

## Glossary

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#### A

<b>Active Ingredient (a.i.)</b>	The part or ingredient (often poisonous) of a pesticide which controls the pest.
<b>Adult</b>	Final stage of development of a pest. They often have wings, for example, moths.
<b>Alternate Host</b>	Different type of plant which a pest or a disease can survive on, for example, some weeds can support whiteflies.
<b>Antagonistic Micro-organism</b>	A micro-organism which can suppress other disease micro-organisms - farmers' friends on a microscopic scale.
<b>Aphid Mummies</b>	Aphids, in which a young wasp has developed, killing the aphid. These parasitized aphids look brown and smooth.
<b>Appearance</b>	How the pest looks.
<b>Arthropod</b>	Very small animal with a hard skin (exoskeleton) segmented body, and jointed legs.
<b>Artificial Respiration (resuscitation)</b>	The emergency first aid technique to establish and maintain breathing and circulation by breathing into someone's mouth when their own breathing has stopped and applying chest compressions.
<b>Augmentation</b>	Increasing the numbers of naturally occurring beneficial insects which can help to control pests.

**Abdomen**

The rear section of an arthropod

**B**

<b>Bactericide</b>	Pesticide which kills bacteria.
<b>Bacterium (plural bacteria)</b>	Extremely small single-celled micro-organisms that are found everywhere. Some types are useful while others cause diseases.
<b>Beneficial Insects</b>	Insects which are helpful to farmers by killing pests or pollinating plants.
<b>Biological Control (or biocontrol)</b>	Use of living organisms to control pests and diseases.
<b>Biopesticide</b>	A pesticide whose active ingredient is a living organism, for example, a fungus or a virus which kills pests.
<b>Botanical</b>	A product made from plant extracts.
<b>Brassicas</b>	Common name for crops such as cabbage, rape, kale, covo, viscose and mustard due to them being in the Brassicaceae family. This family is also known as the Cruciferae so some people call these crops crucifers.
<b>Broad Spectrum</b>	A phrase used to describe pesticides which kill many different types of pests such as caterpillars and aphids. They are likely to kill beneficial insects too.
<b>Bushy Varieties</b>	Tomato varieties which do not grow tall and are able to stay upright without the need for staking or trellising. Also known as determinate varieties.

**C**

<b>Calendar Spraying</b>	Spraying regularly - for example, on a particular day of the week - regardless of pest and disease severity in the crop.
<b>Canker</b>	A dead or discoloured area (lesion) on a plant caused by disease.

<b>Caterpillar</b>	The wingless larval stage of a moth or butterfly. This is usually the stage which is a pest due to its feeding on leaves and other plant parts.
<b>Classical Biocontrol</b>	Controlling a pest by importing a predator or parasite from the same country or area as the pest originated.
<b>Coarse Nozzle</b>	A sprayer nozzle with a large diameter hole. This produces a high flow rate and large droplets (not suitable for spraying insecticides and fungicides on vegetables).
<b>Coarse Spray</b>	Spray with large droplets.
<b>Colonies</b>	Groups of pests such as aphids living together on leaves.
<b>Complete Metamorphosis</b>	The type of arthropod life cycle where the adult looks very different from the immature stages (nymphs or larvae) for example, butterflies look very different from caterpillars.
<b>Compost</b>	Plant material which has been piled up and left to rot to break down, release nutrients and kill the pests and pathogens which may be present. This compost is then added to the soil to improve soil structure and fertility.
<b>Concentration</b>	The quantity of active ingredient per litre of pesticide - in other words how strong the pesticide solution is.
<b>Concentric Rings</b>	Rings inside each other, as in early blight leaf symptoms.
<b>Control</b>	Successfully killing or reducing pests and pathogens to economically acceptable levels.
<b>Crop Cultivar</b>	The particular type or variety of crop being grown, with its own characteristics such as yield potential, disease resistance and time to maturity.
<b>Crop Debris</b>	Unwanted vegetation (stems, leaves or roots)

from previous crops.

<b>Crop Hygiene</b>	Taking care not to spread pests and diseases on to new crops. for example, removing debris from previous diseased crops.
<b>Crop Residues</b>	See crop debris.
<b>Crop Variety</b>	See crop cultivar.
<b>Crucifers</b>	Plants from the Cruciferae family, which is an alternative name for the Brassicaceae family (see Brassicas). The name Cruciferae derives from the cross-shaped arrangement of leaves.
<b>Cultivar</b>	A specially developed agricultural plant variety
<b>Cultivation</b>	The process of growing crops. It can also mean hoeing or ploughing the soil.
<b>Cultural Control</b>	Controlling pests and diseases by changing the way the crop is grown, or its habitat. Examples are crop rotation, field hygiene.
<b>D</b>	
<b>Defoliation</b>	Causing leaves to drop off.
<b>Determinate</b>	A word used to describe the varieties of tomato which are short and bushy and do not usually need staking/trellising or pruning.
<b>Dew</b>	Water droplets often found on leaves early in the morning which have condensed from moisture in the air due to cold temperatures.
<b>Disease</b>	Plant sickness caused by a pathogen or physical and chemical factors such as low temperatures or shortage of particular nutrients.
<b>Distortion</b>	Abnormal change of plant shape or appearance often caused by pests or diseases.
<b>Dose</b>	Quantity of pesticide active ingredient applied to a given area of crop - often expressed as grams of active ingredient per hectare, but

may be in millilitres per hectare.

<b>Drench</b>	Use of high volumes of dilute pesticide solution applied directly to the soil with sprayer or bucket to control pests and diseases in the soil.
<b>Drip Irrigation</b>	Type of irrigation where water is supplied directly to plants through small holes in pipes laid on or in the soil next to crop rows.
<b>Dust</b>	A powdery pesticide formulation which is scattered dry onto the crop and pest.

## E

<b>Egg</b>	Stage of life cycle which is produced by female adults after mating with males.
<b>Emulsifiable Concentrate (EC)</b>	A liquid pesticide formulation which is mixed with water before spraying.

## F

<b>Fallow</b>	Cultivated land that is allowed to lie dormant, with no crops growing on it, during a growing season
<b>Farmers' Friends (natural enemies)</b>	Organisms which feed on and kill pests. Examples are ladybird beetles which feed on aphids and parasitoid wasps which lay their eggs in moth larvae. See also Natural Enemy.
<b>Field Hygiene</b>	Taking care not to spread pests and diseases on to new crops. for example, removing crop debris from previous diseased crops.
<b>Fine Nozzle</b>	A sprayer nozzle with a small hole. These have a low flow rate and produce small droplets suitable for applying insecticides and fungicides.
<b>Fine Spray</b>	Spray with small droplets.
<b>Flat Fan Nozzle</b>	The type of sprayer nozzle which projects spray liquid in a flat pattern. More appropriate

for tractors than for knapsack sprayers since coverage of bushy plants is not so good.

<b>Flood Irrigation</b>	Type of irrigation where water is regularly allowed to flood a relatively flat field.
<b>Formulation</b>	The mixture of ingredients, including the active ingredient, which makes up a commercial pesticide.
<b>Frass</b>	Insect droppings, faeces or excreta - often a sign of presence of a hidden pest for example, cabbage webworm.
<b>Fresh Market</b>	Refers to tomato types which are suitable for eating fresh - usually thin-skinned and quite juicy.
<b>Fungicide</b>	A pesticide designed to control fungal diseases such as tomato late blight or powdery mildew.
<b>Fungus (plural fungi)</b>	Organisms which are similar to plants but have no chlorophyll for trapping sunlight. Many are useful in nature, but some cause diseases such as early blight and damping off.
<b>Furrow Irrigation</b>	Type of irrigation where water is channelled down furrows which run beside the crop rows.
<b>G</b>	
<b>Galls</b>	Swellings on plants caused by pests or diseases. In the case of root knot nematodes these galls (or root knots) appear on the roots.
<b>Generalist</b>	Type of natural enemy that can feed on a wide range of different pests.
<b>Girdling</b>	Plant damage by pest or disease which extends right round the stem, causing it to shrink and constrict the stem at that point.
<b>H</b>	
<b>Halo</b>	Circular pattern of discoloration (often yellow)

	around damage by pest or disease on leaves, stems or fruit.
<b>Hand-picking</b>	Method of controlling pests by picking them off or crushing them.
<b>Herbicide</b>	Pesticide which kills weeds.
<b>Hollow Cone Nozzle</b>	The type of sprayer nozzle which produces a cone-shaped circle of spray (recommended for knapsack sprayers used in small-scale vegetable production).
<b>Honeydew</b>	Sticky sugary substance excreted by pests which suck plant sap such as whitefly and aphids. This can coat lower leaves or fruits on the plant and encourage the growth of sooty moulds.
<b>Host Plant Resistance</b>	ability of a plant to resist attack or infection by particular pests or diseases.
<b>Host</b>	Plant or animal on which a pest, disease or natural enemy feeds.
<b>I</b>	
<b>Immature</b>	Stage of arthropod life cycle before they become adults for example, nymphs, larvae and pupae.
<b>Incomplete Metamorphosis</b>	Type of arthropod life cycle where the immature stages look a little like the adults, for example stink bugs.
<b>Indeterminate</b>	Type of tomato variety which usually needs pruning and cannot support itself so needs staking or trellising.
<b>Inoculation</b>	Introduction of natural enemies to a crop so that they can control pests.
<b>Insect Zoo</b>	Clear glass or plastic container to hold and observe arthropods and plant material from the crop. Those eating the plant material are pests and those eating the pests are natural enemies.

<b>Insecticide</b>	Type of pesticide designed to kill insects.
<b>Insect</b>	Arthropods which have six segmented legs, a head, thorax, and abdomen, and typically one or two pairs of wings in their adult stage.
<b>Instar</b>	The stages between moults of larvae and nymphs. These usually pass through several instars, getting progressively bigger as they shed their skin at the end of each stage.
<b>Integrated Pest Management (IPM)</b>	An ecologically based pest control strategy that relies heavily on resistant crops, hygiene and natural predators and parasitoids, and tries to disrupt these factors as little as possible by only using appropriate chemical pesticides when necessary.
<b>Intercropping</b>	Planting more than one type of crop plant together in order to confuse pests or increase productivity.
<b>Intervention</b>	Doing something to control a pest or disease, for example, moving natural enemies in from other areas or applying a spray.
<b>Introduction</b>	Bringing in new types of natural enemy from another region.
<b>Inundation</b>	Releasing large numbers of natural enemies, usually reared specially, to find and kill the pests.

## K

<b>Knapsack Sprayer</b>	Type of sprayer carried on the operator's back. These are usually lever-operated or pressurised by pumping beforehand, but may be powered by an engine as in motorised knapsack mistblowers.
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## L

<b>LD50</b>	The amount or dose of a pesticide which will kill 50 % of a test population of mammals
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	(usually rats or rabbits) The letters stand for lethal dose.
<b>Larva (plural larvae)</b>	One of the stages in life cycles which exhibit complete metamorphosis. Examples are caterpillars (larvae of butterflies and moths) and maggots (larvae of flies). Larvae usually look very different from the adults and do not have wings.
<b>Legume (leguminous plant)</b>	Plants which have seeds in pods (for example, peas) and have root nodules with helpful bacteria capable of trapping nitrogen from the air, so that plants can use it.
<b>Lesion</b>	Damaged area of a plant, often hollowed slightly, resulting from pest or disease attack or by physical injury.
<b>Life cycle</b>	A description of the changes which take place through the life a living organism from adult through to adult again.

## M

<b>Maggot</b>	The larval stage of a fly.
<b>Mammalian Toxicity</b>	a measure of how poisonous a pesticide is to mammals, in other words animals such as humans, cattle and rats.
<b>Mature</b>	Stage of arthropod life cycle when they become adults
<b>Maximum Residue Limit (MRL)</b>	The limit or amount in parts per million, which is set by regulatory authorities as the amount of pesticide allowable in agricultural produce. These MRLs vary from one pesticide to another, from country to country and from crop to crop.
<b>Mechanical Control</b>	Method of pest control which relies on force to kill or expose the pest or disease, for example, disc ploughing a field to kill the cutworms.
<b>Metamorphosis</b>	The change of form that arthropods go

through between immature stages (larvae or nymphs) and adult stage.

<b>Micro-organism</b>	Tiny living plant or animal too small to see without a microscope, for example, bacteria or viruses. [Also spelt microorganism] Mine (as in leaf mine): Long thin hollowed out tube between the two surfaces of a plant leaf caused by pest larvae (usually of flies) as they eat within the leaf.
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<b>Mite (or spider mites)</b>	Tiny arthropod sucking pests with eight legs as adults, but sometimes only six when younger.
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<b>Mixed Cropping</b>	The practice of planting more than one type of crop in a field (the opposite of monocropping). This may take the form of intercropping (see definition above) or could be patches of different crops near each other.
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<b>Monoculture (monocropping)</b>	The practice of growing large areas of only one crop.
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<b>Mottling</b>	Patchy discoloration of leaves or fruit.
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<b>Mould</b>	Powdery or fluffy fungal growth which can be white, black, green or brown. Black mould can grow on honeydew from sucking insects and can block sunlight from the leaves.
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<b>Mulching</b>	Covering the surface of the soil with material such as crop residues, compost or plastic sheeting to reduce weeds, water loss, reduce splashing and break some pest life cycles.
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## N

<b>Natural Enemy (Farmers' Friend)</b>	Organisms which feed on and kill crop pests. Examples are ladybird beetles which feed on aphids, and wasps which lay their eggs in moth larvae. See also Farmers' Friend.
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<b>Nematicidal</b>	Able to kill nematodes, for example, African Marigolds have nematicidal properties.
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<b>Nematodes</b>	Microscopic worms without segments
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sometimes called eelworms which may feed on plant roots. Other types feed on insects and may turn out to be useful biocontrol agents.

**Nozzle** Device with a small hole fitted at the end of a spray lance to break up the liquid into spray droplets.

**Nutrients** Chemicals in the soil which plants use for growth. Either made available naturally from breakdown of organic matter or added by farmers as artificial fertiliser.

**Nymph** One of the stages in life cycles which exhibit incomplete metamorphosis. Nymphs usually look very similar to the adults but do not have wings.

## O

**Organic farming** Farming without using most synthetic pesticides or fertilisers.

**Organic matter** Material in the soil deriving from plants or animals. Organic matter gives soil good structure, helps it hold water, and breaks down to release nutrients.

**Overdose** Application of more than the recommended dose of pesticide is applied.

**Overhead Irrigation** Type of irrigation where water is sprayed from sprinklers like rain over the crop.

## P

**Parasitoid** Arthropod which lays its eggs in or on other arthropods (either their eggs, larvae or nymphs) and which usually kills its host. A common example is a parasitoid wasp which lays its eggs in aphids.

**Pathogen** Infectious micro-organism which can cause disease, for example, fungi which cause late blight.

<b>Persistence</b>	The capacity of a pesticide to remain active for a time after spraying.
<b>Persistent</b>	Means long-lasting. It can refer to a pesticide which remains active for a long time after spraying, or a disease which can survive a long time in the soil after an infected crop has been growing in the field.
<b>Pesticide Residue</b>	Pesticide remaining in agricultural produce after harvest. Overdosing or not respecting the pre-harvest interval can cause excessive residues which may harm the consumer.
<b>Pesticide</b>	Product designed to kill pests (including diseases). Pesticides may be synthetic (man-made), biological (containing a living organism) or botanical (made from plant extracts).
<b>Pest</b>	Living organism which feeds on or otherwise damages crop plants. Usually used to describe animal pests such as insects, mites and rats, but sometimes also used to include diseases.
<b>Pheromone</b>	A substance secreted by an organism to affect the behaviour or development of other members of the same species; sex pheromones that attract the opposite sex for mating are used in monitoring and controlling certain insects.
<b>Physiological Disease/Disorder</b>	Plant damage caused by factors other than pathogens or pests. for example, sunscald of tomatoes caused by strong sun on the fruit. Also called abiotic disorder.
<b>Pollination</b>	Transfer of pollen from the male sexual parts of a plant to the female sexual parts in order to achieve fertilization which is required to set some fruits and crops. The pollen may be carried by the wind, for example, wind-pollination of maize, or by an insect, for example, pollination of tomatoes by bees.
<b>Pollinator</b>	Type of insect which carries pollen from male

	parts of a plant to the female parts, for example, bees.
<b>Pre-harvest Interval (PHI)</b>	Period of time after spraying before the crop becomes safe to harvest and eat. This can vary from a day to several weeks. Read the pesticide label carefully to find out how long the PHI is.
<b>Predator</b>	Animal which catches and eats other animals, such as a lion. An example in pest management is hover fly larvae which catch and eat aphids.
<b>Preventive Control</b>	taking action to prevent pests and diseases before they appear or become serious.
<b>Processing</b>	Refers to tomato types which are suitable for cooking or canning - usually with thicker skins and less juicy.
<b>Prune</b>	Cutting off parts of a plant to control size or improve its growth or shape.
<b>Pupa (plural is pupae)</b>	One of the stages in the life cycle of arthropods which undergo complete metamorphosis, for example, moths and flies whose younger stages are very different from adults. Pupae usually have a hard skin and do not move or feed.
<b>Pupate</b>	The process of forming a pupa (see above).
<b>pH</b>	The pH scale is a measure of how acidic the soil is. Below pH 7 is increasingly acidic (possibly requiring lime) and above 7 is increasingly alkaline (possibly requiring use of special fertilisers).
<b>R</b>	
<b>Recommended Dose Rate</b>	This is manufacturer's advice on the amount of pesticide to use to achieve good control of a pest or disease.
<b>Red Spider Mite (RSM)</b>	A type of mite which feeds on leaves.

<b>Repellent</b>	Describes something which is able to make organisms stay away (be repelled) - for example, the smell of onion plants repels some pests.
<b>Resistant (resistance)</b>	Able to withstand something. for example, a plant may be resistant to a disease or pest, meaning it cannot be affected by it, or an insect may be resistant to a pesticide, and not be killed by it.
<b>Roguing or Roguing Out</b>	This is removing/destroying plants which are affected by pests or diseases in order to prevent infestation/infection spreading to other plants in the field
<b>Root Knot Nematode (RKN)</b>	A type of nematode which feeds on and damages roots of some plants, often forming lumps or knots which are visible if the plant is pulled up.
<b>Root Knots</b>	Lumps or knots on plant roots as a result of infestation by root knot nematodes (see above).
<b>Rotation</b>	The practice of changing the crop type in a field at each new planting to prevent the build up of pests and diseases. After 3 or more years, the first crop type can often be planted again, so the rotation starts again.
<b>S</b>	
<b>STRong rotation system</b>	A crop rotation system for mostly aimed at control of root knot nematodes. Crops are planted in the sequence: Susceptible, Tolerant, Resistant (STR), then Susceptible again and so on.
<b>Sap</b>	Plant juices containing water and nutrients.
<b>Sclerotia</b>	Hard lump formed by fungal diseases in some plants.
<b>Scouting</b>	Examining crop plants in a systematic way to assess pest, disease and natural enemy situation in order to decide whether any crop

protection intervention is necessary.

<b>Seed Dressing</b>	A treatment which coats the seed with pesticide to prevent early season attack by diseases (and some pests).
<b>Seed-borne</b>	A disease carried in or on the seed, for example, fusarium wilt
<b>Selective</b>	A word relating to pesticides which only kill organisms in a narrow range. For example, diflubenzuron only affects pests which have a cuticle because it disrupts formation of the cuticle - it cannot affect fish, birds or people. Selective pesticides are also sometimes known as specific pesticides.
<b>Shot Hole</b>	Damage caused by flea beetles and other pests whose feeding produces small holes which look as though they have been caused by the pellets from a shotgun.
<b>Skeletonized</b>	used to describe leaves which have had most of their softer tissue eaten by a pest, leaving only the thicker veins intact.
<b>Soil-borne</b>	Pests and diseases which can survive and infect crops from soil in the field, for example, bacterial speck on tomato.
<b>Solanaceae</b>	The plant family containing tomatoes and other crops such as egg plant, Irish potato and peppers.
<b>Solarization</b>	Covering the soil with plastic (preferably clear) so that hot sunshine will heat the soil and kill pests and diseases in it.
<b>Spore</b>	The microscopically small seed of a fungal disease which can be carried by wind or water splashes.
<b>Spot Spraying</b>	Spraying only the area of crop which is affected by pests or diseases, rather than spraying the whole field.
<b>Spray Management Valve</b>	Device fitted to spray lance which regulates

	spraying pressure so that flow rate and droplet size remain constant.
<b>Spray Stratification</b>	Spraying only one level of the crop, for example, spraying the bottom of the crop to reduce transmission of rain-splashed fungal diseases.
<b>Spray Threshold</b>	the level of severity of pest or disease attack - for example, number of aphids per plant leaf - which prompts a decision to spray pesticides.
<b>Staking</b>	Using a pole (or stake) to support plants so that they can grow upwards without falling on to the soil.
<b>Sterilize</b>	To treat with heat or a chemical so that diseases and pests are killed.
<b>Stippling</b>	Damage showing as small white dots on leaves as a result of leaf sucking pests or leaf miner adults laying eggs or probing to find good egg-laying sites.
<b>Stunted</b>	Plants which are small and poorly developed.
<b>Succulent</b>	Very soft sappy or juicy plants which are quick growing. Over-use of nitrogen-containing fertiliser can produce succulent growth which may be especially liable to aphid damage.
<b>Sunscald</b>	Physiological condition of tomato fruits caused by exposure to hot sunshine (often caused by harsh pruning).
<b>Susceptible</b>	Capacity to be affected by something. For example, a plant which is susceptible to a disease can be infected by it, and an insect which is susceptible to a pesticide can be killed by it.
<b>Symptom</b>	A visible sign of damage by pest or disease.
<b>Systemic Pesticide</b>	A pesticide which can pass through the plant cuticle and be carried around in the plant sap. Very useful for controlling sucking pests.

## T

<b>Tolerant</b>	Capacity to withstand particular diseases without major damage or yield loss. Also refers to pests which are partially resistant to pesticides.
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<b>Toxicity</b>	a measure of how poisonous a pesticide is either to mammals (see mammalian toxicity) or to pests or natural enemies.
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<b>Translaminar</b>	Capacity of a pesticide to pass through the plant cuticle, but unlike systemic pesticides, not to be carried around in the plant sap. Very useful for controlling pests inside the leaf such as leaf miners.
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<b>Transmission</b>	The way in which a disease is spread to other plants
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<b>Trap crop</b>	Crop which is planted to attract a pest and is then destroyed together with the pest.
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<b>Trellising</b>	Supporting tomato plants with wire strung between posts. The plants are tied in to the wire.
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## U

<b>Underdose</b>	Application of less than the recommended dose of pesticide is applied.
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## V

<b>V lance</b>	Spraying device fitted at the end of a spray lance which can swivel to direct the spray upwards and improve underleaf cover. Good for control of pests found underneath leaves and for preventing diseases which are splash-borne to underleaf surfaces.
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<b>Vector</b>	Organisms which spread a disease, for example, thrips transmitting tomato spotted wilt virus.
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<b>Vessel</b>	Tube in stems and leaves which carries plant
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	water and nutrients (sap).
<b>Vine Varieties</b>	Tomato varieties which are indeterminate and required staking/trellising and pruning.
<b>Virus (plural viruses)</b>	Some of the smallest of living organisms. Cause diseases which discolour and deform the plant and may reduce vigour and yield.
<b>Volume Application Rate (VAR)</b>	The volume of diluted spray applied per crop area, usually expressed as litres/hectare. Farmers often unknowingly apply a VAR which is far too high, resulting in heavy overdosing and unnecessary run off on to the soil.
<b>Volunteer Crop Plants</b>	Plants growing from seed, tubers or debris left over from the previous crop in the field.

## W

<b>Water Stress</b>	Damaging plant condition resulting from insufficient water supply which may cause wilt disease symptoms to show.
<b>Weed</b>	Wild plant which competes with the crop for water, nutrients and/or light
<b>Wettable Powder (WP)</b>	Powder pesticide formulation which is mixed with water before spraying.
<b>Windowing</b>	Caused by pests eating only the upper or lower surface of the leaf, leaving the other surface intact, looking like a translucent window.