APPLICATION & USAGE GUIDE

Erupt Grow Systems - Best Practices

(4th Generation Nutrient System for Cannabis with 3rd Generation Support)

Rev. 4a – October 12th 2011

Contents

1.0 INTRODUCTION – ERUPT'S 4TH GENERATION (4G) GROW SYSTEM

Thank you for selecting ERUPT™ as the nutrient product for your medicinal grow. You have just joined a most noble effort to "Green-Up" the gardening practices you use by being as environmentally friendly as possible while growing these beneficial plants.

Although technologically innovative and truly unique, the ERUPT™ system is as user friendly as it is environmentally friendly. Allot of the magic has already been done for you. Your role is simplified, just apply using these easy-to-use guidelines, and watch the magnificent results. In any event, "pre" through to "post" grow, ERUPT's™ Technical Support Group is always available to assist you, call toll free 1-888-989-3839 or e-mail us at support@eruptnutrients.com.

1.1 ERUPT's™ New Medi-Kit™ 6-Pack & Instructional Video

Introducing ERUPT's™ "Medi-Kit™". The Medi-Kit™ is a 6-Pack of Nutrient and Enhancer products including everything that you need to grow "Connoisseur Produce" from seed to harvest. One Medi-Kit™ is sufficient for approximately 6-10 indoor or 4-6 outdoor plants, depending on strain and size. Included are a "Quick-Start" guide in print and the complete Application & Usage Guide with Instructional video on CD. Medi-Kit™ contains the following 6 ERUPT™ components (below), also available individually in sizes supporting larger grows.

1	500g / 17.5oz.	ProGro Start™ – Vegetation Cycle Nutrient
1	500g / 17.5oz.	Budimus Maximus™ – Flower Cycle Nutrient
1	3.5g / .125oz.	Rootimus Maximus™ – Root Enhancer with Native Soil Biology
1	110mL / 4fl.oz.	Foliar-FX™ – Cellular Enhancer & Metabolic Promoter with Nutrients
1	100g / 3.5oz.	Carb-FX™ – Carbohydrate Blend with Nutrients
1	100g / 3.5oz.	Bud-FX™ – Flower Cycle Organic Nutrient Source

The Medi-Kit™ is our 4th Generation (4G) Grow System and is "**COMMERCIAL GROWER ENDORSED**" by multiple growers, each with over 25 years in the business. ERUPT's™ 4G system is responsible for increasing their yields by as much as 30% as compared to anything they have ever grown before. ERUPT™ Nutrients - just think - these growers are doing all this while being as gentle as is currently possible to our environment for about 30-40% less than they would spend to use leading competitive nutrient & enhancer products.

1.2 ERUPT's™ 3rd Generation Grow System w/ HY-Cyto™ & HY-Meta™ Is Supported

Growers using our 3rd Generation (3G) Grow System are supported. The only differences are that the HY-Cyto™ and HY-Meta™ products are replaced with a single product called Foliar-FX™ and 2 additional nutrient/enhancer products have been added to the mix creating our "6-Pack". These additional products are Carb-FX™ and Bud-FX™. This Application and Usage Guide mentions the differences where applicable & these differences are discussed in our Instructional Video.

Both, this Application & Usage Guide and the Instructional Video are included on the Medi-Kit™ CD as well as being available for download at:

eruptnutrients.com

2.0 GROW MODEL DISCUSSION

The grow model must be considered, as this directs your grow and identifies the nutrient & enhancement application regimen for the grow. Growing medicinal herbs is as fulfilling as the herb itself, but very much a multi-faceted effort requiring a group of skills and discipline. There are literally myriads of issues to ponder and/or discuss that contribute to a successful grow, however for the purposes herein, much of the magic has been done for you by ERUPT™ and we will provide brief & concise focus on the most important variables pertaining to both an Indoor and Outdoor grow.

Beyond this - for those interested and keen on becoming a grow guru – I would highly recommend, along with our nutrients and enhancers, purchasing and reading Ed Rosenthal's Marijuana Grower's Handbook, Ed is a great guy and has not just written a book, but rather a "Text" that is invaluable to cultivating these wonderful & beneficial plants. I call it the "Grower's Bible"- a bargain at twice the price, we've read it and you should too.

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Ed with ERUPT's Eva Lerant
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2.1 Outdoor

Growing outdoors typically constrains you to the environmental conditions attached, at the time, to the vicinity in which you grow – yes that's right good ol' Mother Nature. Given this grow model there is not a lot one can do other than; 1. Successfully transplant the clone or seedling; 2. Apply nutrients (correct amount & timing); 3. Apply water (when required - correct amount & timing); and 4. Maintain the garden for prevention of weeds, insects & disease. Soil chemistry, most notably "pH" is always a concern and Erupt's nutrients & enhancers tend to stabilize this important soil property but many factors contribute to where on the scale (at any given time) your soil is, therefore monitoring & correcting (if necessary) the pH of the soil helps considerably. When successful, the yield from growing outdoors is usually much larger.

2.1.1 Amending Soil

Most soils require some amendment and the materials used will vary depending upon the condition of the soil prior. The most important things to remember are loosen up and turn the soil to a depth of 18" or so and a footprint of about 3 feet (1m) in diameter for each outdoor plant and mix in the amendments that will give the desired properties; good drainage, ease of natural aeration, and nutrient richness. Most often a good triple mix and some sand mixed with the native soil will do fine. Some will opt to use coco coir or coco peat mixed with the native soil and that will work quite well also, just remember to test the pH of the final mixture and amend with the appropriate pH adjustment compound until the correct level is achieved. To raise pH in the soil add dolomitic lime in small amounts, mixing it in well and adjust it slowly over several days measuring the pH with a good soil pH test kit or, even better a Soil pH meter, pH test kits are inexpensive and available at almost any nursery, grow store or the like. If your preference is a meter (ours certainly is) and your favourite local grow store does not have a suitable unit then they are available on-line at http://www.vesseys.com/ - they sell a good one for around $70 called the "Kelway® Soil pHD" – we use this invaluable tool. To lower soil pH add peat moss and again add it in small amounts over several days measuring the pH daily. You are targeting the pH to be on the slightly acidic side - around 6.0-6.5 works quite well.

2.1.2 pH Primer

The measure of pH is actually the negative log of the concentration of hydrogen ions present in a given medium:

$$pH = -\log[H+]$$

The pH scale is logarithmic (base 10) and as a result, each whole pH value below 7 is ten times more acidic than the next higher value. For example, pH 4 is ten times more acidic than pH 5 and 100 times (10 times 10) more acidic than pH 6. As you can see, the implications of not recognizing the requirement for corrective action can be devastating to a crop. Most cannabis thrives when the pH is kept between 5.8 - 6.5 (slightly acidic) – so we strongly advise to test the pH that you begin with and adjust it if required prior to the application of any nutrient or enhancement product, test again 1-2 days after the application of nutrients or enhancers, and periodically throughout the grow. Aside from organic or chemical nutrient application, a plant itself or a nearby plant (possibly a tree, shrub, or flower) can alter pH as it synthesizes its own food – hydrogen ions are released from the root system of a plant during their uptake of Nitrogen, these ions will acidify the soil. The pH of the water you use will also affect the soil pH and your plant(s). Many water treatment facilities will treat the source water with lye to push the pH up to around 7.8-8.2, which is far too alkaline for growing cannabis, and will cause nutrient lockout eventually. Well water can also be incorrect for this purpose - pH testers for liquids are available almost anywhere, swimming pool supply stores always have these. To lower the pH of your water you can use fresh lemon juice in the amount of 1 tsp. (teaspoon) per gallon, until the pH is in the desired range. Lemon juice contains citric acid and will not have a negative effect on the plants. Around 6.0 for water applied to the soil and around 6.5-7.0 for water used as foliar spray water should be your target.

2.1.3 Predicting Flower Cycle Onset

Most strains of cannabis will begin to flower (genetically predisposed) as soon as they experience 9 or more hours of darkness for 4 days in a row, auto-flowering strains being an exception. There are websites that, for your particular location will tell you the predicted sunrise and sunset times months in advance to assist you in predicting when your outdoor plants will begin to flower, one such site is - http://www.sunrisesunset.com/predefined.asp. Here you can choose the city closest to your grow and select the month (usually sometime in July - Sept. for us here in North America) and what you are looking for is the hours between the Nautical Twilight times to just exceed 15 hours and the 3rd day after that is when your plants should begin to flower – this may vary by a few days either way and is also affected by elevation & topography.

2.1.4 Supplemental Lighting

It has been discussed that supplemental lighting can be used outdoors, and absolutely it can, however most will not choose to do so for the blatant obviousness and undesirable message to neighbours or passersby.

2.2 Indoor

Growing indoors can by planned, setup, and executed in a myriad of ways, the predominant divisor being lighting in terms of accelerating the Veg. Cycle or not. When growing indoors many factors in addition to those mentioned above for outdoors are involved such as temperature, humidity, lighting, supplemental CO_2, and the soil or growing medium chemistry is of greater concern.

The quintessential additional considerations for an indoor grow are (in no particular order):

2.2.1 Ambient Temperature - Lighted (~75˚F / 24˚C) / Lighted with CO_2 (~82˚F / 25˚C) / Dark (~10 ˚F / 12˚C cooler than lighted temperatures). If low intensity lighting is used then keep the ambient (room) temperature 2 degrees cooler, whereas when high intensity lighting is in place keep the ambient temperature 2 degrees warmer. This is important to support and insure favourable conditions for photosynthesis and plant metabolic activity.

2.2.2 Root Zone Temperature - Keep this as close to 70-75˚F / 20-24˚C as possible, if the temperature of the root zone is too cold then plant growth will be stunted, if the root zone temperature is too high then undesirable fungus growth is promoted.

2.2.3 Relative Humidity - 45 to 55% is ideal, if the humidity is too low then noticeable will be; wilting and necrotic (dying or dead) tissue at the leaf tips.

2.2.4 Typical Lighting Cycles – With exception of "Auto-flowering" strains the main thing to remember is that as soon as the plant experiences approximately 9 hours of darkness during the 24h cycle for 4 or more days in a row, the flowering cycle is triggered. This is the genetic predisposition of a typical Cannabis plant; however slight variations from one strain to another can occur. ***It cannot be stressed enough that the lighting cycles should be consistent and not interrupted – inconsistency in this most important area will confuse the plant and cause stress affecting the crop.***

The typical lighting cycles used by commercial growers are:

Veg. Cycle - 18 hours on / 6 hours off
Flower Cycle – 12 hours on / 12 hours off

2.2.5 Lighting Type / Amount – This and many other parameters discussed herein can be debated (especially amongst experienced growers) for hours at a time. This is a topic for a book all on its own; however if a few basic guidelines are observed and followed then your success should not be limited by lighting. Cannabis plants use light in the spectral range from 400nm (blue) to 730nm (far red). What is actually important in terms of "*plant usable*" spectra is what is termed PAR (Photosynthetically Active Radiation) of which the most important spectral ranges are 400-520nm and 620-720nm. The amount of this light that can be used by a plant is determined by several factors predominantly temperature and use of supplemental CO_2. PAR is measured in units of moles or micromoles (millionths of a mole), which measure light quanta (photons), therefore PAR is also termed quantum light.

Typically a commercial grower will use combined lighting of the Metal Halide & High-Pressure Sodium variety; MH being more prevalent during the Veg. Cycle, whereas the HPS lighting is brought on in the Flower Cycle as it produces more "far-red" light usable in the later part of the flowering and while ripening. The intensity that they look for is typically 1000 µmol m^{-2} s^{-1} (per m^2 or 10 ft^2 of grow area per second) or about 5000 fc (foot candles) or 55,000 lux at the top of the canopy. Remember, to generate light, heat is also generated. If you are growing in a confined space you will require a means of venting the excess heat.

LED lighting has come a long way in the last year or so and is an acceptable way to generate suitable light in terms of amount, just be sure that the LED fixture generates the correct type (band) of PAR light. As we began to say, there is literally a books worth of discussion just on this topic and if you are unsure, please consult additional literature or contact our Technical Support group at the phone numbers / e-mail address mentioned previously on page 1.

2.2.6 Supplemental CO_2 – The efficient use of Carbon Dioxide (CO_2) within any plant is directly related to lighting & nutrient (predominantly Nitrate Nitrogen) availability. Normal atmospheric conditions usually present a CO_2 concentration of about 380ppm (parts per million). At low light intensity 150 µmol / m^2 /second (or about 1150 foot candles or 12,330 lux) photosynthetic activity increases until the CO_2 concentration approaches 400ppm in the atmosphere. Plants will not utilize higher concentrations of CO_2 unless the intensity of PAR light increases. If you are going to grow with an enriched CO_2 atmosphere indoors, unless you are an experienced grower particularly with supplemental CO_2 experience, we recommend that you contact our Technical Support group at the phone numbers / e-mail address mentioned previously on page 1.

2.2.7 pH of Soil or Medium – It cannot be stressed enough that this measurement is one of if not the most important factors to ascertain & monitor. As mentioned in the pH Primer (Section 2.1.1 above), Cannabis plants thrive in slightly acidic soil/medium conditions in the range of pH5.8-6.5. A pH test kit is inexpensive and usually available at your local Nursery or Grow Store and range in price from $6-10, even better, Soil pH meters (different from the type to test liquids) are also available from Grow Stores and they are typically in the range of $25-250, but well worth the investment if you intend to grow often as there are no consumables to buy except for electrode cleaning supplies, Section 2.1.1 (above) discusses the "Soil pHD" Meter that we use. To increase pH typically Dolomitic Lime is used; whereas to decrease pH typically growers will use organic mulch (requires time to adjust and is usually done over a winter), however in the absence of available mulch, peat moss may be used as a substitute, also soluble salts may be added; iron sulphate or preferably magnesium sulphate (Epsom Salts) work well mixing at a ratio of 1 tsp. (teaspoon) per gallon, and watering with that solution, Keep in mind subtle changes are what we want so change this over several days. Abrupt pH changes can cause the plant to go into shock and lockout nutes and even water. A change of 2 tenths of a point per day is a much as you want if the plant is already in the soil or medium.

2.2.7 Container/Vessel Size - Most transplant their clones or seedling into a 3-5Gal. / 12-23L container (about 1-1½ ft^2 or 1000-2000 cm^2) in surface area. Larger is better *(it's not a myth!)* and of course good drainage is important. Another nice property of any container for growing is side holes for aeration – plants love it and in fact need it.

Again much of the aforementioned can be discussed in much more detail than we discuss here. An investment in additional literature and the time to read it will be of great value not to mention an interesting read.

And Now a Message from our Sponsor – ERUPT™ Plant Products!

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Pest Control Tip - A shameless plug, but nonetheless, **ERUPT's™ Bugimus Minimus™** (granular for soil/growing medium and also a foliar powder) is an inexpensive and very effective non-chemical pest prevention product preventing soil borne and foliar pests.

Rave reviews from everyone!

3.0 ERUPT's™ PLANT NUTRIENT PRODUCTS

3.1 Easy Container Math

Before we get started with discussing nutrient applications rates, we need to know how large of an area we are applying nutrients to, so let's review some basic remedial geometry & mathematics for those that don't like to remember formulas.

Round Containers - Calculate the square foot area of the container by measuring the Diameter of Container (in inches or centimetres) at the top of the container (edge to edge, across the middle) and use this simple formula;

$$\text{Square Foot Area (SFA)} = \frac{\text{Diameter (inches)}^2}{2} \times 3.14$$ and divide that number by 144

$$\text{Square Metre Area (SMA)} = \frac{\text{Diameter (centimetres)}^2}{2} \times 3.14$$ and divide that number by 10000

Square or Rectangular Containers – Calculate the square foot area of the container by measuring the length (in inches or centimetres) and multiplying it by the width (in inches or centimetres) – this gives you the Square Inch or Centimetre Area. Convert it to Square Feet or Square Meters using this simple formula.

$$\text{Square Foot Area (SFA)} = \frac{\text{Square Inch Area}}{144}$$

$$\text{Square Metre Area (SMA)} = \frac{\text{Square Centimetres Area}}{10000}$$

These measurements are that simple.

Now that we know the size of the surface area of the containers we can discuss the applications rates for the ERUPT™ Nutrients that you will apply.

Remember – bigger containers make bigger plants possible.

3.2 F420™ ProGro Start™ - Vegetation Growth Cycle

Typically this is the cycle in which that plant grows the most in size. If outdoors it is not unusual for the plants to attain 8 to 10 ft. in height during this growth phase and some Sativa dominant strains even taller. Indoor plants can easily attain 5 to 8 feet in size dependent upon the environment grown in - simply put - pot or container size, available room & lighting. If growing indoors you can use any size container you wish, just remember that unlike outdoors, the root system cannot exceed the size of the container, meaning bigger container = possibility of bigger plants. ERUPT's™ ProGro Start™ if applied using these simple guidelines, will easily supply enough nutrients for any situation, the trick is, in this first stage of growth - the "Vegetation Growth Cycle" - you want to achieve a correct level of soil/medium fertility (nutrient richness), however you want the nutrients applied to run out or exhaust almost completely about 1 week prior to the onset of the flower cycle - although there are subtle differences in this regard, this method works well for Indica, Sativa, and Hybrid strains. Section 5 presents generic "timeline type" charts for timing and application rates for all products addressing 3 different grow models.

Important **- *begin nutrient application regimen no sooner than 2-3 days after clone or seedling transplant to allow for sufficient time for transplant shock, if any to subside.***

F420™ Nutrient Application Tip – A small dose of **Budimus Maximus™** (about 3-4g or ½ teaspoon) applied as a shallow tilled top/side dressing then lightly watered will assist in root development and mitigate exposure to shock by providing a Potassium & Phosphorus rich environment prior to the application of Nitrogen bearing nutrient material. Always till nutrient content 2-4 in. (5-10 cm) deep into the soil or growing medium carefully with a fork or 3-tined garden tool – do not go deeper as root damage may result.

3.2.1 ProGro Start™ - Outdoors

The best practice is to stage the application and apply evenly every week across the cycle as per the grow models outlined in Section 5.

The amount of nutrient a plant can use will depend largely upon lighting, strain and size prior to being put into flower (veg. cycle duration). Always pay attention to visible plant signs as the plant condition will always indicate over fertilization or nutrient deficiencies – refer to Appendix "A" for assistance to diagnose & remedy any problems, should they occur.

ProGro Start™ Application: Continual and gradual application (recommended), apply 7.5g-10g (½ – ¾ level Tablespoon) per ft^2 of ERUPT™ ProGro Start™ every week. Remember that outdoors you are aiming to make fertile (nutrient rich) an area of about 4 ft^2 minimum for each plant.

Outdoor Grow Tip - apply nutrient to an area just inward of around the canopy drip line and apply in a circle around the entire canopy. Eventually this area should enlarge to approx. 4 ft^2 (½-¾ m^2) around plant base, possibly larger, once the plants become sufficiently large.

3.2.2 ProGro Start™ - Indoors

The best practice is to stage the application and apply evenly every week across the cycle as per the grow models outlined in Section 5.

ProGro Start™ Application: Plants in their finishing containers (3-5Gal. / 12-23L) should receive 7.5g-10g (½ – ¾ level Tablespoon) per ft^2 of ERUPT™ ProGro Start™ every week. Some choose to start with smaller containers and scale the container size up as the plants become sufficiently large - in that case each plant should receive a reduced amount of ERUPT™ ProGro Start™ (proportional to the reduced container size) until the plant is finally transplanted into their finishing (3-5Gal. / 12-23L) containers.

Indoor Grow Tip – be careful to monitor the pH of the container soil or growing medium as pH fluctuations tend to occur more rapidly in the smaller confines of a container. Rapid fluctuations in pH can easily affect plant growth and even kill the plant due to nutrient lockout.

3.2.3 Veg. Cycle Enhancer Brief

Rootimus Maximus™ Information: A "ProBiotic" root enhancer & stimulant with a native soil biology enhancement package. These "beasties" also create a symbiotic relationship with the root system and in effect form a "***Nutrient Super-Highway***" to supercharge nutrient delivery.

Foliar-FX™ Brief: A nutrient / enhancer product that is to be used throughout the entire grow to assist in cell building & strengthening, metabolic function and protect the plant from the harmful portion if the UV spectrum.

Carb-FX™ Brief: A nutrient / enhancer product that is to be used throughout the entire grow to supplement simple and complex carbohydrates. Supplement to those normally biosynthesised allow the plant to focus more on other important functions.

These and other enhancers are discussed completely in Section 4.

Important for an Outdoor or Indoor Grow – Stop applying ProGro Start™ 1 week prior to the Flower Cycle to give time for any excess Nitrogen to deplete. Remember, our nutrient delivery mechanism is quite different and the substrate holds Nitrogen extremely well. Excess Nitrogen in the transition period can cause a "stall condition" in the onset of flower development and excess Phosphorus can become toxic to the plant if a sufficient amount off potassium is not available.

3.3 F420™ Budimus Maximus™ - Flowering (Bud) Cycle

3.3.1 Budimus Maximus™ Outdoors & Indoors

Budimus Maximus™ should be applied weekly, just like you did with the ProGro Start™ product. The amount of nutrient a plant can use will depend largely upon lighting, strain and size when put into and growth during the flower cycle. Always pay attention to visible plant signs as the plant condition will always indicate over fertilization or nutrient deficiencies – refer to Appendix "A" for assistance to diagnose & remedy any problems, should they occur.

Budimus Maximus™ Application: With the exception of Foliar-FX™ (or HY-Meta™ for 3G growers) & CarbFX™ (briefly discussed in 3.3.2 below) or if the plant(s) exhibit noticeable signs of nutrient deficiency, do not apply any N-P-K bearing nutrients for at least 7 days after putting the plant (s) into the Flower Cycle. If you are an outdoor grow - this includes timing things with good ol' Mother Nature – know when to expect the plants to flower (discussed in section 2.1.3 above). After that period apply 7.5g-10g (½ – ¾ level Tablespoon) per ft^2 of ERUPT™ Budimus Maximus™ every week. Remember that outdoors you are aiming to make fertile (nutrient rich) an area of about 4 ft^2 for each plant sometimes larger depending upon the plant.

3.3.2 Flower Cycle Enhancers

Rootimus Maximus™ Information: A "ProBiotic" root enhancer & stimulant with a native soil biology enhancement package. These "beasties" also create a symbiotic relationship with the root system and in effect form a "***Nutrient Super-Highway***" to supercharge nutrient delivery.

Foliar-FX™ Brief: A nutrient / enhancer product that is to be used throughout the entire grow to assist in cell building & strengthening, metabolic function and protect the plant from the harmful portion if the UV spectrum.

Carb-FX™ Brief: A nutrient / enhancer product that is to be used throughout the entire grow to supplement simple and complex carbohydrates. Supplement to those normally biosynthesised allow the plant to focus more on other important functions.

Bud-FX™ Brief: An organic nutrient / enhancer product that is to be used iduring the flower cycle only. Bud-FX works in concert with the Budimus Maximus nutrient to assist in flower development.

These and other enhancers are discussed completely in Section 4.

Section 5 presents generic timeline type charts for timing and applications rates for all products addressing 3 different grow models.

That's it – it's that simple. Now throughout each the Vegetation and Flowering Cycles - simply water your plant(s) as you normally would or more importantly as your plants require until harvest.

<u>Important:</u> Don't forget to keep a watchful eye on the pH of the water that you use, don't take anyone's word for it - always measure to see for yourself.

4.0 ERUPT's™ NUTRIENT ENHANCERS

4.1 Rootimus Maximus™

Is a "ProBiotic" root enhancer & stimulant with a soil enhancement package. The multifaceted consortium of beneficial Mycorrhizae, Fungi, Bacteria, and Protozoa provides a well-balanced, compatible blend of microorganisms. In addition Rootimus Maximus™, a **Commercial Grower Endorsed** enhancer, contains a broad diversity of biota with fish solubles, crab meal, worm castings, humates, and polysaccharides. Our research observed a significant increase in native soil biology and more fertilizer nutrients in the root zone to protect the root system and plant from soil borne diseases.

In addition to the aforementioned inoculate properties, some of these "beasties" create a symbiotic relationship with the root system and in effect form a "***Nutrient Super-Highway***" to supercharge the delivery of essential nutrients, which in turn fosters healthy and rapid root system & plant development. The root mass of plants inoculated with Rootimus Maximus™ will be much larger than normal (as much as 800%) which in turn enables accelerated plant growth in both the Vegetation and Flowering cycles. Rootimus Maximus™ has been specifically designed to complement the ERUPT™ F420™ line of "*Eco-Nutrients*", however it may also be used for virtually any living plant to provide the best possible environment for plant growth and sustenance. Rootimus Maximus™ is suitable for Indoor or Outdoor use.

Rootimus Maximus™ is available individually in 30g (1oz.); 60g (2oz.) or 200g (7oz.) size formats or as part of the **Erupt™ Medi-Kit™.** Special Orders are also available – just e-mail info@eruptnutrients.com or call our order desk.

Rootimus Maximus™ Application Tip – A "squirt" bottle such as a spent Bugimus Minimus Foliar Applicator Bottle or a used up dish soap bottle works well for applying the Mixed Rootimus Maximus™ solution. Remember to thoroughly clean and rinse any bottle used.

Plant Type / Use	Mix Ratio	Best Application Practice
Vegetative **&** **Flowering Cycles**	Mix 0.2g (2 measure spoons) per litre or US Quart of water. Measure Spoon Provided = 0.1 g May be mixed with tap, well, DI or RO water. (For Best Results use non-chlorinated, non-softened water.) ***Shake mixed inoculate solution well when initially mixed & gently just prior to and periodically during application.***	Rootimus Maximus™ should be used immediately after transplanting seedlings or clones, and in the initial 2 weeks of Vegetation and Flowering cycles. Do not use in place of a "Rooting Hormone" complex. Rootimus Maximus™ increases and amends native soil biology and the Mycorrhizae component will form symbiosis with the root system allowing more efficient nutrient uptake. (See grow model examples for application timing). Although mostly soluble the Rootimus Maximus™ inoculate solution will for some part be a particulate suspension requiring continued shaking while applying with a squirt bottle. This is normal. **Transplanting Seedling or Clones** - treat the soil or growing medium 1 day prior to placement of Clones or Seedlings by a light application of mixed solution. **Vegetation & Flower Cycle** - Apply 200mL of mixed solution per plant per each application. When plants are small (1-2 weeks after transplant) 200mL may be excessive water for one application, spread this out over a few days.

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Rootimus Maximus™ Mixing & Application Instructions

Important: ***Only mix a quantity to be used immediately – Discard excess – DO NOT STORE LIQUID.***

4.2 Foliar-FX™ with 3rd Generation HY-Cyto™ & HY-Meta™ Support

Foliar-FX™ replaces the HY-Cyto™ and HY-Meta™ products used in Erupt's 3rd Generation Grow System with one product making for an easier system to use with less maintenance. Foliar-FX™ is a **Commercial Grower Endorsed**, cellular fortifier that assists in cell building, plant strengthening in general & promotes increased metabolic function. Foliar-FX™ nurtures cellular health, function & division (plant growth) throughout the plants entire life cycle. Free L-Amino Acids and Vitamins supplement those normally biosynthesized within the plant. Some of the Free L-Amino compounds are "Chelators" assisting in nutrient uptake of nutrients already present in the exchange complex of the soil or growing medium. One of the Free L-Amino Acids, "L-Lysine" stimulates the production of chlorophyll and several others promote development of bud sites and stimulate or promote the plants ability to push out more branches and larger flowers during the flower cycle. Free L-amino acids, when quickly metabolized, give birth to biologically active substances. They also invigorate and stimulate growth. Added Vitamin-B compounds assist in mitigation of shock, stimulate cellular function and supplement those that are normally biosynthesized within the plant. This allows more of the plants energy to be spent on other functions. L-Ascorbic Acid (Vitamin-C) protects plants from the harmful portion of the UV spectrum. All this plus an extra Magnesium and Sulphur boost, combined with the nutrient application regimen, build bigger and more potent buds.

Foliar-FX™ is available individually in 500mL (16.9fl.oz.); 1L (33.8fl.oz.) or 4L (135.2fl.oz.) size formats or as part of the **Erupt™ Medi-Kit™.** Special Orders are also available – just e-mail info@eruptnutrients.com or call our order desk.

Foliar Application Tip # 1 – A spray bottle applicator (some call them a "spritzer") works very well for foliar application of this and any other of the foliar applied mixed solutions. Most household or light duty utility spray bottles give approximately 10mL per pump so you can gauge the amount applied using that simple method. Industrial or commercial spray applicators can vary quite a bit so it is best to test (with plain water) how much is dispensed per pump.

Plant Type / Use	Mix Ratio	Best Application Practice
Vegetation Cycle and Flower Cycles	Shake Vigorously before Mixing. Mix 12mL per litre or US quart of water. This translates approximately to: 110mL / 4floz. bottle - 4 caps full 500mL & 1L bottles – 3 caps full May be mixed with tap, well, DI or RO water. (For Best Results use non-chlorinated, non-softened water.) ***pH corrected water is not necessary unless the source water is extremely high in pH - above 8.5***	Apply 100-200mL of mixed solution per plant every 3-4 days starting week 2 of the Veg. Cycle through to 1 week before Harvest. (See grow model examples in Section 5). When plants are small (1-2 weeks after transplant) 200mL may be excessive water for one application, spread this out over a few days. Each application apply about ½ of the amount foliar to the topside and underside of the fan leaf sets and the other ½ to the soil/medium with a spray applicator bottle. Apply to the root zone any time; however apply foliar spray just before the plants go into their dark period for that day to prevent burning due to the water droplets amplification of the sun or artificial light. ***Cauton: This product has been designed for Cannabis plants ONLY. Though it may work for other plants at certain times during their life cycle, we do not recommend use of Foliar-FX™ for anything other than Cannabis.***

Foliar-FX™ Mixing & Application Instructions

4.3 Carb-FX™

ERUPT™ Carb-FX™ is a carbohydrate blend containing simple and complex carbohydrates and several additional important nutrients in significant quantities. Supplementing carbohydrates to that which the plant normally produces allows the plant to expend energy in other ways - build tissue during the vegetative growth cycle and build large, potent and flavourful produce during the flower cycle. **Commercial Grower Endorsed**, Carb-FX™ as part of the "6-Pack"allowed commercial growers to exceed their normal yield by 30%. Carb-FX™ is an important nutrient and enhancer component of our 4th Generation (4G) nutrient & enhancer system and our newly released **Medi-Kit™**. All ERUPT™ "***eco-nutrient***" products are based upon our patent pending unique "Molecular Nano-Technology". Nutrients are released upon plant demand, lending reason to the low leaching nature, high nutrient availability, and high value of all ERUPT™ products. We have a formulation for all your gardening needs. Suitable for Indoor or Outdoor use.

Carb-FX™ is available in 100g (3.5oz.), 200g (7oz.), 500g (17.5oz.) 1.5Kg (52.5oz.) and 7.5Kg (16.4lb.) Special Orders are also available – just e-mail info@eruptnutrients.com or call our order desk.

Plant Type / Use	Mix Ratio	Best Application Practice
Vegetative **&** **Flower Cycles**	Mix 7.5g (1 Level Teaspoon) with 4L (litres) or 1 US Gallon of warm water, mixing well and allow cooling to room temperature before use. Shake Vigorously before Use. (Tap, well, DI or RO water may be used - For Best Results use non-chlorinated, non-softened, pH corrected (6.5-7.0) water.	Apply 100-200mL of mixed Carb-FX™ solution per plant every 3-4 days after 1 week into the Vegetative Cycle throughout the entire grow to 1 week prior to harvest. Early in the Veg. Cycle, when the plants are smaller, apply less, but ensure the plant is evenly covered. Ensure to apply to both the topside and underside of the Fan Leaf sets. Also apply to the Bud Leaves during the Flower Cycle. Although mostly soluble the Carb-FX™ solution will contain some suspended particulate – this is the Silicon Dioxide that is used as an anti-caking agent and it will fall to the bottom. This is normal. The Carb-FX™ solution should also be applied to the root zone in the soil/medium, but is only required weekly. Apply to the root zone any time; however apply foliar spray just before the plants go into their dark period for that day to prevent burning due to the water droplets amplification of the sun or artificial light.

Carb-FX™ Mixing & Application Instructions

Foliar Application Tip #2 – Foliar applied products may be used indoor or outdoor the only difference being weather - it does not make much sense to apply foliar sprays prior to rain therefore keep watch of the forecast if you are growing outdoors.

4.4 Bud-FX™

ERUPT™ Bud-FX™ is an organic nutrient source that works in concert with the Budimus Maximus™ flower cycle nutrient supplying boosted levels of much needed nutrients during this critical time. ***Commercial Grower Endorsed***, Bud-FX™ delivers both immediate and slow release nutrients and promotes the plants ability to multiply and push out branches and flowers. Bud-FX™ is an important nutrient & enhancer component of our 4th Generation (4G) nutrient & enhancer system and our newly released **Medi-Kit™**. Bud-FX™, as part of the Medi-Kit™ "6-Pack" helped commercial growers exceed their normal yield by 30%. All ERUPT™ Nutrient Products are based upon our patent pending unique "Molecular Nano-Technology". Nutrients are released upon plant demand, lending reason to the low leaching nature, high nutrient availability, and high value of all ERUPT™ products. We have a formulation for all your gardening needs. Suitable for Indoor or Outdoor use.

Bud-FX™ is available in 100g (3.5oz.), 200g (7oz.), 500g (17.5oz.) 1.5Kg (52.5oz.) and 7.5Kg (16.4lb.) Special Orders are also available – just e-mail info@eruptnutrients.com or call our order desk.

Plant Type / Use	Mix Ratio	Best Application Practice
Flower Cycle Only	Shake Vigorously before Use. Mix 45g (3 Level Tablespoons) with 4L (litres) or 1 US Gallon of warm water, mixing well and allow the solution to combine for 48 hours before use. During the combining period shake periodically. (Tap, well, DI or RO water may be used - For Best Results use non-chlorinated, non-softened, pH corrected (6.5-7.0) water.	Apply 200mL of mixed solution per plant once each week. The best time to apply the Bud-FX™ solution is 2-3 days after the application of Budimus Maximus™ which is also applied weekly. Apply each week up to 1 week prior to harvest. Although mostly soluble the Bud-FX™ inoculate solution will for some part be a particulate suspension requiring continued shaking while applying. This is normal. The Bud-FX™ solution should be applied to the root zone in the soil/medium ONLY.

Bud-FX™ Mixing & Application Instructions

5.0 GROW MODEL EXAMPLES

The pages that follow give grow model examples for Outdoor (full cycle), Indoor (full cycle) and Indoor (Accelerated Veg. Cycle) – many commercial growers opt for the latter Indoor (Accelerated Veg. Cycle) model for the sheer reality that based upon select strains, an indoor grow with an accelerated veg. cycle allow for the overall yearly yield to be higher as more grow cycles are possible for a given floor area within the year.

Please note that these are examples only and the grow model that you will choose will be contingent upon several factors some of which we have already discussed but also the landrace strain (Indica vs. Sativa vs. Hybrid) and climatic conditions.

You are encouraged to call or e-mail our Technical Support Group to discuss your particular application – we always are happy to help. Our Technical Support Group is always available to assist you, call 905-619-5266 or toll free 1-888-989-3839 or even better e-mail us at support@eruptnutrients.com that way we both have an audit trail of our communications.

5.1 Indoor Accelerated Veg. Cycle Grow Model

The first example on the Page 15 is a model used by some commercial growers and works well (strain dependant) provided the plants attain sufficient size in the initial 4-5 week Veg. Cycle. The overall grow cycle is 10-11 weeks meaning that the crop turnover is roughly 5 crops per year for any given floor area.

Notes for this Grow Model Chart:

1. Veg. cycle is 4 weeks.
2. Flower cycle is strain dependant.
3. Ripening time is dependent upon your desired level of ripening – check the Trichomes.

5.2 Indoor Full Veg. Cycle Grow Model

The second example on Page 16 is a model that most indoor growers follow. This grow model works very well as the plants attain the full, desired size prior to being driven to flower based upon the lighting (lit vs. dark periods) that you control. . The flower cycle continues and its length is completely strain dependant excepting the degree of ripening that you choose.

Notes for this Grow Model Chart:

1. Veg. Cycle length varies according to the plant size that you desire.
2. Flower cycle is strain dependant.
3. Ripening time is dependent upon your desired level of ripening – check the Trichomes.

5.3 Outdoor Full Veg. Cycle Grow Model

The third example is quite influenced by Mother Nature and where you grow. The latitude, elevation & topography determine daylight length at any given point throughout the year. The Veg. cycle duration will be the number of weeks (or days) between when you plant in the ground and when the daylight hours are sufficiently short to trigger flowering, the flower cycle will be strain & weather dependant.

Notes for this Grow Model Chart:

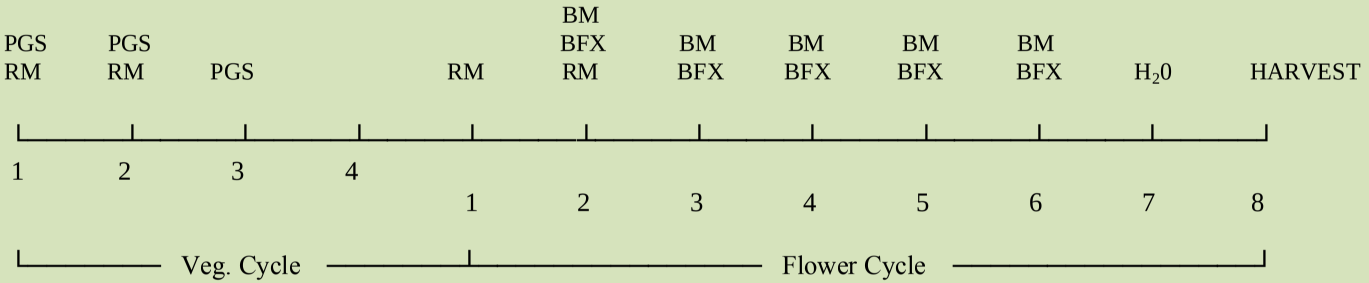
1. Veg. Cycle length varies according to planting time & geographical location, elevation & topography.
2. Flower cycle & ripening is strain & weather dependant.

Notes for all Grow Model Charts:

1. Nutrient application rate is 7.5g per week (both Veg. & Flower cycles) more may be applied as the plants grow in size and if the plant(s) indicate the need for nutrients – know your plant strain and the signs of need for nutrients.
2. Do not apply nutrients during the period of 1 week prior being driven to flower and 1 week following being driven to flower (2 week period) unless the plant(s) show signs of the need for nutrients.

Indoor (Accelerated Veg. Cycle) Grow Model
Hybrid (Indica predominant 60 %+)

(18/6 Lighting for Veg. Cycle & 12/12 Lighting for Flower Cycle)



Foliar-FX - Apply 100-200mL (Depending upon plant size) every 3-4 Days through to 1 week before harvest
Carb-FX - Apply 100-200mL (Depending upon plant size) every 3-4 Days through to 1 week before harvest. Stager the application to be 1-2 days after the application of Foliar-FX – for example if you apply Foliar-FX on Saturday then apply the Carb-FX 2 days later.

The full Flower cycles of Indica vs. Sativa are usually quite different in duration with Hybrids somewhere in the middle. Additional weeks like week 6 may be necessary dependant on what you are growing and desired duration.

PGS ProGro Start – 7.5g-10g (½ – ¾ level Tablespoon) per square foot.

BM Budimus Maximus - 7.5g-10g (½ – ¾ level Tablespoon) per square foot.

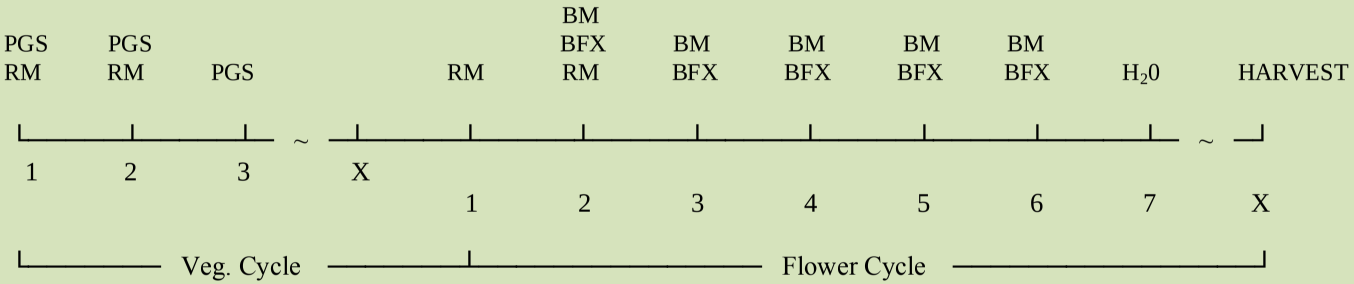
RM Rootimus Maximus - 200mL of mixed solution (as per mixing instructions). If plant is small apply over a few days (mix a smaller batch each of those days. ***Important: Only mix a quantity to be used immediately – Discard excess – DO NOT STORE LIQUID.***

BFX Bud-FX – Apply 200mL of mixed solution (as per mixing instructions and letting it combine). (Mixed liquid may be stored). Apply systemically to the root zone 2 days after Budimus Maximus application.

H_20 Water (ensure the pH is correct)

Indoor (Full Veg. Cycle) Grow Model
Hybrid (Indica predominant 60 %+)

(18/6 Lighting for Veg. Cycle & 12/12 Lighting for Flower Cycle)



Foliar-FX - Apply 100-200mL (Depending upon plant size) every 3-4 Days through to 1 week before harvest
Carb-FX - Apply 100-200mL (Depending upon plant size) every 3-4 Days through to 1 week before harvest. Stager the application to be 1-2 days after the application of Foliar-FX – for example if you apply Foliar-FX on Saturday then apply the Carb-FX 2 days later.

If longer than a 4 week veg. cycle repeat week 3 (PGS and HY-C) until 1 week prior to driving the Flower Cycle. Only give the PGS that week if the plant appears to need it.

The Flower Cycle of Indica vs. Sativa are usually quite different in duration with Hybrids somewhere in the middle additional weeks like week 6 may be necessary dependant on what you are growing.

PGS ProGro Start – 7.5g-10g (½ – ¾ level Tablespoon) per square foot.

BM Budimus Maximus - 7.5g-10g (½ – ¾ level Tablespoon) per square foot.

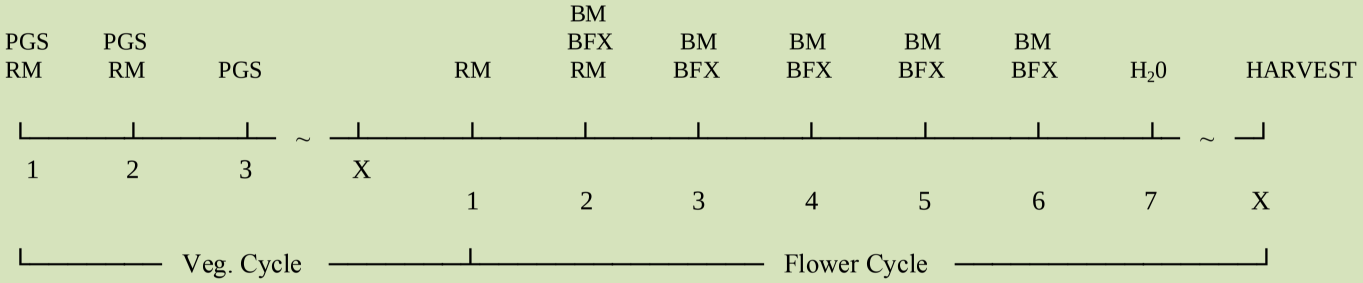
RM Rootimus Maximus - 200mL of mixed solution (as per mixing instructions). If plant is small apply over a few days (mix a smaller batch each of those days. ***Important: Only mix a quantity to be used immediately – Discard excess – DO NOT STORE LIQUID.***

BFX Bud-FX – Apply 200mL of mixed solution (as per mixing instructions and letting it combine). (Mixed liquid may be stored). Apply systemically to the root zone 2 days after Budimus Maximus application.

H_20 Water (ensure the pH is correct)

Outdoor Grow Model
Hybrid (Indica predominant 60 %+)

(Natural Lighting - Flower cycle for most strains is triggered by 4 consecutive days with 9 hours of darkness)



Foliar-FX - Apply 100-200mL (Depending upon plant size) every 3-4 Days through to 1 week before harvest
Carb-FX - Apply 100-200mL (Depending upon plant size) every 3-4 Days through to 1 week before harvest. Stager the application to be 1-2 days after the application of Foliar-FX – for example if you apply Foliar-FX on Saturday then apply the Carb-FX 2 days later.

The Veg. cycle here is determined by when your plant(s) go in the ground and they will Veg. until being driven to flower by 4 consecutive days of 9 hours or more of darkness.. This could be 8 or more weeks depending when you plant outdoors. Repeat week 3 for as long as is needed.

The Flower Cycle of Indica vs. Sativa are usually quite different in duration with Hybrids somewhere in the middle additional weeks like week 6 will likely be n necessary. Repeat week 6 as needed.

PGS ProGro Start – 7.5g-10g (½ – ¾ level Tablespoon) per square foot.

BM Budimus Maximus - 7.5g-10g (½ – ¾ level Tablespoon) per square foot.

RM Rootimus Maximus - 200mL of mixed solution (as per mixing instructions). If plant is small apply over a few days (mix a smaller batch each of those days. ***Important: Only mix a quantity to be used immediately – Discard excess – DO NOT STORE LIQUID.***

BFX Bud-FX – Apply 200mL of mixed solution (as per mixing instructions and letting it combine). (Mixed liquid may be stored). Apply systemically to the root zone 2 days after Budimus Maximus application.

H_20 Water (ensure the pH is correct)

Appendix "A" Recognizing and Treating Nutrient Deficiencies

SYMPTOMS	N	P	K	S	Ca	Mg	Zn	Mn	Fe	B	Cu	Mb	Excessive Nutrient Application
Yellowing of Upper Leaf Sets				✓					✓				
Yellowing of Middle Leaf Sets												✓	
Yellowing of Lower Leaf Sets	✓	✓	✓			✓							
Red Stems	✓	✓	✓			✓							
Necrosis (Dying Tissue)			✓			✓		✓		✓	✓		
Spots								✓					
Growing Shoots become Necrotic (Die)										✓			
White Leaf Tips						✓							
Stunted Growth		✓			✓								
Deformed New Growth		✓											
Yellow Leaf Tips													✓
Twisted Growth										✓			

Nutrient & Ailment Diagnosis Chart

How to Use this Chart

Scan "Symptoms" and refer to the right for diagnosis, then proceed to the next page(s) to determine corrective measures for the particular aliment(s). Where more than one box is checked next to the symptom, the possibility of more than one deficiency exists.

NITROGEN (N)

Pale plants, red stems, smaller growth. Rapid yellowing of lower leaves progressing up the plant. Add any chemical fertilizer containing N. Treated plants recover in about a week.

PHOSPHORUS (P)

Slow or stunted growth, red stems. Smaller leaves that are dark green. Lower leaves yellow and die. Add chemical fertilizer containing P. Affected leaves will not show recovery but new growth will appear normal.

POTASSIUM (K)

Affected plants are usually tallest and appear to be most vigorous. Necrotic spots form on lower leaves. Red stems. Leaves appear pale or yellow. Add chemical fertilizer containing K.

CALCIUM (Ca)

The lack of calcium in the soil results in the soil becoming too acid. This leads to Mg or Fe deficiency or very slow stunted growth. Treat by foliar feeding with one teaspoon of dolomitic lime per quart of water until condition improves.

SULFER (S)

Plants suffering from S deficiencies exhibit yellowing of new growth. Mix one tablespoon of Epsom salts per gallon of water until condition improves.

MAGNESIUM (Mg)

Lower leaves yellow and may even turn white while veins remain dark green. Blades die and curl upward.

IRON (Fe)

Leaves on growing shoots turn pale and veins remain dark green. pH imbalances make iron insoluble. Foliar feed with chemical fertilizer containing Fe or rusty water.

MANGANESE (Mn)

Necrotic and yellow spots form on top leaves. Mn deficiency occurs when large amounts of Mg are present in the soil. Foliar feed with any chemical fertilizer containing Mn.

BORON (B)

Growing shoots turn grey or die. Growing shoots appear burnt. Treat with one teaspoon of Boric acid (sold as eyewash) per gallon of water.

MOLYBDENUM (Mb)

Yellowing of middle leaves - Foliar feed with chemical fertilizer containing Mb.

ZINC (Zn)

White areas form at leaf tips and between veins. This often occurs in alkaline soils. Zn deficiency can be treated by burying galvanized nails in the soil. Chemical fertilizer containing Zn can also be used.

OVER FERTILIZATION

Causes leaf tips to appear yellow or burnt. To correct soil should be flushed with three gallons of water per one gallon of soil.

Over fertilization can also cause curling of newly developing leaves.