

Glossary

Algae: A group of aquatic, photosynthetic, eukaryotic organisms ranging from unicellular to multicellular forms, and generally possess chlorophyll but lack true roots, stems and leaves characteristic of terrestrial plants.

Algaecide: An algaecide is a pesticide used for killing and preventing the growth of algae.

Animal & Plant Health Inspection Service (APHIS): The part of USDA responsible for protecting American agriculture and natural resources from imported or invasive organisms.

Antimicrobial: Destroying or inhibiting the growth of microorganisms and especially pathogenic microorganisms.

Autoclave: An apparatus in which special conditions (as high or low pressure or temperature) can be established for a variety of applications; especially: an apparatus (as for sterilizing) using superheated steam under high pressure.

Backflow: The flow of a liquid by siphon pressure or gravity back to its source.

Backflow Prevention Device: A mechanical device that prevents the return flow of water and any dissolved chemicals back into the water supply.

Bactericide: A pesticide used to control bacteria which cause disease.

Beneficial organisms: Organisms used to manage a pest population. These include:

Competitors: Individuals that need to utilize the same limiting resource. Competition generally has negative effects on one or both competitors.

Parasites: Small organisms that live and feed in or on a larger host organism.

Parasitoids: Parasitic insects that live in or on, and eventually kill, a larger host insect.

Pathogens: Microorganisms that live and feed (parasitically) on or in a larger host organism, and thereby cause injury to the host.

Predators: Animals that feed upon other animals.

Biological Control: The use of beneficial organisms to manage pest populations.

Biosafety Levels: More information to determine biosafety levels can be found in the following locations: National Institutes of Health (NIH) Guidelines <https://osp.od.nih.gov/biotechnology/nih-guidelines/> Cornell University Institutional Biosafety Committee <http://www.ibr.cornell.edu/> ; A Practical Guide to Containment by Patricia L. Traynor, Dan Adair, Ruth Irwin <http://conacyt.gob.mx/cibiogem/images/cibiogem/comunicacion/Eventos/CIBIOGEM/Taller-Bioseguridad-Cofinamiento/Practical-guide-containment.pdf>

Biosafety Level 1-Plant (BL1P) and Biosafety Level 2-Plant: See Biosafety Levels definition for more information to determine biosafety levels.

Calibration: Determining accuracy of equipment and methods; using standards to maintain accuracy in equipment capacity and volumes delivered.

Clean Room (Cleanroom): is an enclosed space in which airborne particulates, contaminants and pollutants are kept within limits.

Composting: Managed aerobic decay of organic matter to produce a humus-like product that can be used as a plant growth medium or soil amendment.

Cornell Institutional Biosafety Committee (IBC): The Cornell IBC is the institutional body responsible for oversight of activities involving biohazardous materials as required by the National Institutes of Health Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules (NIH Guidelines) and the Centers for Disease Control and Prevention (CDC) Biosafety in Microbiological and Biomedical Laboratories (BMBL). <http://www.ibt.cornell.edu/glossary/>

Cross-connection: Interconnection between a potable water supply and a water supply intended for plant care which may contain fertilizer or other agricultural chemicals.

Cultural Control: Manipulation of growing conditions such as sanitation, the environment, or production timing to achieve disease, insect, or weed management.

Curbed Concrete Pad: A containment method using concrete flooring constructed to restrict the movement of spilled materials within raised edges.

Debris: The scattered remains of media and/or plant material.

Decontamination/Clean Area: Designated area to don or store clean PPE, and perform personal decontamination (i.e., shower or sink).

Deluge Shower: is activated by a rigid pull and provides a unique impeller set action, gives a complete and dense coverage with a thorough and rapid decontamination action. Heads distribute floods of water without voids in the shower pattern that assures complete body coverage for faster decontamination.

Disinfectant: An antimicrobial intended to destroy or irreversibly inactivate infectious or other undesirable bacteria, pathogenic fungi, or viruses on surfaces or inanimate objects.

Documented Maintenance: Written list of type and date of maintenance performed.

Documented Training: Attendees sign in (or out) of training and manager/supervisor maintains sign in sheet.

Electrical Conductivity (EC): As used in measuring fertility, it is the ability of the solution (nutrient or soil) to conduct electricity based on the concentration of dissolved ions..

Environmental Protection Agency (EPA): The Federal organization charged with protecting human health and the environment of the United States.

Environmentally Persistent: A chemical compound that does not rapidly break down but remains in the environment for a prolonged period.

Equipment Malfunctions: Greenhouse equipment fails to operate properly.

Ergonomics: An applied science concerned with designing and arranging things people use so that the people and things interact most efficiently and safely.

Eutrophication: the process by which a body of water becomes enriched in dissolved nutrients (as phosphates) that stimulate the growth of aquatic plant life usually resulting in depletion of dissolved oxygen.

Evaporative Cooling: Evaporation of water by an air stream to reduce the air temperature.

Eyewash: A piece of safety equipment that provides for quick flushing of the eyes; provided within a work area where the eyes of any person may be exposed to corrosive materials (such as some pesticides); installed and maintained according to regulations; for immediate emergency use.

Fertigation: Irrigation of plants with water containing fertilizer.

Fertilizer: a substance (such as manure or a special chemical) that is added to media for plant growth.

Fertilizer Formulation: identifies specific fertilizers in the product i.e. Potassium sulfate.

Fire Suppression System: A system designed to respond to smoke, heat, or spark with water or a chemical fire retardant.

Fumigants: A pesticide in the form of a poisonous gas that will kill destructive microorganisms, animals, or plants when absorbed or inhaled.

Fungicide: A pesticide used to control fungi which cause molds, rots, and other plant diseases.

Glazing: Light-transmitting materials used to cover a greenhouse.

Greenhouse Equipment: Autoclaves, soil mixers, or other equipment, excluding vehicles, which is used by greenhouse personnel who have been trained in its use.

Growing Media: A material formulated to provide structural support, and a substrate to hold water, nutrients and air for growing plants; a soil substitute.

Growth Regulator: Synthetic or naturally occurring plant substances that are effective in minute amounts to regulate or modify plant growth.

Hazard Class: A classification system designating the toxicity level of pesticides to humans, including: Danger/Poison, Danger, Warning, and Caution – Slightly Toxic, Caution – Relatively Non-toxic. The classification is directly related to the suggested precautions for handling and use.

Herbicide: A pesticide formulated to inhibit growth of or kill plants. Non-selective herbicides work on many different types of plants, while selective herbicides are specific to a selected group of plant species.

High Intensity Discharge (HID) Lamps: HID lamps are a type of electrical gas-discharge lamp which produces light by means of an electronic arc between electrodes housed inside a transparent arc tube filled with gas and metal salts.

Fertilizer Injector: Device that injects fertilizer stock solution into the irrigation line at a known dilution ratio. (see also proportioner)

Insect Growth Regulators (IGRs): Hormones or hormone-like substances that affect the ability of insects to grow and mature normally.

Insecticide: A pesticide that is used to control or prevent damage caused by insects.

Institution: any public or private entity (including federal, state and local government agencies).

Integrated Pest Management (IPM): A pest control strategy based on knowledge of the crop and its pests using multiple management techniques, including cultural, biological, and chemical control.

Inventory Control: Detailed monitoring and recording of product identifications and quantities to ensure proper planning, use, distribution and disposal.

Impermeable Flooring: Flooring designed to limit or eliminate the movement of water into the flooring system.

Label: The printed material attached to or part of pesticide container.

LC₅₀: “Lethal Concentration” of a substance suspended in the air or dispersed in water.

LD₅₀: “Lethal Dose” of a substance that will kill 50% of a population of organisms; this is generally expressed as milligrams of toxin per kilogram of body weight.

Leaching: Applying excess water or nutrient solution to wash chemicals and excess nutrients out of the root zone.

Least Toxic: having a minimally or no toxic effect upon non-target organisms

Media: (See also Growing Media) Substance that plants grow in such as soil, vermiculite, or peat moss.

Mode of Action: The mechanism by which a pesticide kills or controls the target organism (i.e., systemic, contact, etc.).

MUA (Memorandum of Understanding and Agreements): Applications for the NIH and Institutional Biosafety Committee for research involving recombinant or synthetic nucleic acid molecules (r/sNA) as defined by the NIH Guidelines.

National Institutes of Health Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules (NIH Guidelines): The NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules (NIH Guidelines) set forth the principles for NIH and institutional oversight of recombinant and synthetic nucleic acid molecule research, including human gene transfer trials. The NIH Guidelines were first published in 1976 as an outcome of a public process

by which scientists developed standards to address the risks associated with recombinant DNA research.

Natural Enemies: see **Beneficial Organisms**

Non-compost: Material not subject to aerobic decay, or excluded from composting for phytosanitary reasons, including: plastic coated paper; plastic stakes, labels, pots, bag, twist ties, gloves or any plastic material; large woody material; rock wool or manufactured soil media substitutes; transgenic, diseased or insect infested material unless it has been adequately autoclaved; wooden labels or stakes.

Nutrient: A mineral used by plants for growth or development.

Nutrient Analysis: Testing of growing mixes, water or plant material to determine actual nutrient content, pH, and/or electrical conductivity (saltiness).

Nutrient Deficiency: The lack of one or more mineral nutrients, which prevents optimum growth.

NY State Certified Pesticide Applicator: A commercial or private pesticide applicator who is certified by the NYS DEC to use, supervise the use of, or train another individual in the use of any pesticide in any category of use covered by the individual’s certification. Applicators at Cornell must have commercial certification.

NY State Department of Environmental Conservation (NYS DEC): Department of Environmental Conservation; the Pesticide Management Program within NYS DEC is the lead New York agency responsible for regulation of pesticides, compliance assistance and public outreach activities to ensure enforcement of State pesticide laws.

NY State Registered Pesticide Product: A DEC approved substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any insects, rodents, fungi, weeds, or other forms of plant or

animal life or viruses (except viruses on or in living humans / or other animals); and any substance or mixture of substances intended as a plant regulator, defoliant (causes plants to drop leaves) or desiccant (promotes death of plants by drying).

Operating Manual: An instruction handbook prepared by the manufacturer on the use of the equipment.

Organic Waste: any biodegradable waste that originates from animal or plant sources.

Oxidizer: A substance that oxidizes another substance, especially one that supports the combustion of fuel; an oxidizing agent.

Passive Temperature Control: Using non-motorized shutters, vents, shading and other systems to moderate indoor temperature without benefit of mechanical coolers or heaters; indoor temperature patterns tend to follow outdoor temperature trends.

Passive Ventilation: Non-automated ventilation such as opened windows and shutters that allow airflow in and out of the greenhouse without relying on motorized fans and vents.

Personal Protective Equipment (PPE): Clothing and accessories such as goggles, rubber boots and gloves worn for protection from exposure to or injury from chemicals during handling activities or from using greenhouse equipment.

Personal Protective Equipment Area: An area designated for storage and donning of personal protective equipment.

Pest: Any organism causing an undesired effect on the health, growth or development of a desirable organism or interfering with production methods, including weeds, mammals, birds, insects, mites and pathogens.

Pest Exclusion: The use of exclusion methods, such as caulking crevices or screening air vents, to limit or prevent pest access.

Pest Reservoir: An area or host population where pests remain after using pest management techniques.

Pesticide: Any substance or mixture of substances intended to prevent, destroy, repel, or mitigate any pest, or intended for use as a plant regulator, defoliant, or desiccant.

Pesticide Formulation: A classification of the physical form of pesticide products, including but not limited to: EC = emulsifiable concentrate, F = flowable microencapsulated, FP = flowable powder, G = granular, L = liquid, ME = microencapsulated, SP = soluble powder, W = wettable powder.

pH: The measure of the acidity or basicity of a solution.

Phytosanitation: concerning the health of plants; especially the freedom from pests requiring quarantine.

Principal Investigator (PI): This title identifies the individual responsible for the conduct of the project. This responsibility includes the intellectual conduct of the project, fiscal accountability, administrative aspects, and the project's adherence to relevant policies and regulations.

Potable Water: water that is safe for drinking, tap water may be potable

Precipitate: Solids that have separated out of solution.

Proportioner: A device that injects fertilizer stock solution into the irrigation line at a known dilution ratio. (see also fertilizer injector)

Recombinant DNA and Synthetic Nucleic Acid Molecules:

(i) molecules that a) are constructed by joining nucleic acid molecules and b) that can replicate in a living cell, i.e., recombinant nucleic acids;

(ii) nucleic acid molecules that are chemically or by other means synthesized or amplified, including those that are chemically or otherwise modified but can base pair with naturally occurring nucleic acid molecules, i.e., synthetic nucleic acids, or

(iii) molecules that result from the replication of those described in (i) or (ii) above.

<http://osp.od.nih.gov/office-biotechnology-activities/biosafety/nih-guidelines>

Recycling: to treat or process used or waste materials so as to make them suitable for reuse.

Renovate: to restore to good condition; make new or as if new again; repair.

Residual: Leaving a residue that remains effective for an extended period.

Right to Know: EPA Emergency Planning and Community Right-to-Know Act (EPCRA) Hazardous Chemical Inventory Reporting

<https://www.epa.gov/epcra/epcra-sections-311-312>

Rogueing: The prompt removal of infested or infected plants by bagging and carrying out of the greenhouse.

Safety Data Sheet (SDS): an OSHA mandated collection of information provided by the manufacturer for the proper storage and use of a chemical, including toxicity and safety information.

Sanitary Sewer: a sewer to dispose of sewage (the waste matter that passes through sewers) but not water from ground surface or storm.

Sanitation: Cleaning, disinfecting and/or remove elements that endanger plant health or interfere with plant production such as debris, or infected/infested plants.

Sanitizer: An antimicrobial intended to reduce the number of living bacteria or viable virus particles on inanimate surfaces, in water, or in air.

Scouting: The systematic checking of plants for insect and disease problems. Scouting records are kept and used in making predictions and decisions concerning pest and disease control.

Secondary Containment: A container or structural barrier placed under or around a vessel to contain the contents of the vessel in the event of an accidental spill or leak. The secondary containment should have at least 110% of the primary vessel's capacity.

Selectivity: Refers to the range of organisms or life stages of organisms affected by a pesticide; a selective pesticide is toxic to a narrow range of pests species or life stages.

Shading: The use of fabric or coatings applied to glazing to reduce the indoor light level or solar heat gain in a greenhouse.

Shading Compound: liquid applied to glazing to form a coating to reduce light.

Standard Operating Procedure (SOP): A set of instructions covering those features of operations that lend themselves to a definite or standardized procedure without loss of effectiveness.

Spill Kits: a compilation of absorbent materials, cleaners and chemicals neutralizers used to contain accidental spills.

Sticky Traps/Cards: glue based traps typically used to catch and monitor pests.

Stock Solution: concentrated liquid fertilizer for proportioning via fertilizer injector or proportioner.

Sustainable: conserving an ecological balance by avoiding depletion of natural resources.

Training: The skill, knowledge or experience acquired by one that trains. The trainer will teach operative concepts, proper personal protective equipment (PPE) requirements, safety, and information outlined in a training manual. If assistance is needed by the trainer OSHA and Cornell EH&S can be referenced.

Transgenic or Genetically Modified: A genetically modified plant is a plant whose genotypic and perhaps phenotypic characteristics have been altered with recombinant DNA techniques (e.g., transformation techniques that use electroporation, gene gun, viral vector, Agrobacterium) (these techniques are different than those used with traditional breeding techniques- random mixing of genes thru sexual crosses and backcrosses, wild crosses, pollination, grafting). Transgenic plants include a subset of genetically modified plants where the plant expresses new genes. These genes may be derived from the same species, different plant species, or even different organisms (e.g., Bt cotton). Knockout plants are a subset of genetically modified plants where a particular gene or subset of genes have been inactivated/deleted. Both types of plants would utilize similar rDNA techniques (with natural or synthetic nucleic acids) and would be subject to the NIH Guidelines.

Ventilation: The air exchange between the inside and outside of the greenhouse to remove heat or affect relative humidity of the air.

Worker Protection Standard (WPS): A federal regulation administered by the US Environmental Protection Agency (EPA) intended to reduce the risk of pesticide poisonings and injuries among agricultural workers who are exposed to pesticide residues on plants. The WPS requires greenhouse owners to assure that workers receive basic pesticide safety information before they work with treated plants.

WPS Worker: A worker is anyone who: (1) is employed (including self-employed) for any type of compensation and (2) is doing tasks, such as harvesting, weeding, or watering, related to the production of agricultural plants on a farm, forest, nursery, or greenhouse. This term does not include

persons who are employed by a commercial establishment to perform tasks such as crop advisors.

WPS Handler: A pesticide handler is anyone who: (1) is employed (including self-employed) for any type of compensation by an agricultural establishment or a commercial pesticide handling establishment that uses pesticides in the production of agricultural plants on a farm, forest, nursery, or greenhouse, and (2) is doing any of the following tasks:

- Mixing, loading, transferring or applying pesticides
- Handling opened containers of pesticides
- Acting as a flagger
- Cleaning, handing, adjusting or repairing the parts of mixing and loading or application equipment that may contain pesticide residues
- Assisting with the application of pesticides, including incorporating the pesticides into the soil after the application has occurred
- Entering a greenhouse or other enclosed area after application and before inhalation exposure level listed on the product labeling has been reached or one of the WPS ventilation criteria have been met to: operate ventilation equipment, adjust or remove coverings, such as tarps, used in fumigation or check air concentration levels
- Entering a treated area outdoors after application of any soil fumigant to adjust or remove soil coverings, such as tarpaulins
- Perform tasks as a crop advisor: during any pesticide application before any inhalation exposure level or ventilation criteria listed on the labeling has been reached or one of the WPS ventilation criteria has been met, during any restricted-entry interval
- Disposing of pesticides or pesticide containers