



NUTRIENTS AND ADDITIVES INFO

The following 16 elements are considered essential plant nutrients: nitrogen(N), phosphorus(P), potassium(K), calcium(Ca), magnesium(Mg), Sulfur(S), iron(Fe), manganese(Mn), boron(B), molybdenum(Mo), copper(Cu), zinc(Zn) and chlorine(Cl). Plants also need carbon(C), hydrogen(H) and oxygen(O), derived from air & water. The nutrients C, H, O, N, P, K, Ca, Mg and S are needed in large amounts and are referred to as the macronutrients. Fe, Mn, B, Mo, Cu, Zn and Cl are needed in small amounts and are the micronutrients. A nutrient solution should ensure that all of these nutrients are available. It is now understood that there are more factors to plant nutrition than just these essential macro and micronutrients. High quality organic nutrients are available. Nutrients are also chelated to assist in the uptake of micronutrients and other molecules.

Modern plant nutrition also provides plant growth hormones and metabolic enhancers – there are a variety of nutrient additives and foliar sprays whose essential function is to speed the plant up, making the plant work faster and harder. These hormones help the plant to have more energy, grow faster, and ultimately, to produce more. Last but not least, the importance of healthy root zone function has come to the forefront of plant science. Now there are a variety of ways to provide for extreme and healthy root growth. These options include enzymes to break down dead materials, root tonics and stimulants, and inoculations with beneficial microbes, fungal, bacterial and mycorrhizael. (To learn more about healthy root growth, check out our [info sheet](#) handout [Healthy Roots](#) on that topic.) To learn more about managing your reservoir and adding nutrients and additives, check out our [info sheet](#) handout [Reservoir Maintenance](#).

Mineral Nutrient Selections

The nutrients in these solutions are readily available, allowing plants to grow fast and strong. Although they are not organic, these nutrients are made from highly refined and pure ingredients. You will see excellent growth with any of these options - they all provide a full range of macro and micro nutrients. If you are growing in hydro, be sure to use a hydro nutrient line.

General Hydroponics

This is the original line of hydroponic nutrients. Many growers still rely on the reliable **3-Part Flora Series** and feel it is unrivaled in its overall performance. (*We feel a little differently, but that's another story altogether.*) The 3-Part Flora Series lets you tinker with the levels of **Grow**, **Micro** and **Bloom** til your hearts content in search of the perfect formula. General Hydroponics has also put out a one-part nutrient, **Flora Nova** (comes in both a **Grow** as well as a **Bloom** formula,) which works rather well and is super easy to use (as one-part formulas typically are). They have some really good additives to support the line. **Floralicious Plus** is a Kelp based metabolic enhancer that is chock full of good stuff. Along with Kelp, **Floralicious Plus** has carbohydrates, amino acids, polyflavorinoids, humic and fulvic acid. **Diamond Nectar** is concentrated pure Fulvic Acid and will help with nutrient uptake and availability. **SubCulture** is an easy-to-use affordable inoculant of beneficial microbes ranging from Trichoderma to Streptomyces. **FloraNectar** is a new product that contains all natural raw cane sugar, molasses, malt syrup, select plant based esters, L-amino acids, organic acids, polyflavonoids, vitamins and essential minerals. **FloraBlend** is a vegan organic product that contains highly soluble organic compounds that increase and promote healthy root structures, build the plants immune system and provide carbon building blocks for plant processes responsible for color and flavor of fruits and vegetables. Lastly, **Kool Bloom** is General Hydroponics age-old “super phosphate” bloom stimulant, which will promote larger fruit / flowers.



Spotlight on Roots Excelerator

This is the best and most powerful root stimulator available in today's market. Using only 1.1ml per gallon, Roots Excelerator will provide explosive root growth and rid the plant of brown roots. Roots Excelerator is packaged in an aluminum canister to preserve organic ingredients and beneficial organisms. We just can't say enough good stuff about this product. It will keep your roots healthy in some of the most extreme conditions. Most growers use all the way throughout.

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Advanced Nutrients

These are some of the best nutrients on the Gardening Market as well as some of the most complicated. The line contains the entire range of nutrient additives and it can be overwhelming to manage at first. When using A.N., it is suggested that you use only RO water. What makes the nutrients themselves special is that the micro nutrients are individually chelated with their appropriate micronutrients (as opposed to CANNA which does batch chelation). Nutrients come from premium mineral sources. When working with Advanced Nutrients you have your choice between the base nutrients **Sensi Grow** and **Sensi Bloom** - two part A & B solutions, or you can go with **Advanced Nutrients Grow, Micro** and **Bloom** which can be combined to provide specialized nutrients for plants in any stage. Now there is also **Connoisseur A + B** for Bloom. Connoisseur is the most premium nutrient system we have seen. It is made from Pharmaceutical grade minerals which have been either individually amino chelated or chelated with the most expensive chemical chelates (such as EDDHA). On top of that they have new technology in the form of Polyamino alcohols which increase the elasticity of the cell membrane allowing for more nutrients to be absorbed and thus digested. This provides for explosive growth and yield. When using any of these Advanced base nutrients we suggest starting out slow with the additives. **Sweetleaf** - is a great additive which includes molasses, cane sugar, a full suite of B-Vitamins, esters, and polyphenolic compounds that come together to greatly increase flavor, aroma, and overall oil content in your favorite fruits and flowers. **BigBud, and OverDrive** are premium Bloom enhancing products that have unique levels of Phosphorus and Potassium for the given stages of the Fruit and Flowering Stage (inquire within to find out more info.) **Piranha** and **Tarantula**, are two beneficial microbe solutions that greatly increase root mass and thus yield (More roots more fruits!) **SensiZym** is a strong digestive enzyme solution that will help the plant by degrading dead or dying root systems and feed them back to the plant and the beneficial microbes keeping them away from any pathogens.

House and Garden

This a very fine crafted suite of Nutrients and Additives brought to you straight from Holland. Made from only the finest ingredients. This line uses the highest levels of Calcium we have ever seen (up to 12% for some base nutrients!) Also, only uses EDDHA Iron Chelates. They have a base nutrient for almost any type of grower. The **Cocos A+B** is a premium Coco Drain to Waste nutrient with levels set to perfection for Coco growers. Their **Aqua Flakes A+B** are designed for Recirculating Hydroponic systems. They also have a one-part (easy to use) Soil formula called **1 Comment Aarde**. The most extraordinary product in their fleet is **Roots Excelerator** (*featured on the first page of this hand out in a spotlight.*) House and Garden also has a full line of Additives including: **Bud-XL** - a bloom booster that concentrates all the plants energy to the growing fruit / flowers, **Top Booster** - a premium pK booster that ensures for larger Fruit/Flower sites, **MagiGreen** - a foliar spray that will green up any plant, **Shooting Powder** - creates a secondary bloom stage increasing overall yield, **MultiZym** - a very economical, yet powerful digestive enzyme collection, and **DripClean** - a flushing/cleaning agent that can be run through a system at all times ensuring that the lines stay clean.

CANNA Nutrients

Canna **Aqua Vega & Aqua Flores** is a premium two-part nutrient from Holland. This means that the grow (Vega) solution has a Part A and a Part B. The same holds true for the Bloom (Flores). CANNA has a unique line of nutrients – all the micronutrients are batch chelated using a blend of humic, fulvic and amino acids, providing a greater micronutrient absorption. They are also extremely pH balanced. They also make a ultra-premium Coco Nutrient aptly called **Canna Coco A+B**. The same **Coco A+B** Nutrient is to be used for Veg. and Bloom. Their line includes **Rhizotonic**, a great root stimulator (grows roots at an accelerated rate and creates tons of white fuzzy micro-hairs) full of B vitamins, oligosaccharides, and other good stuff; **Cannazyme**, an enzymatic formula which breaks down dead plant matter and helps roots to grow to fullest potential; and last but not least, **Canna PK-13-14** which is Canna's bloom stimulator (high ratio of Phosphorus and Potassium). Optional products to help boost these nutrients are **Alg-A-Mic** for cytokinin hormonal push throughout. We also highly recommend **Piranha**, a mychorizaal inoculant that encourages explosive root growth. **EM Microbe** is another perennial favorite with this line. We also suggest using **Sweet** to help balance out the slight imbalance when using coco. And don't forget to check out Canna's new exciting **Boost** product. It will greatly enhance flavor, aroma and overall Yield! *Look for the spotlight below.*



Spotlight on Nutrient Additives

Nutrient additives are added to a base nutrient and provide a wide range of benefits. They can be confusing, and with this handout we try to shed some light on the subject (and the many products we offer). We suggest cautiously trying any nutrient additive at 1/2 strength to judge the effect on your plants. Always be aware of what is in an additive so you do not add two of the same types of additives, which in turn will be too strong and may burn the sometimes sensitive plants.

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Organic Options

Organic nutrients can be used in either soil, coco, rockwool, or even Hydroton. It is becoming easier to grow a successful hydroponic crop with organic nutrients. These solutions are derived from sources such as fish meal, crab meal, cottonseed meal, seaweed (kelp) and bat guano. Organic nutrients can be slightly unstable in use and control. The flavor and smell of the final harvest product is much fuller, sweeter and yummier than regular mineral based nutrients.

Botanicare Pure Blend Pro

Botanicare Pure Blend Pro is an organic nutrient with 10-15% pure mineral content. It contains absorbable forms of iron, calcium and phosphorous. The phosphorous comes from pure rock phosphate. The line has a **vegetative** and a **bloom** formula. It also includes a **calcium/magnesium** micronutrient formula called **Cal-Mag Plus** which is to be used at the end of the vegetative period and throughout bloom. Cal-Mag Plus helps to prevent micronutrient deficiencies and lockout. (We prefer substituting **SensiCal** for Cal-Mag. **SensiCal** has 3 forms of Calcium and four forms of Iron as well as all essential Plant metals (Copper, Boron, Zinc, etc.) **Liquid Karma**, a kelp-based growth enhancer was made to be used with this line, as was **HydroGuard**, a bacterial inoculant and fungicide. For those who are concerned about Large flowers and fruits, we recommend using **Pure Blend Pro Bloom for soil** instead of the reg. Bloom formula for the last 3 weeks of Bloom. We also highly recommend **Piranha**, a mychorizal inoculant that encourages explosive root growth, **SensiZym**, comprised of enzymes which stimulate root growth and digest dead or dying plant proteins, and **Silica Blast** which hardens cell walls, increasing yield by up to 20% and also increases the plants odds of dealing with environmental stress (i.e. bugs, heat, etc.) strongly suggest **Roots Excelerator** - See **Info Spotlight** on first page. Keep the pH of your nutrient solution between 5.8 – 6.2.

PLEASE NOTE: *If you follow the directions on the PureBlend Pro label you will find that the strength of your solution can be too high. It is best to monitor the PPM in your solution - we HIGHLY recommend getting a meter --- but if you want to try without it, just use a little less than the directions call for (this is generally good advice anyway.)*

BioBizz (for soil only)

BioBizz is known for creating fertilizers and additives for use in organic cultivation. They truly believe in the superiority of organic produce, and they use only the highest quality ingredients. Made in the Netherlands.

Bio-Grow Is a liquid organic nutrient that can be used in all types of media during the vegetative stage. It smells very sweet owing to its content of natural sugars which also provide an ideal inter-relationship with the bacteria in the soil mixture. Enriched with 70 trace elements and the vitamins B1, B2, C and E, it is a complete fertilizer that can also be used in the very latest stages of flowering as a plant tonic. **Bio-Bloom** contains a small amount of nitrogen and enough phosphorous and potassium to ensure exuberant blooming. Trace elements and hormones of vegetable origin are also added to improve the plant process itself. Bio-Bloom contains enzymes and amino acids to promote flowering and fruit production.

TopMax is a 100% organic bloom stimulant comprised of the pure essence of special flowers. **TopMax** stimulates the blossom cells and increases the transport of sugar molecules within the flowers, creating an abundance of floral growth. TopMax also contributes to a soft sweet taste in the finished product. **RootJuice** is a 100% vegetable root stimulator that creates explosive root growth in rooted plants via the stimulation of the natural microbiology surrounding the root system. It provides a better yield due to the ability of the plant to accelerate the uptake of nutrients. Produces a strong plant that is resistant to disease and insect attack. *Provides a higher resistance to high EC-values.* **Alg-A-Mic** Is a vitality booster made with cold pressed concentrated seaweed; hence it's extremely high content of trace elements and hormones of vegetable origin. Natural amino acids and vitamins are also added, catering to the whole spectrum of the plants needs. Alg-A-Mic can be used as a foliar spray or watered directly to the roots promoting vigorous green growth.

Fox Farm

FoxFarm nutrients have been known as the Microbrewery of Premium Plant Foods and Soil Mixes. Their fertilizers are built around the use of FoxFarms proprietary earthworm castings, nature's finest soil amendment. They also add Fish Meal, Crab meal, Shrimp Meal, Calcium Carbonate, Rock Phosphate, Kelp and more to create a well balanced diet for plants to take in. Although not entirely "Organic", FoxFarm is mostly organic with no chemicals added. Anything that is not technically organic is at least ALL NATURAL. For example even though Rock Phosphate comes from pure mineral sources (shaved from a mined "rock"), it is still not technically "organic" because it is not carbon based (from life). We still look at this as being Organic. . . There are three pieces to their formula - **Grow Big** for Vegetative Growth, **Big Bloom** and **Tiger Bloom** to promote heavy Yields full of lush flavor and enticing aromas. Please refer to their [Feed Chart](#). We also suggest using **Piranha**, **Subculture**, **Hygrozyme**, and **FoxFarms TriPack** of Bloom Enhancers (**Open Sesame**, **Beastie Bloomz**, and **Cha-Ching**.)

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BIOCANNA Products

BIOCANNA products have been developed on the precision farming theory in which the plant is fed directly and precisely. BIOCANNA is also based on direct as well as indirect nutrition to the plants. This means that BIOCANNA products stimulate the microflora around the roots, which helps the plant absorb the necessary nutrients and also protects the plant's root environment. **BioVega**, **BioFlores** and **BioBOOST** are vegetable-based (vegan organic) and do not contain any animal residual products. The main advantage of this is that the product's composition is much better tuned to the plant's needs. Research has shown that products grown with BIOCANNA have a higher percentage of certain essential oils such as: β -Pinene, Limonene, Caryophyllene and α -Humulene. These essential oils determine the scent and flavour. **BioVega** has been developed specifically for the plants vegetative growth phase. **BioVega** is rich in highly absorbable betaine nitrogen that is released according to the plant's needs. The bioactive substances within **BioVega** create very strong growth shoots and stimulate explosive root development. **BioFlores**, the bloom fertilizer in this line, as well as being a complete vegan fertilizer, also contains hops extract which is high in lupuline, luparol, and humulone, which provide the plant with extra blooming power. **BioBoost** is a yield enhancing Bloom stimulant for all cultivation systems. **BioBoost** is a natural fermented plant extract which as well as increasing yield will help to form more flavor and aroma. **Rhizotonic**, a great root stimulator, grows roots at an astounding rate and creates tons of white fuzzy micro-hairs. It is full of B vitamins, oligosaccharides, and other good stuff; **Cannazyme**, an enzymatic formula, breaks down dead plant matter and helps roots to grow to fullest potential. We also suggest using beneficial microbes such as **Piranha**, **EM-Microbe**, and **GLEEO**. Also try **Grand Finale** during the last 2 weeks.

Earth Juice

The Earth Juice line of organic fertilizers are derived from 100% natural, organic ingredients. Earth Juice stimulates vigorous growth and provide abundant yields, while improving the soil. They are highly concentrated, easy to use, and contain no salt-building chemicals or hidden NPK boosting synthetics. **Earth Juice Grow** is an All Organic OMRI listed Nitrogen formulation for vigorous green growth. **Earth Juice Bloom** is a non nitrogen phosphorus solution which is used to promote larger fruit, buds, flowers, and vegetables. It is also OMRI certified. **Earth Juice Catalyst** is a premium organic additive that encourages compact branching, stimulates optimal fruiting sites, and triggers early yields. Along with these 3 core ingredients there are two other additives: **MicroBlast** - a liquid micronutrient formula to be used to prevent and correct micronutrient deficiencies; and **META - K** - a natural potassium-based formulation for maturing, fruiting, and flowering plants that require more potassium. Earth Juice also makes a one part nutrient - **SugarPeak Grow** and **Bloom**. These are simple, easy to use formulas of selected natural and organic elements, bio-enhancers along with the purest elemental nutrients complex into a form that is easily assimilated by plants grown both hydroponically and in soil. **Sugar Peak Grow** is crafted for energetic stem and leaf growth for foliage plants and the vegetative stage of flowering and fruiting plants. **Sugar Peak Bloom** is designed to effectively maintain fruiting and flowering plants. There are two great additives for this line as well. **Briximus Maximus** is a carbohydrate foliar spray which when used in conjunction with **Grand Finale** maximizes the flavor and aroma.

Spotlight on CANNA BIO BOOST

Canna Boost is first and foremost a yield increasing agent. It is also VEGAN and ORGANIC. It is not a nutrient but a natural fermented plant extract with bloom stimulating characteristics that are also responsible for a more round flavor. The bioactive substances result in a heightened metabolism that is exactly what the plant needs during the blooming period. The plants produce more fructose, become healthier and stronger and are less vulnerable to diseases and plagues. Again, this is a vegan organic version of Canna Boost - Slightly slower, slightly less yield, but expect even more flavor and more aroma.



Root Tonics and Beneficial Microbes

There is a wide selection of products that will aid in root development and ward off pathogens, keeping your roots extremely happy and healthy. Depending on the medium employed, beneficial microbes can also do wonders for the media's environment, the root zone efficiency and for overall health, as well as provide help with delivering nutrients and creating hormones and enzymes. Please refer to the info sheet **Maintaining a Healthy Root Zone** for a more comprehensive look at the root zone and various products that are available to maximize its potential.

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Calcium Products

Traditionally, the three "major plant nutrients" were thought to be Nitrogen, Phosphorus, and Potassium (NPK). Recent studies on Calcium have proven it to be just as important as the "the BIG 3". First off, calcium is an essential part of plant cell wall structure. The more calcium present, the stronger and thicker the cell wall will be. In addition to its role in cell structure, Calcium also plays a role in regulating various cell and plant functions as a secondary messenger / co-factor. This function as a secondary messenger / co-factor assists in various plant functions including nutrient uptake. It also helps the plant react to the impact of environmental and disease stresses. Magnesium goes hand in hand with Calcium. Although not as important, magnesium is part of the chlorophyll in all green plants and essential for photosynthesis. Magnesium also helps to activate specific enzyme systems. Enzymes are complex substances that build, modify, or break down compounds as part of a plant's normal metabolism. Both Calcium and magnesium are two of the most common deficiencies (especially when using purified (Reverse Osmosis) water, and need to be address and dealt with quick when diagnosed. Below are our favorite Calcium products:

Plant-Amp is derived from a unique and proprietary microorganism based chelation process, which harnesses the power of Nature's smallest creatures to "fix" plant food for easy uptake. This microbe-chelated Calcium will not lock-up important compounds such as phosphorous, silicates, or sulfur, while facilitating Calcium uptake by plant roots and leaves. Great for Foliar applications! We suggest using with **Nitrozime** or **Alg-A-Mic**. *Also Note:* This is a pure calcium product. Does not contain magnesium or other plant essential elements.

MagiCal - MagiCal is a highly enriched blend of Magnesium, Calcium and Iron, that promotes vigorous and healthy plant growth for both soil and soiless gardens. MagiCal accelerates protein syntheses, maintains high starch content in crops, improves the density of fruit and the production of essential oils, creates lush and greener foliage, and maintains a healthy root system. Completely soluble and clear of any sediment, MagiCal will mix with ease into any solution providing an instantly available source of nutrients. *This is the most Absorbable form of ready-to-use Calcium out there.* It also has an assortment of Micro-Nutrients within it as well.

Cal-Mag - The Yellow bottle has a Cal-Mag now which has a DTPA Iron, Calcium Chelate product out. This is pretty good stuff. Easy to use and Great Concentration.

Amino Acid Solutions

BioHeaven - The L-amino acids used by BioBizz for **BioHeaven** are extracted from organic protein sources via enzymatic hydrolysis and fermentation. This process ensures the amino acids to be extracted in L-form, the only absorbed and used by plants. Besides the L-amino acids, BioHeaven contains natural aged humus, one of the most versatile components in soil environments. This component, in combination with other operative substances in BioHeaven, increases extremely the quantity of minerals in the soil. Normally, the percentage of minerals uptake lies around the 5-10%, the substances within **BioHeaven** can raise it up to 95%. 100% organic, **Bio-Heaven** contains a range of carefully selected bio-stimulants and organic ingredients that effectively turbo charge your plant into ridding itself of toxins, increasing its nutrient and trace element uptake and maximising its potential. This leads to enhanced vegetative growth, increased root system development and superior flowering performance. Bio-Heaven is used at 1-5 ml/Litre from the second week of vegetative growth right through until two weeks from harvest and should be used in conjunction with your normal grow and bloom nutrient regimen. *This product is also great for stressed out plants or if you want to just give them a kick.*



Spotlight on Foliar Spraying

Foliar Spraying is an excellent way to deliver larger molecules directly into the plant. The root zone is protected (internally) by a protective lining called the casparian strip which prevents larger molecules (carbohydrates and some hormones, etc.) from getting through and into the interior of plant cells where they can be helpful. By Foliar Spraying these growth promoters can be easily and directly absorbed. There are some very innovative products available - Please check out our Info sheet on **Foliar Sprays**.

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Humic and Fulvics (and a brief note on Chelating)

Humic acids are a complex mixture of organic materials. They change the water retention of a grow media and the of the plant cell, causing it to swell up with more water, creating an osmotic imbalance and promoting the uptake of nutrient salts. Fulvic Acid, Nature's chelating agent, is the most powerful type of Humic Acid. Important to the Krebs Cycle, Fulvic Acid shuttles essential elements across a cell membrane effortlessly and insures the availability of those elements. Studies show that plants treated with Fulvic Acid show a 36% increase in harvest weight, a 36.5% increase in growth, and they flower ahead of control plants.

Media Max - Buffers salts, balances pH, increases nutrient availability and is essential for healthy microbial activity. Contains high levels of humus as well as humic, fulvic and amino acids. Also contains over 70 beneficial vitamins, minerals, enzymes, bio-stimulants and natural wetting agents. 100% organic and all natural while containing no animal proteins or bi-products often high in unwanted salts and heavy metals. **Use with Soil / Coco / Soil-less media.**

Go ALL Phase - This product contains essential organic acids, seaweed extracts, minerals, vitamins and high-energy carbon sugars to promote maximum growth potential and beneficial microbial activity. Improves soil and water quality. You will also notice an increase in disease and pest resistance. Greatly increases nutrient availability to the plant. Increases nutrient availability over a wider range of pH, freeing the grower from excessive pH adjustments.

Grandma Eggys Humic (H2) - Grandma's pure Humic Acid brew can be used in soil and hydroponics to increase water-holding capacity, root zone aeration, and root efficiency. Humic stimulates root branching, plant enzyme function, and plant immune systems. Humic provides natural carrier compounds that transport nutrients and vitamins into plants more efficiently, so plants grow faster and have stronger cellular processes.

Grandma Eggys Fulvic (F1) - A 7-step extraction process creates Grandma's honey-golden Fulvic Acid that nourishes plant cells, roots and leaves to produce bigger, more aromatic flowers. Has been competitively tested against other Fulvic products and was found to produce quicker nutrient absorption, transport, and a greater cellular metabolism.

Ruby Fulvic - This very high quality fulvic from Millenium Garden Products will greatly enhance plant growth rates. Contains low levels of cytokines, auxins, and indoleacetic acid (IAA) all derived from fermented organic materials such as seaweeds, other algae and rich plant sources. **Ruby Fulvic** is designed to dramatically increase transpiration rates without showing an increase in ppm of the nutrient solution remaining in the reservoir.

Diamond Nectar - A fulvic acid extract providing a highly available & diverse range of bioactive plant compounds. Diamond Nectar supercharges your nutrients in order to optimize the health of your plants and the quality of your crops. By accelerating nutrient absorption at the root boundary zone where minerals enter the plant, small particle sized fulvic acids optimize nutrient uptake in fast growing vegetation.

Guano Products

BudSwell - A solution comprised of Bat Guano and Earthworm Castings. This solution has been around for quite a long while, and many people swear by it. The organic enzymes and hormones contained in this powerful solution will help promote more aroma, sugars, oils, and resins - "to the max."

Organa Guano - Unlike any other Liquid Guano out. This product contains super concentrated organic phosphorus extracted from Bat Guano. In order to get this high concentration it has been sterilized and highly filtered. For an exciting and thorough combination use with Budswell to bring back the hormones and enzymes into the mix. (Note: Contains 20 times more phosphorus than BudSwell.)



Colossal Bud Blast, Emerald Shaman and Wet Betty

A great Foliar Mix for the more experienced grower. This powerful cocktail will increase overall Fruit/Flower Sites, and enhance overall potency and flavor. **Emerald Shaman** is totally unique and comprised of 88 certified-organic fermented extracts. **Colossal Bud Blast** is made from a concentrated base-tea extracted from seaweed meal, alfalfa meal, krill meal, high-phosphate bat guano and azomite. Deliver both together with **Wet Betty** (more than just a wetting agent - it's a great Delivery agent).

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Bloom Stimulants

Bloom Stimulants come in two forms these days. Those that are mineral based (“super phosphate” - indicated below in orange) and those that employ hormones and/or enzymes. Phosphorous and potassium are the directly involved in fruit/flower formation, structure and overall taste, potency & aroma. By adding more of these two Macro-nutrients at “key” points in the Bloom phase we can influence (and thus speed up) or increase the number of fruit/flowering sites. Hormones and enzymes, alternatively are organic (and have no NPK value) and can stimulate new growth, speed up the plants metabolism or govern a wide variety of internal reactions which in turn will increase the yield, flavor and aroma of the fruit/flowers. It is very important to NOT overlap two of the same type of product which essentially are offering the same ingredients.



Big Bud & OverDrive - From Advanced Nutrients. **Big Bud** will dramatically increase bud/fruit growth, width, weight and resin production like no other bloom enhancing product can (use for weeks 2-5). **Overdrive** is a premium fruit/flower booster with an extremely extensive and very complex array of phosphorus and potassium source. **OverDrive** is designed to give fruit/flowers their final girth as well as increase oil/sugar/resin content (use weeks 6-7). Designed to be used one at a time.



Kool Bloom -This is General Hydroponics “super phosphate” product that is designed for use in the second half of reproductive development, this concentrated nutrient supplement increases the production of essential oils and fragrance in flowers. Comes in both a Dry (Last 3 weeks of Bloom) and Liquid formulation (weeks 2-4 of bloom).

Hydroplex - This is botanicare’s “super phosphate” and is designed to be used for the final 3 weeks. (Not to be used during Flush.) What makes this product special is their use of humic,fulvic, and amino acids to help chelate their phosphorus and potassium and make it more accessible to the plant.

Canna PK-13-14 -Unlike other blooming aids, Canna PK13-14, Canna’s “super phosphate” works rapidly and becomes immediately available because it requires a very small amount of absorption energy. (Due to fulvic acid and other phosphorus/potassium uptake co-factors) This allows for full focus on blooming. Use Weeks 4-6.



CANNA Boost Accelerator - The primary function of this additive is to stimulate recently formed flowers into fuller and heavier growth by increasing the plants’ actual rate of photosynthesis. This leads to not only increased yields, but also higher nutrient uptake and greater sugar production for better tasting harvests. Also, because your flowers are stimulated into the maturing process a lot earlier, the consistency of quality across your crops will be much better. Even better results can be achieved if **PK13/14** is used as well. This is because **PK 13/14** provides the plant with extra flowering elements while **CANNA BOOST** ensures that the plant has the energy to be able to utilize these elements.

TopMax- This unique recipe contains some humic acid as well as some kelp, but the the bulk of the potion contained within is comprised of proprietary ingredients. This product, during the last 3 weeks increases the oil / resin / sugar production of your fruits/flowers and will cause “crowning” - a sort of secondary “bloom” stage event. (ok for hydro)

Shooting Powder - This Bloom booster starts a new fruiting/flowering cycle after the regular bloom phase, increasing the fruit's weight. The extra yield after applying this nutrient will probably surprise you. It actually creates a new layer on top of the existing fruit. Output increases of over 20% can be reached this way. Use with **Bud-XI** for best results.

Bud-XL - Bud-XL has the unique ability to extract sugars from the leaf of the plant and transfer them to the fruit. The fruit is thus made sweeter and its taster improved. **Bud-XL** also increases the size and robustness of the flower, resulting in an increase in fruit production and a greater yield. Use with **Shooting Powder** for best results.

PHAT-Bloom - Use during weeks 2-4 of Bloom. This unique Bloom Stimulator uses Sugar Translocation Technology (STT) and Phytic Acid (very similar to ATP) to make fruits and flowers bigger and thus yield more. Phytic Acid is the most abundant form of stored phosphorus and carbohydrates in flora. Phytic Acid and STT make flowers PHAT fast.



Plant Growth Regulators (PGRs)

PhosphoLoad - PhosphoLoad will effectively halt the vertical growth of a plant and create more lateral growth, as well as larger bulkier flowers with a larger overall yield (up to 30%) and less overall time to maturity. The active ingredient in PhosphoLoad is Paclobutrazol, which is a plant growth regulator (PGR). Paclobutrazol will interfere with the flow of Gibberelins throughout the plant (a hormone responsible for much of the plants apical growth). Paclobutrazol is scheduled to only be used for ornamental plants or flowers. One thing that we can certainly say about **PhosphoLoad** is that it works. Within three days after adding this product all vertical growth will halt and flower production will begin. *Please note: For success, you must use this product according to our directions based on our [Info sheet](#). (Do NOT follow the directions on the bottle itself.)*



BushMaster - This high-potency formula uses kelp as an activator to lock in plant height, a must for the limited space of indoor gardens. **Bushmaster** also increases the density of indoor plants by forcing the flowering of the entire stalk and limbs. When applied, vertical height and limb length stops. New growth comes from within the established flowers creating huge clusters. We recommend using two weeks after flowering. At that time, stored energy is flowing upward to the developing flowers. *Do NOT apply as label suggest.* Apply 1-3mL per Gallon. *Check out our [info sheet](#).*

Enzyme Solutions

Along with the major plant hormone research, enzymes have become the recent focus of much attention. Small, yet amazingly powerful -- enzymes have a variety of important benefits for the hydro grower. There are many different enzymes that all have different functions. The growing community is just beginning to get a hold on what they all do. There are two types of enzymes that we are most concerned with. There are those that accelerate sugar/ resin production and work to create flavor and Yield. Then there are those that break down dying and dead plant proteins into their component parts – amino acids, lipids and smaller molecules which can be reabsorbed by the plant.



Hygrozyme - This enzyme solution prevents the formation of pythium bacterial rot, and algae, Hygrozyme is an activating enzyme solution. It will create healthy white root growth in your plants. (Great with freshly rooted cuttings to promote even more roots.) It will not harm beneficial microbes. You CAN use Hygrozyme (or any other enzyme product) with any product except for **Hydrogen Peroxide** or **Zone**. In fact you can (an many people do) use Hygrozyme with another enzyme solution such as **SensiZym**. Hygrozyme will produce Bigger, Stronger, Faster Growing plants with larger overall Yield and greater overall health. Feel free to come in and ask us about Hygrozyme and its many benefits.

Cannazyme consists of more than 15 different kinds of enzymes to which vitamins and extracts of desert plants are added. Cannazym speeds up the breaking down of dead root material and activates micro-organisms. Cannazym also facilitates & increases the resistance against pathogenic microbes. The stongest digestive enzyme on the market.

SensiZym is a super concentrate of over 80 different enzymes, each having specific functions that enhance plant and root growth. Part of the Advanced Nutrients line. Great for soil or hydroponics. Mainly digestive enzymes. This is our favorite all around enzyme solution. We feel it does the best job at promoting good healthy new growth, as well as helps keep the roots in good condition.

Multi-zyme - Yet another enzyme mixture. This is slightly more concentrated then either **SensiZym** or **Cannazym**. It is part digestive enzyme and part catalyst. This is a combination package similar to **Sensizym**.



Spotlight on Liquid Light Foliar Spray + Penetrator

Designed to massively increase the amount of light your plants can use, **Liquid Light** will turn your plants into light processing power houses - using over 60% more of the available light. Liquid Light Super-charges the chloroplasts enabling the plant to use more light and convert more sugar into plant tissue faster. This in turn leads to a higher overall yield. When used as directed, plants grow and develop faster and yield more – as if they were under a higher wattage light! Must use with **Penetrator**. Check out our Info sheet [Liquid Light](#).

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Carbohydrate - Sweet Solution

Sweet - Available in either berry or citrus flavor, Sweet organic carbohydrate synthesizer contains carbohydrates, organic acids, vitamins, amino acids, esters, essential secondary and trace elements which are utilized for the biosynthesis of crucial compounds to maintain optimal metabolism. Sweet - The Original Blend of Carbs and Esters to give more oil / resin / sugar production in plants.

Carboload - Polysacharrides and simple sugars. Can be used in conjunction with either **Sweet** or **Sweetleaf**. Really good food for beneficial microbes. Carboload is easy to apply. Comes in either powder or liquid form. We actually prefer the powder form, and feel it does a better job.



Bud Candy- By supplying four of the richest tasting sugars along with an abundance of amino acids, organic acids, esters and vitamins, **Bud Candy** pumps up the flavor of your favorite flowers and fruits through flavor molecule precursors to build more aromatic compounds. Bud Candy is derived from both Cane Sugar and Molasses. Along with Esters and polyphenolic compounds it also contains a full array of B-vitamins for stress - relief for all stages of plant growth. Bud Candy also has a full array of L-amino acids for better chelation. And finally 72 Ag. minerals for faster growth. **Bud Candy** does NOT raise the overall ppm of the solution, which in turn is good for growers who are watching overall ppm.

Seaweed (Kelp) Based Products

The natural plant growth regulators, (gibberellic acid, ethylene gas, abscisic acid (ABA), auxins, and several cytokinins,) all have their own specific effects on growth and development in plants. The main research advancements have involved cytokinins which are known to govern cell division & increase growth. There is a wide range of products available made of ascophylum nodosum, the North Atlantic sea kelp form which most cytokinins are derived.

Liquid Karma - If you are looking for just one thing to add to nutrient regimen, Liquid Karma is the one. Great for every stage of growth, Liquid Karma will increase branching points, flower sets and yield by as much as 30%. It chelates micronutrients through amino & fulvic acids, shuttles them into plant cells, increasing metabolic rates and conserving plant energy. Full of B-vitamins and other stress relieving compounds w/ cytokines from ascophylum nodosum.

SeaPlex - Finally another Cold Processed Kelp has hit the market. Seaplex is chock full of seaweed that is processed using only a press and non-damaging enzymes. Then it is cold filtered to make sure it will not clog up any aero or dripper system. Finally Humic Acid is added for extra absorption.

Alg-A-Mic A vitality booster made with cold pressed concentrated seaweed; hence it's extremely high content of trace elements and hormones of vegetable origin. Natural amino acids and vitamins are also added catering to the whole spectrum of the plants needs. Alg-A-Mic can be taken in by the leaves through means of sprayers as well as with water directly to the roots promoting vigorous green growth. Healthy plants are also less likely to suffer from deficiency diseases and temperature fluctuations. Alg-A-Mic may be used in all stages of growth and bloom. It can also be foliar fed with **WetBetty**. *We prefer adding this into the root zone at a rate of 1-4tsp./Gal. Start low and build it up. Ok For Hydro*



Spotlight on Piranha

Piranha Beneficial Fungi colonizes root zones and plant surfaces with eight species of trichoderma and 18 species of endomycorrhizal and ectomycorrhizal fungi. Piranha's mycorrhizal fungi can expand surface area of root mass by as much as 700%, which means vastly increased nutrient water uptake. It's the only beneficial fungi formula to receive official approval from OMRI- the Organic Materials Review Institute. OMRI certified Piranha because it's a 100% organic formula that cleans and energizes roots and root zones.

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Finishing / Ripening Products



Grand Finale - This is a new 1 Part Finishing formula from the makers of the famous Earth Juice line of all organic fertilizer. Start using **Grand Finale** 14 Days prior to harvest. It is a stand alone 1 part fertilizer (NPK 0-6-4.) Grand Finale causes yellowing, (pulling out reds, and purples as well) and dropping of leaves - Leaving you with a cleaner end product with less green leafy taste to it. We feel this is one of the best, if not THE BEST finishing products on the market. Creates firm fruit, with great aroma. Derived from Molasses, Marinbird Fossilized Guano, Phosphoric Acid, Bat Guano and Potassium Sulfate. This product is very visual. We are sure that after one use of this you will be blown away.

Purple Maxx - This product has been in development for over two years under the name of STACKER. They discovered a combination of organic compounds that would encourage plants to "stack" their flowering / fruiting sites closer together, increase resin / sugar production and fruit / flower size and stimulate extreme crystal development. After Stack, it took on the name Snow Storm. . . Then when continuing to Beta-test they discovered that it turned their fruit a deep purple. Finally Snow Storm became titled Purple Maxx. You still get all the yield enhancing stacking power, and the extreme oil/resin/sugar production and if your genetics allow you get the added purple colorization.



SAR solutions

Scorpion Juice - Dr. Hornby's Scorpion Juice triggers a plant's defense mechanisms by inducing a systemic acquired resistance (SAR) in the plant cells. This acts as a vaccination for your plants, which quickly build immune responses to a diverse variety of pathogens including viruses, fungi, and bacteria. This immunity response is particularly evident in resin producing plants which show substantial increases in resin production when the defense mechanisms are activated. In addition, a marked increase in flower / fruit production and size as well as fragrance is also seen. Scorpion Juice contains chitosan (active ingredient) and its benefits are extremely heightened when used with **Messenger**.

Messenger is the harapin Protein and elicits a SAR response in plants after being sprayed. Messenger causes a natural reaction in the plant. It turns on your plants own immune system! Plants treated with Messenger are healthier than untreated plants and have less disease, bigger root systems, more flowers, and more fruit. Use with **Scorpion Juice!**

Foliar Bloom A+B is a powerful SAR solution. it combines both salicylic acid and chitosan. Both of these products synergize together to create a very large SAR response in plants. This is the strongest solution we have found and is very good at preventing Powdery Mildew if used before an infection occurs. We suggest spraying every 2 weeks. For an even more potent solution mix A+B of this solution along with Messenger and a wetting agent and watch your plants stand erect and reach for the light (happy as can be!).

Flushing Agents

No matter what nutrient program you use, it is highly recommended that you flush your crop out before harvest. You can do this by running plain water through the system for a few days, but if you really want to remove the build-up of nutrient salts to allow a clean and clear flavor to come through, you might want to try a flushing solution.

Clearex is also used at the end of a crop's cycle to trigger the last reproductive stage of the plant, forcing the plant to process and assimilate endogenous nutrients. From the Botanicare line by American Agritech.

Final Phase is a flushing agent that will rid plants of salt buildup and will leave them with a sweeter taste as well. Final Phase is not a fertilizer. When used at the end of the Fruit / Flowering Phase, plants get a signal which indicates that their time is drawing to a closure, inducing them to put all their remaining energy into a final burst (which will help create more oil / resin / sugar). Final Phase is also very good at flushing out mediums whenever nutrient salts have built up within. It is best to use Final phase first, then rinse with just water afterwards.

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Agricultural Organics New “Yellow Bottle” Line of Additives

Pre Bloom - Pre Bloom stimulates massive branching and triggers a stage of development called pre flowering, improving response at flower initiation. Plants grown using Pre Bloom also have much shorter internode spacing, producing much more compact plants without the use of Plant Growth Regulators.

Ultra Bloom - Using organic plant signaling compounds and nucleic acids Ultra Bloom triggers flower development fast, increasing initial flower set. The signaling compounds in Ultra Bloom that trigger flower set are so specific they only switch on genes responsible for the development of female flowers. *More Bloom sites less stretching!*

Phat Bloom is the big gun for using during the most rapid period of plant growth and development and also the exponential flowering phase during weeks three and four. Phat Bloom puts a on bio-mass faster during this period than any other product on the market. Phat Bloom utilizes the Sugar Translocation Technology (STT) and Phytic Acid (which is another plant usable form of ATP (liquid energy) to make flowers Phat fast.

Ooze Bloom uses cutting edge technology developed through extensive research and development. Based upon commercial essential oil technology, advanced through research, Agricultural Organics have been able to stimulate the terpenoid production through natural bio stimulants. They combine this with their proprietary combination of tricontanol, rare earth minerals, fulvic acid, vitamins and amino acids. Ooze Bloom stimulates these secondary metabolites which aid in the synthesis of oil, sugar and resin production in fruits and flowers.



Final Bloom - This is an Organic stimulant consisting of organics phytohormones, fulvic acid, vitamins and amino acids. Use Final Bloom in the last two weeks of the flowering cycle just prior to harvest. You will see noticeable change's in 2 -3 days. Final Bloom will increase yield, improve sugar / resin production, increase overall aroma, and create very dense fruit structure. It will really tighten up your flowers / fruit clusters and add to the overall quality. We have had customers that have come in saying that 2-3 days after adding this product to their reservoir solution their plants had just fallen over due to the sheer weight of the fruit. If you need to add some final density or bulk, this is it.

Other New Products

SeaWeed - This is the “Yellow Bottle lines” new Seaweed solution. It is made from cold processed kelp and is very rich in cytokinens and other plant hormones. Along with kelp it contains a small amount of Humic acid to help with water retention and absorption of the various active ingredients and micronutrients held within. Along with its quality structure and components it is priced right (at about 1/2 of other quality kelp products on the market).

Huvega - Huvega is primarily a fulvic acid solution. It uses Ionic minerals which have high oxygen - hydrogen levels which have very positive influences on plants metabolism and nutrient absorption. These ionic minerals have a very high Cation Exchange capacity (CEC) and can capture and hold onto other minerals and transport them through a plants cell membrane and still keep them mobile within. This saves a plant HUGE amounts of energy which can then be used for other functions such as flower generation. Also these Ionic compounds (because they are so reactive) can be used to break down “toxic” or pathogenic matter within the plant's cells.

Humega - is a leonardite based media enhancer. It is comprised of lignite ore which is cold processed and contains oodles of unique fulvic and humic acids, hormones, enzymes, minerals and a sleu of beneficial microbes. Humega allows for more water absorption and retention within the plant cells, allowing them to swell up and in turn hold more nutrient, enzymes, and multiply faster.

Sea Fuel - Principally Fish Hydrolysate, Australian bull kelp and Fulvic acid. This product is only made from fresh Blue Fin Tuna which is ground up and composted organic-style under the Australian skies. This is THE freshest and most potent Fish-Mix out there today. It will increase oil/resin content and help with stress (draught / heat /cold) tolerance.

Sea Minerals - Bloom SEA MINERALS contains 85 times the concentration of essential minerals present in seawater. First seawater is harvested from the southern ocean and then evaporated down to just over 1% of its initial volume using the nothing but the power of the sun. Creating a solution 25 times more rich in minerals than the dead sea yet low in sodium creating **the perfect agricultural mineral and trace element supplement.**

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