

## *Hydroponics and Organics Terms*

### A

**Alternating Current (AC):** An electric current that reverses its direction at regularity occurring intervals. Homes have A.C.

**Adobe:** Heavy clay soil, not suitable for container gardening or hydroponics.

**Aeration:** Supplying growing mediums and roots with air or oxygen.

**Aeroponics:** Growing plants by misting roots suspended in air. No medium is needed with this method and usually only small plants that need no support are grown this way.

**Aggregate:** Medium usually grow rocks, gavel, or lava rocks that is all nearly the same size, and used for an inert hydroponic medium.

**Alkaline:** Refers to soil or hydroponic nutrient solution with a high pH : Any pH over 7 is considered alkaline.

**All-purpose (General-purpose) fertilizer:** A balanced blend of N-P-K; all purpose fertilizer for soil and is used by most growers in the vegetative growth stage. Miracle-Gro and Peters is an example. They are not recommended for hydroponics.

**Ampere (amp):** The unit used to measure the strength of an electric current; A 20-amp circuit is overloaded when drawing more than 17amps.

**Annual:** A plant that normally completes its entire life cycle in one year or less: Marigolds and tomatoes are examples of annual plants.

**Arc:** Luminous discharge of electricity (light) between two electrodes.

**Arc tube:** Container for luminous gases; also houses the arc.

**Auxin:** Classification of plant hormones; Auxins are responsible for foliage and root elongation.

## B

**Bacteria:** Very small, one-celled organisms that have no chlorophyll.

**Beneficial insect:** A good insect that eats bad insects that attack your plants.

**Biodegradable:** Able to decompose or break down through natural bacterial action; Substances made of organic matter are biodegradable.

**Bleach:** Ordinary laundry bleach is used in a 1 part bleach to 10 parts water solution as a garden fungicide. Use this solution to clean all your equipment between harvests to rid of any lingering contamination.

**Bolt:** Term used to describe a plant that has run to seed prematurely which means that it bloomed because of heat or other reasons.

**Bonsai:** A very short or dwarfed plant.

**Breaker box:** Electrical circuit box having on/off switches rather than fuses.

**Breath:** Roots draw in and breath oxygen, stomata draw in and breathe CO<sub>2</sub>.

**Bud blight:** A withering condition that attacks flower buds.

**Buffering:** The ability of a substance to reduce shock and cushion against pH fluctuations. Many soil fertilizers contain buffering agents but it is much more critical to maintain the correct pH with hydroponics than with soil growing.

**Bulb:** The outer glass envelope or jacket that protects the arc tube of an HID lamp 2. clove or bulb of garlic.

## C

**Calyx:** The pod harboring female ovule and two protruding pistils, seed pod.

**Carbon dioxide (CO<sub>2</sub>):** A colorless, odorless, taste less gas in the air necessary for plant life.

**Carbohydrate:** Neutral compound of carbon, hydrogen and oxygen; Sugar, starch and cellulose are carbohydrates.

**Caustic:** Capable of destroying, killing or eating away by chemical activity

**Cell:** The base structural unit that plants are made of: Cells contain a nucleus, membrane, and chloroplasts.

**Cellulose:** A complex carbohydrate that stiffens a plant: Tough stems contain stiff cellulose.

**CFM:** Cubic feet per minute.

**Chelate:** Combining nutrients in an atomic ring that is easy for plants to absorb.

**Chlorine:** Chemical used to purify water.

**Chloroplast:** Containing chlorophyll

**Chlorosis:** the condition of a sick plant with yellowing leaves due to inadequate formation of chlorophyll; Chlorosis is caused by a nutrient deficiency, usually iron or imbalanced pH.

**Circuit:** A circular route traveled by electricity.

**Clay:** Soil made of very fine organic and mineral particles: Clay is not suitable for container gardening.

**Climate:** The average condition of the weather in a grow room or outdoors.

**Color Spectrum:** The band of colors (measured in nm) emitted by a light source.

**Color Tracer:** A coloring agent that is added to many commercial fertilizers so the horticulturist knows there is fertilizer in the solution. Peters has a blue color tracer.

**Compaction:** Soil condition that results from tightly packed soil: Compacted soil allows for only marginal aeration and root penetration

**Companion Planting:** Planting garlic, marigolds, etc. along with other plants to discourage insect infestations.

**Compost:** A mixture of decayed organic matter, high in nutrients; Compost must be at least one year old. When too young, decomposition uses nitrogen; after sufficient decomposition, compost releases nitrogen.

**Core:** The transformer in the hydroponics ballast is referred to as a core.

**Cotyledon:** Seed leaves first leaves that appear on a plant.

**Cross-Pollinate:** Pollinate two plants having different ancestry.

**Cubic Foot:** Volume measurement in feet: Width times length times height equals cubic feet.

**Cutting:** Growing tip cut from a parent plant for asexual propagation, to clone

## D

**Damping-off:** Fungus disease that attacks young seedlings and cuttings causing them to rot at the base: Over-watering is the main cause of damping-off.

**Direct Current (DC):** An electric current that flows in only one direction

**Deplete:** Exhaust soil of nutrients, making it infertile: Once a soil is used it is depleted

**Desiccate:** Cause to dry up. Safari's Insecticidal Soap desiccates its victims.

**Detergent:** Liquid soap concentrate used as a: 1. wetting agent for sprays and water 2. pesticide. Note: Detergent must be totally organic to be safe for plants.

**Dioecious:** Having distinct male and female flowers.

**Dome:** The part of the HID outer bulb opposite the neck and threads.

**Dome Support:** The spring-like brackets that mount the arc tube within the outer envelope.

**Drainage:** Way to empty soil of excess water: with good drainage, water passes through soil evenly, promoting plant growth; with bad drainage water stands in soil, drowning roots.

**Drip Line:** A line around a plant directly under its outermost branch tips: Roots seldom grow beyond the drip line.

**Drip System:** A very efficient hydroponics drip watering system that employs a main hose with small water emitters. Water is metered out of the emitters, one drop at a time.

**Dry Ice:** A cold, white substance formed when CO<sub>2</sub> is compressed and cooled: Dry ice changes into CO<sub>2</sub> gas at room temperatures. For small garden rooms this may be an easy way to add CO<sub>2</sub>.

**Dry Well:** Drain hole, filled with rocks

## E

**Electrode:** A conductor used to establish electrical arc or contact with non-metallic part of circuit.

**Elongate:** Grow in length.

**Envelope:** Outer protective bulb or jacket of a lamp.

**Equinox:** The point at which the sun crosses the equator and day and night are each 12 hours long: The equinox happens twice a year.

**Extension Cord:** Extra electrical cord that must be 14-gauge or larger (i.e. 12- or 10-gauge).

## F

**Feed:** Fertilize

**Female:** Pistillate, ovule, seed-producing.

**Fertilizer Burn:** Over-fertilization: First leaf tips burn (turn brown) then leaves curl.

**Fixture:** Electrical fitting used to hold electric components.

**Flat:** Shallow (three-inch) deep container, often 18 by 24 inches with good drainage, used to start seedlings or cuttings.

**Flat White:** Very reflective, whitest white paint available.

**Fluorescent Lamp:** Electric lamp using a tube coated with fluorescent material, which has low lumen and heat output; A fluorescent lamp is excellent for rooting cuttings.

**Foliage:** The leaves, or more generally, the green part of a plant

**Foliar Feeding:** Misting fertilizer solution which is absorbed by the foliage.

**Fritted:** Fused or embedded in glass, Fritted trace elements (FTE) are long-lasting and do not leach out easily.

**Fungicide:** A product that destroys or inhibits fungus.

**Fungistat:** A product that inhibits fungus keeping in check.

**Fungus:** A lower plant lacking chlorophyll which may attack green plants; Mold, rust, mildew, mushrooms and bacteria are fungi.

**Fuse:** Electrical safety device consisting of a metal that melts and interrupts the circuit when circuit is overloaded.

**Fuse Box:** Box containing fuses that control electric circuits.

## G

**GPM:** Gallons per minute

**General Purpose Fertilizer:** See ALL-PURPOSE FERTILIZER.

**Gene:** Part of a chromosome that influences the development and potency of a plant; Genes are inherited through sexual propagation.

**Genetic Make-Up:** The genes inherited from parent plants: Genetic make-up is the most important factor dictating vigor and potency.

## H

**Halide:** Binary compound of a halogen(s) with an electropositive elements.

**Halogen:** Any of the elements fluorine, chlorine, bromine, iodine and astatine existing in a free state: Halogens arc in the arc tube of a halide lamp.

**Hermaphrodite:** One plant having both male and female flowers: The breeding of hermaphrodites is hard to control.

**Hertz (Hz):** A unit of a frequency that cycles one time each second: A home with a 60 hertz AC current cycles 60 times per second.

**HID:** High Intensity Discharge.

**Honeydew:** A sticky, honey-like substance secreted onto foliage by aphids, scale and mealy bugs.

**Hood:** Reflective cover of a HID hydroponics lamp; A large, white hood is very reflective.

**HOR:** The abbreviation stamped on some HID bulbs meaning they may be burned in a horizontal position.

**Horizontal:** Parallel to the horizon, ground or floor.

**Hormone:** Chemical substance that controls the growth and development of a plant. Root-inducing hormones help cuttings root.

**Hose Bib:** Water outlet containing an on/off valve.

**Humidity (relative):** Ratio between the amount of moisture in the air and the greatest amount of moisture the air could hold at the same temperature.

**Humus:** Dark, fertile, partially decomposed plant or animal matter: Humus forms the organic portion of the soil.

**Hybrid:** An offspring from two plants of different breeds, variety or genetic make-up.

**Hydrated Lime:** Instantly soluble lime, used to raise or lower pH.

**Hydrogen:** Light, colorless, odorless gas: Hydrogen combines with oxygen to form water.

**Hygrometer:** Instrument for measuring relative humidity in the atmosphere A hygrometer will save time, frustration and money.

## I

**Inbred:** (True Breed) offspring of plants of the same breed or ancestry.

**Inert:** Chemically non-reactive; inert growing mediums make it easy to control the chemistry of the nutrient solution.

**Intensity:** The magnitude of light energy per unit: Intensity diminishes the farther away from the source.

## J

**Jacket:** Protective outer bulb or envelope of lamp.

**Jiffy 7 Pellet:** Compressed peat moss wrapped in an expandable plastic casing; When moistened, a Jiffy 7 pellet expands into a small pot that is used to start seeds or cuttings.

## K

**Kilowatt-Hour:** Measure of electricity used per hour; A 1000- watt HID uses one kilowatt per hour.

## L

**Leach:** Dissolve or wash out soluble components of soil by heavy watering but can be beneficial to hydroponics systems to flush out excess fertilizer salts.

**Leader:** See Meristem

**Leaf Curl:** Leaf malformation due to over-watering, over fertilization, lack of magnesium, insect or fungus damage or negative tropism.

**Leaflet:** Small immature leaf

**Leggy:** Abnormally tall, with sparse foliage: Legginess of a plant is usually caused by lack of light.

**Life Cycle:** A series of growth stages through which plant must pass in its natural lifetime: The stages for an annual plant are seed, seedling, vegetative and floral.

**Light Mover:** A device that moves a lamp back and forth across the ceiling of a grow room to provide more even distribution of light.

**Lime:** Used in the form of DOLOMITE or HYDRATED LIME to raise and stabilize soil pH.

**Litmus Paper:** Chemically sensitive paper used for testing pH.

**Loam:** Organic soil mixture of crumbly clay, silt and sand.

**Lumen:** Measurement of light output: One lumen is equal to the amount of light emitted by one candle that falls on one square foot of surface located one foot away from

## M

**Macro-Nutrient:** One or all of the primary nutrients N-P-K or the secondary nutrients magnesium and calcium.

**Mean:** Average throughout life; HID's are rated in mean lumens.

**Micro-Nutrients:** Also referred to as TRACE ELEMENTS, including S, Fe, Mn, B, Mb, An and Cu.

**Millimeter:** Thousandth of a meter; approximately .04 inch.

**Moisture Meter:** A fantastic electronic device that measures the exact moisture content of soil at any given point.

**Monochromatic:** Producing only one color; LP sodium lamps are monochromatic.

**Mulch:** A protective covering of organic compost, old leaves, etc.: Indoors, mulch keeps soil too moist, and possible fungus could result.

## N

**Nanometer:** .000 000 001 meter, nm is used as a scale to measure electromagnetic wave lengths of light: Color and light spectrums are expressed in nanometers (nm).

**Necrosis:** Localized death of a plant part.

**Neck:** Tubular glass end of the HID bulb, attached to the threads.

**Nutrient:** Plant food, essential elements N-P-K, secondary and trace elements fundamental to plant life.

## O

**Ohm's Power Law:** A law that expresses the strength of an electric current: Volts times Amperes equals watts.

**Organic:** Made of, derived from or related to living organisms.

**Outbred:** See hybrid.

**Overload:** Load to excess; A 20-amp circuit drawing 17 amps is overloaded.

**Ovule:** A plant's egg; found within the calyx, it contains all the female genes; When fertilized, an ovule will grow into a seed.

**Oxygen:** Tasteless, colorless element, necessary in soil to sustain plant life.

## P

**Parasite:** Organism that lives on or in another host organism: Fungus is a parasite.

**Peat:** Partially decomposed vegetation (usually moss) with slow decay due to extreme moisture and cold.

**Perennial:** A plant, such as a tree or shrub, that completes its life cycle over several years.

**pH:** A scale from 1 to 14 that measures the acid-to-alkaline balance a growing medium (or anything): In general plants grow best in a range of 6 to 6.8 pH in soil and 5 to 6.5 for hydroponics.

**pH Tester:** Electronic instrument or chemical used to find where soil or water is on the pH scale.

**Phosphor Coating:** Internal bulb coating that diffuses light and is responsible for various color outputs.

**Photoperiod:** The relationship between the length of light and dark in a 24-hour period.

**Photosynthesis:** The building of chemical compounds (carbohydrates) from light energy, water and CO<sub>2</sub>.

**Phototropism:** The specific movement of a plant part toward a light source.

**Pigment:** The substance in paint or anything that absorbs light, producing (reflecting) the same color as the pigment.

**Pollen:** Fine, yellow, dust-like microspores containing male genes.

**Pod Seed:** A dry calyx containing a mature or maturing seed.

**Pot-Bound:** Bound, stifled or inhibited from normal growth, by the confines of a container: Root systems become pot bound.

**Power Surge:** Interruption of change in flow of electricity.

**Primary Nutrients:** N-P-K.

**Propagate:** Sexual - produce a seed by breeding different male and a female flowers 2. Asexual - to produce a plant by taking cuttings.

**Prune:** Alter the shape and growth pattern of a plant by cutting stems and shoots.

**PVC Pipe:** Plastic (polyvinyl chloride) pipe that is easy to work with, readily available and used to make most of the gardens on this site.

**Pyrethrim:** Natural insecticide made from the blossoms of various chrysanthemums: Raidsí Pyrethrum is the most effective natural spider mite exterminator.

## R

**Rejuvenate:** Restore youth: A mature plant, having completed its life cycle (flowering), may be stimulated by a new 18 hour photoperiod, to rejuvenate or produce new vegetative growth.

**Root-Bound:** See POT BOUND.

## S

**Salt:** Crystalline compound that results from improper pH or toxic buildup of fertilizer. Salt will burn plants, preventing them from absorbing nutrients.

**Secondary Nutrients:** Calcium (Ca) and magnesium (Mg).

**Short Circuit:** Condition that results when wires cross and forms a circuit. A short circuit will blow fuses.

**Socket:** Threaded, wired holder for a bulb.

**Soluble:** Able to be dissolved in water.

**Spore:** Seed-like offspring of a fungus.

**Sprout:** A recently germinated seed 2. small new growth of leaf or stem.

**Square Feet (sq. ft.):** Length (in feet) times width equals square feet.

**Staminate:** Male, pollen producing.

**Starch:** Complex carbohydrate: Starch is manufactured and stored food.

**Sterilize:** Make sterile (super-clean) by removing dirt, germs and bacteria. A good sterilizer for hydroponic equipment is a 10 percent bleach to water solution.

**Stroboscopic Effect:** A quick pulsating or flashing of a lamp.

**Stress:** A physical or chemical factor that causes extra exertion by plants: A stressed plant will not grow as well as a non-stressed plant.

**Stomata:** Small mouth-like or nose-like openings (pores) on leaf underside, responsible for transpiration and many other life functions: The millions of stomata must be kept very clean to function properly.

**Sugar:** Food product of a plant.

**Super-Bloom:** A common name for fertilizer high in phosphorus that promotes flower formation and growth

**Synthesis:** Production of a substance, such as chlorophyll, by uniting light energy and elements or chemical compounds.

**Sump:** Reservoir or receptacle that serves as a drain or holder for hydroponic nutrient solutions

## T

**Tap Root:** The main or primary root that grows from the seed: Lateral roots will branch off the tap root,

**Teflon Tape:** Tape that is extremely useful to help seal all kinds of pipe joints. I like Teflon tape better than putty.

**Tepid:** Warm 70 to 80f F (21 to 270 C). Always use tepid water around plants to facilitate chemical processes and ease shock,

**Terminal Bud:** Bud at the growing end of the main stem.

**Thin:** Cull or weed out weak, slow growing seedlings.

**Tonic Life:** The amount of time a pesticide or fungicide remains active or live.

**Transformer:** A device in the ballast that transforms electric current from one voltage to another.

**Transpire:** Give off water vapor and by products via the stomata.

**Trellis:** Frame of small boards or PVC (lattice) that trains or supports plants.

**True Breed:** See INBRED.

**Tungsten:** A heavy, hard metal with a high melting point which conducts electricity well: Tungsten is used for a filament in tungsten halogen lamps.

## U

**Ultraviolet:** Light with very short wave lengths, out of the visible spectrum.

## V

**Variety:** Strain, phenotype (sec strain).

**Vent:** Opening such as a window or door that allows the circulation of fresh air.

**Ventilation:** Circulation of fresh air, fundamental to healthy indoor garden. An exhaust fan creates excellent ventilation.

**Vertical:** Up and down; perpendicular to the horizontal.

## W

**Wetting Agent:** Compound that reduces the droplet size and lowers the surface tension of the water, making it wetter. Liquid concentrate dish soap is a good wetting agent if it is biodegradable,

**Wick:** Part of a passive hydroponic system using a wick suspended in the nutrient solution, the nutrients pass up the wick and are absorbed by the medium and roots.