



THE GROWERS JOURNAL

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20⁺ YEARS OF
H&G
NUTRIENTS



Coming to America
Our transition from old to new!

The Evolution of H&G Nutrients

House and Garden Nutrients has been researching, examining and manufacturing advanced horticultural nutrient programs for over 25 years. H&G operates multiple research analysis facilities to continually develop globally leading agricultural technology and manufacturing standards.

House and Garden is originally from Holland and strives to preserve their legacy of brewing premium fertilisers. Since the incredible growth and development of the U.S.A horticultural sector; H&G has relocated their facilities and team of scientists, researchers and manufacturing staff to Humboldt County, California.

Why Humboldt County?

Humboldt County has a long and proud history of advanced production horticulture and innovative hydroponic technology development. This powerful market and 'green' hub allows for new improvements in facilities and appeals to a significantly wider audience of growers.

Humboldt County is part of the 'Emerald Triangle'; a region of Northern California which is named for its incredible scale of hydroponic and medical-grade production horticulture. Medocino County, Humboldt County and Trinity County make up this region and the expertise in this territory can be traced back to the early 1960's.

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NOW MADE IN THE
EMERALD TRIANGLE
HUMBOLDT - CALIFORNIA

Cultivating our 'Green' impact:

House & Garden Nutrients strives to reduce any environmental impact and their brand-new manufacturing facility has been built with 'zero-waste' capabilities and drastically reduces their carbon footprint. This state-of-the-art facility features the latest blending and mixing technology that is unparalleled by traditional European and Dutch techniques.

New methodology for manufacturing nutrient allows for more stabilised, consistent and powerful products! The H&G collection of unique patented recipes are world-recognised for their impressive results. House & Garden's own advancements in research and technology ensure they stay ahead of the competition while continually reducing any negative green impact.

What sets us above the competition?

House & Garden Nutrients is the global leader for advanced nutrients, yet maintains their incredible attention to detail for consistent craft nutrients. The range is ideal for hobby or commercial cultivators and utilises powerful base ingredients, stimulants and additives to guarantee exceptional results. Don't settle for tired old recipes from the 1980's and un-tested mineral formulations, stick with H&G for reliable and ground-breaking growth. The proven yield winner!

KNOW BEFORE YOU GROW



DOWNLOAD FEEDCHART APP





30ML
25ML
20ML
15ML
10ML
5ML

USE LESS FOR MORE SUCCESS!

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HOUSE AND GARDEN'S SUPER CONCENTRATED FORMULA MEANS YOU USE LESS FOR MORE SUCCESS!

AQUA FLAKES A&B
1.5-3ml/L

SOIL A&B
2-5ml/L

HYDRO A&B
1.5-3ml/L

COCOS A&B
1.5-3ml/L



CONTENTS

1-6

BASE NUTRIENTS

7-20

MASTER GROW
TIPS & ADDITIVES

21-28

MASTER BLOOM
ADVICE & ADDITIVES

29-30

SUBSTRATES

31-34

FEED GUIDES

35-36

HYDROPONIC
SYSTEMS

37-38

NUTRIENT MIXING
INSTRUCTIONS

39-40

GROW ROOM
ETIQUETTE

41-42

IDENTIFYING
INSECTS AND PESTS

43-44

IDENTIFYING
PLANT DEFICIENCIES

A dynamic splash of blue water against a black background. In the center-left, there is a red shield-shaped logo with a white border. Inside the shield is a white swan with its wings spread, and the text 'HOUSE & GARDEN' and 'VAN DE ZWAAN' is written in white on a red background.

STARTING FROM THE SOURCE - THE ESSENTIALS ABOUT H2O

WATER IS THE KEY TO ALL EXISTENCE ON EARTH.

It is known as the 'solvent of life' for its unique ability to dissolve many different substances. However not all water is created equal and understanding the properties of your base water source can drastically influence the productivity of your crop!

The water source for your facility will influence what treatment or preparation may be required to ensure the water is suitable for horticulture. Common water sources include tap water, rain water or spring water however these all can include contaminants or various compounds that could interact with your fertiliser regime.

When we measure key parameters of the water we can gain an insight as to whether it is suitable. Always test the starting pH and EC of your source water. If the water is unusually acidic or alkaline, or too 'hard' or 'soft', this may influence your plants ability to uptake nutrient. The water temperature, dissolved oxygen and waterflow/ movement all influence the properties of your reservoir and need to be understood and monitored.

If your water is not ideal for horticulture, we strongly recommend the use of reverse osmosis (RO) filtration alongside H&G pH Stabiliser. This allows for a healthy ionic exchange, pH stability and consistent plant nutrient uptake.

When mixing nutrients, always follow our "Nutrient Mixing Instructions -page 37" to ensure the best results from every single bottle. Using the best fertiliser tools with the best information is the key to prize winning harvests!

H&G – Commercial & Research Applications

Our premium range of fertilisers caters to all garden sizes. From hobby home growers, up to commercial farms and research institutions; H&G is proudly growing prize winning flowers. Our unique zero-waste production facility in Humboldt CA provides fertilisers for farmers all over the world. H&G is successfully used in large commercial operations as we always aim to exceed the expectations of the grower.



Our new manufacturing location can provide commercial sizing and fertigation programs for any scale of operation. While our research and testing facilities ensure perfect quality and flawless consistency in all product volume. Please contact your local H&G distributor for more information.

BASE NUTRIENTS

All **House & Garden base A&B** are composed of pure liquid base elements, unlike most other “premium” nutrients on the market that are mixed up powders and bulking agents. Because H&G only use a liquid mineral base, this ensures plants can uptake all the available food without having to separate out the unusable compounds. All our base nutrients are made with computer controlled precision, slightly heated during mixing for extended periods of time to ensure all essential compounds are blended to perfection. All nutrients are batch tested in our zero-waste facility in California to ensure the outstanding quality and consistency that H&G is renowned for. Our base nutrients come in four variations - Aqua Flakes / Hydro / Cocos / Soil, to accommodate the various growing methods used in production horticulture.



H&G base nutrients A&B are used for **GROW & BLOOM** eliminating the extra cost & need for 2 separate sets.

H&G is so concentrated that you might even find that you use half the amount of H&G than your old nutrient brand.



GROWTH



BLOOM

COCOS A+B

House & Garden Cocos A&B is a two part base nutrient formulated for gardeners using a medium of 40% or more coco substrate. Cocos A&B's is revolutionary in its formulation, our nutrients are made of an entirely new composition, structure and method of preparation using only food and pharmaceutical grade ingredients. H&G Cocos base nutrients are produced from 100% liquid base elements, not powders. Combined with our state of the art mixing process this ensures Cocos A&B is the cleanest most concentrated base nutrient on the market. H&G is manufactured in a unique production facility in California; ensuring perfect consistency with every single batch.

Dosage: 1.5-3ml/L
Available in 1L, 5L, 10L & 20L

SUITABLE SYSTEMS FOR USE WITH H&G COCOS A&B*



Run to waste system



Hand water



GROWTH



BLOOM



HYDRO A&B

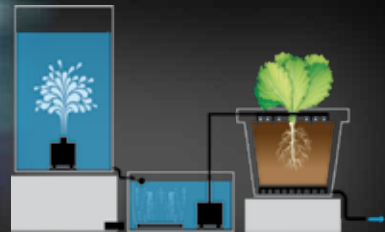
House & Garden Hydro A&B uses a unique formulation specifically for run-to-waste hydroponic systems. Hydro A&B allows for rapid nutrient uptake as efficiently as possible. This powerful base nutrient has been designed to provide complete fertigation for both vegetative and flowering (generative) growth. Ideal for run-to-waste systems in rockwool, flock, perlite, clay, growstone, gravels, vermiculite or volcanic stone.

Our Hydro A&B base been precisely designed to provide the complete range of required nutrient in soluble forms using unique chelating agents. Hydro A&B is engineered to balance optimised pH levels rapidly, resulting in more effective nutrient uptake and faster, healthier plant growth.

Dosage: 1.5-3ml/L

Available in 1L, 5L, 10L & 20L

SUITABLE SYSTEMS FOR USE WITH H&G HYDRO A&B



Run to waste system



Hand water

AQUA FLAKES

House & Garden Aqua Flakes is the complete base nutrient reformulated in the USA specifically for recirculating systems. House & Garden Aqua Flakes are ideal for expanded clay, rockwool, growstone and various forms of recirculating hydroponic cultivation. This liquid concentrate has a unique composition that encourages rapid transfer of nutrients from fertigation into the plant foliage. The secret H&G formulation and blending methodology allows for a perfectly balanced combination of nutrients for optimum, medical-grade cultivation. The result for you? Better pH balance, improved nutrient uptake, faster plant growth and stability in EC levels

Aqua Flakes contains all macro and trace elements in absorbable forms to ensure rapid uptake and complete nutriment for the life cycle of the plant.

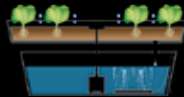
Dosage: 1.5-3ml/L
Available in 1L, 5L, 10L & 20L



SUITABLE SYSTEMS FOR USE WITH H&G AQUA FLAKES A&B



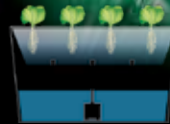
Wick



Drip



NFT



Aeroponics



DWC



Ebb & flow

SOIL A&B

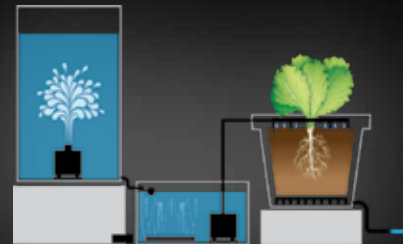
House & Garden Soil A&B nutrient is a powerful A/B set that has been precisely designed to compliment and enhance the existing mineral content within the soil, or any soil mixes. We engineered specifically calculated ratios of all required plant nutriment to encourage incredible vegetative and generative growth. A&B Soil is used for soil / peat substrates. A&B Soil nutrient does not contain any bulking agents or cause any unnecessary acidification. Thus ensuring that the soil structure is retained and even improved.

Great for the outdoor garden seasons and soil/peat substrates.

Dosage: 2-5ml/L

Available in 1L, 5L, 10L & 20L

SUITABLE SYSTEMS FOR USE WITH H&G SOIL A&B



Run to waste system



Hand water



GROWTH



BLOOM



Solving the Secrets of Super Soils

Soil is the upper layer of earth in which plants grow and in nature it is generally a dark brown material, typically consisting of a mixture of organic remains, sand, silt and clay compounds. The different size of these compounds affects the soil structure and usability. Cultivating crops in soil can provide incredible plant profile development with strongly scented flowers and tasty fruits!

In protected production horticulture soil substrates are generally peat and perlite base, occasionally with humus, composts or various forms of organic matter included. Different terra blends require a precisely calculated air-porosity, soil structure and CEC (cation exchange capacity) to allow for the most efficient uptake of mineral and organic nutrients.

The H&G Soil A/B Nutrient solution has been engineered to account for pre-existing organic matter in terra blends, and compliment the existing soil structure; whilst feeding the plant throughout all growth cycles. It is calculated to provide nutriment for all heavy fruiting or flowering crops.

Soil A/B can be effectively used in terra and soil mixes, indoors, in glasshouses or outdoor in traditional broadacre farming techniques.



MASTER GROWER TIPS

FOR VIGOROUS VEGETATIVE GROWTH



As your seedlings or cuttings develop, their root mass expands and lateral roots grow thin root hairs to more efficiently uptake nutriment and water from the substrate. Your plant is currently in a vegetative state of growth as the roots, a stem and leaves progress. For photoperiodic plants that depend on the light/dark cycle to determine their growth stages, they can usually be kept in a vegetative state as long as they receive a minimum of 16 hours light per day.

A healthy, happy green vegetative plant will always yield the most delicious fruits or flowers. To achieve the best results with your vegetative crops, always ensure to follow our 5 helpful tips for vigorous results:

1. Environmental Control:

Maintain a healthy airflow throughout the growroom, this prevents stratification of air surrounding the leaves, ensures adequate CO2 and encourages stronger stems through the production of lignin and cellulose. Keep a slightly higher humidity during the vegetative period; between 60-70% is generally ideal for lush green growth.

2. Nitrogen Power!

The plant uses high levels of Nitrogen during vegetative growth but lower levels are required during the seedling, clone and flowering stages. N is mainly responsible for leaf and stem growth and is most active in young buds, shoots and leaves. Being mobile within the plant, N deficiencies are easily remedied with a foliar application of Nitrogen N27% or Magic Green.



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3. Love the blues

For indoor horticulturalists: The spectral quality and quantity of your grow lighting is essential. Using lamps that emit a higher ratio of blue/white light encourages shorter internodal spacing, stronger cell development and thicker stems. Traditionally some growers use Metal Halide globes during the vegetative state for stockier plants but we suggest adding CMH (Ceramic Metal Halide) luminaires. These lamps have an incredibly high colour-rendering index; ensuring powerful vegetative growth and increased essential oil and resin production in flower.

4. Nature makes the best flowers

The H&G Range has incorporated a number of organic compounds into our feeding regime. These organic biostimulants encourage much faster plant development through a range of natural biological processes. They gently interact with the roots, the substrate, the mycorrhizae and beneficial bacteria and this stimulates a more efficient uptake of nutrients. Enzymes help to break down dead root matter and convert unusable compounds into more absorbable forms. Sea Kelp also provides a whole assortment of delicious trace elements and even aids as a stress reliever!

5. Keep your pH in check!

The pH (The acidity or alkalinity of an aqueous solution) affects the uptake of certain nutrients and should be carefully monitored in both hydroponic and soil cultivation. The influence of hydrogen ions (H⁺) affects the capacity of positively or negatively charged ions within the soil, water or growing medium. Our range of nutrients is pH stable, which ensures they will adjust the pH when added to water at the correct ratios. However as plants grow they use certain compounds and the root exudates and mucilage influences the ratios within the water. It's always worth checking the pH of your reservoir and runoff with an accurately calibrated pH pen. Also note that not all tap water is created equal.

During the vegetative state your plants leaf and stem development is powerful and exciting. They will thrive if given the right conditions and grow into a beautiful fruiting crop. For best results always ensure to follow our recommended feed charts and don't over water!

MAGIC GREEN



House & Garden Magic Green is an extremely powerful foliar spray! When used correctly plants will display incredible vigour and leaf structure, with visible results within 24 - 48 hours! Magic Green can be effectively used from un-rooted cuttings through to established mature plants. It can effectively restore natural colour and vitality to the leaves by strengthening the vascular tissue and promoting photosynthetic processes. Magic Green acts as a defensive layer for the plant, aiding in crop resistance to pest and disease. For best results spray Magic Green onto your plants when lights are off. Use from seedling until floral sites are set and developed.

- *Enhances vitality of plant growth*
- *Rapid response and ultra-efficient uptake*
- *Aids in plant defence mechanisms*
- *Remedies deficiencies in certain varieties*

Sick leaf = Apply Magic Green = Healthy leaf



- *Dosage: 1-2ml/L*
- Available in 500ml & 1L



MULTI ZYME

House & Garden Multi Zyme is a useful stimulator, rich in enzymes, co-enzymes and vitamins. Multi Zyme accelerates and simplifies the growth process. It breaks down and dissolves dead root material when watered and also increases the plant's resistance to disease and stress. Enzymes convert nutrients into 'easily digestible chunks', which can be readily absorbed by the plant. The activity of enzymes is fundamental to the success of a plants growth. To be used in both the vegetation and flowering cycles.

Multi Zymes formulation helps to aid in the break-down of nutrients to make them more absorbable within the root zone; combined with our unique blend of vitamins, the resulting crop is healthier and produces significantly more flower sites.

- *Strengthens your plants vascular system.*
- *Accelerates and simplifies the growth process.*
- *Aids with nutrient uptake and increases flower sites.*
- *Breaks down dead roots.*
- *Greener, healthier plants.*
- *Dosage: 1ml/L*

Available in 500ml, 1L, 5L & 20L



GROWTH



BLOOM



ROOTS EXCELURATOR

House & Garden Roots Excelurator creates a healthy environment where the root zone can thrive. It's the most powerful root stimulator currently available. Our showpiece in the area of nutrients! This powerful root stimulator ensures the explosive growth of the roots, rids the plants of brown roots, root diseases and provides an excellent rhizosphere (root environment) in the soil or coco medium. Roots Excelurator creates a film around the roots, which functions as a kind of membrane. It keeps harmful diseases and germs out of the root zone but allows the absorption of nutrients. Roots Excelurator also isolates harmful pathogens and prevents them from reproducing.

- *Explosive root development.*
- *Ultra concentrated.*
- *Unique encapsulation for disease prevention and cure.*
- *Promotes rapid growth for a faster vegetative period.*
- *Powerful combination of organic biostimulants and vitamins.*
- *Quicker cloning.*
- *Proven results.*
- *Dosage: 0.3ml/L*

Available in 100ml, 250ml, 500ml, 1L & 5L



GROWTH



BLOOM

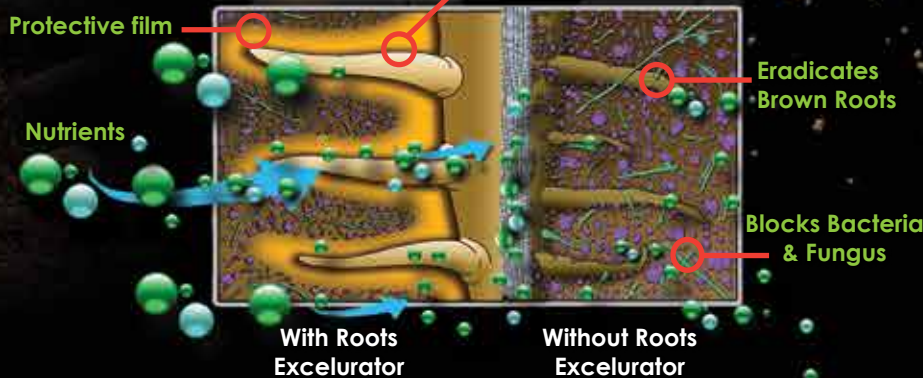


WHY ROOTS EXCELURATOR IS SO BENEFICIAL



**Mega Concentrated
0.3ML/L**

Roots Excelurator stimulates the development of the strongest and most efficient root system possible.



CHEMIST'S CORNER

Roots Excelurator's formula is a well kept secret! For explosive root growth use right from the start. This also ensures your plant receives the most efficient nutrient uptake. We think you'll agree that Roots Excelurator is a must have for all growers.

N 27% NITROGEN



House & Garden N 27% Nitrogen is converted quickly and easily by the roots into amino acids, which are the building blocks for proteins and important for the cell division of the entire plant. N 27% Nitrogen stimulates the growth, contributes to leaf formation and aids with root growth. Helps speed up slow vegetation growth. This product is super strength and has the highest Nitrogen content on the market. N 27% Nitrogen works very fast, is economical in use and free from bulking agents.

- *Promotes vigorous plants growth, contributes to leaf formation and aids with root growth.*
- *Increases in photosynthesis resulting in greener, healthier plants.*
- *Speeds up slow vegetation growth.*
- *Prevents leaf discolouration.*
- *Increases resistance to pests, diseases, and adverse conditions.*
- *Dosage: 0.25-1 ml/L*



Available in 250ml, 1L & 5L



ALGEN EXTRACT

House & Garden Algen Extract contains a very high percentage of dry matter of *Ascophyllum nodosum*. This Norwegian sea kelp extract is therefore rich in both macro nutrients (such as N, P, K, Ca, Mg & S) and micro nutrients (Mn, Cu, Fe & Zn). Seaweed, in addition, contains very high levels of natural hormones, polysaccharides, amino acids and proteins. These substances stimulate healthy root growth and lush green foliage. This makes Algen Extract an important supplement to the base nutrients of the plant.

Algen Extract stimulates the growth of the root system enabling the plant to absorb more nutrients. It also increases the resistance of the plant and stimulates the production of chlorophyll. A larger root system guarantees improved growth during the entire season.

- *Aids in plant recovery and stress relief.*
- *Stimulates the formation of root hair, leading to increased uptake of trace elements.*
- *Increases resistance to disease and pests.*
- *Faster, healthier growth.*
- *Dosage: 1ml/L*



GROWTH



BLOOM

Available in 250ml, 500ml, 1L & 5L



AMINO[®] TREATMENT

House & Garden Amino Treatment is our unsung hero within the H&G family. It contains a patented seed extract to provide your plants with the vigour and energy of a young seed growth. Containing essential amino acids and enzymes, this stimulating additive is used throughout the vegetative period and into the first stages of floral growth. This aids in the plants transitional period to provide you with bigger and healthier flowers! Amino Treatment also includes cold-pressed Norwegian Sea kelp to aid in plant development and provide organic fundamental macro and trace elements to your plant. We also incorporated a unique complex small particle silica component. Silica has been proven to help with plant stress relief, stem and leaf development and encourages additional heat/cold resistance.

- *A better foliage distribution.*
- *A higher photosynthesis ratio.*
- *Solid stems.*
- *Enhanced root activity.*
- *A better and increased fruit production.*
- *A higher sugar level of the fruit.*
- *Aids nutrient distribution.*
- *Dosage: 20-100ml/100L*

Available in 100ml, 250ml, 500ml, 1L & 5L



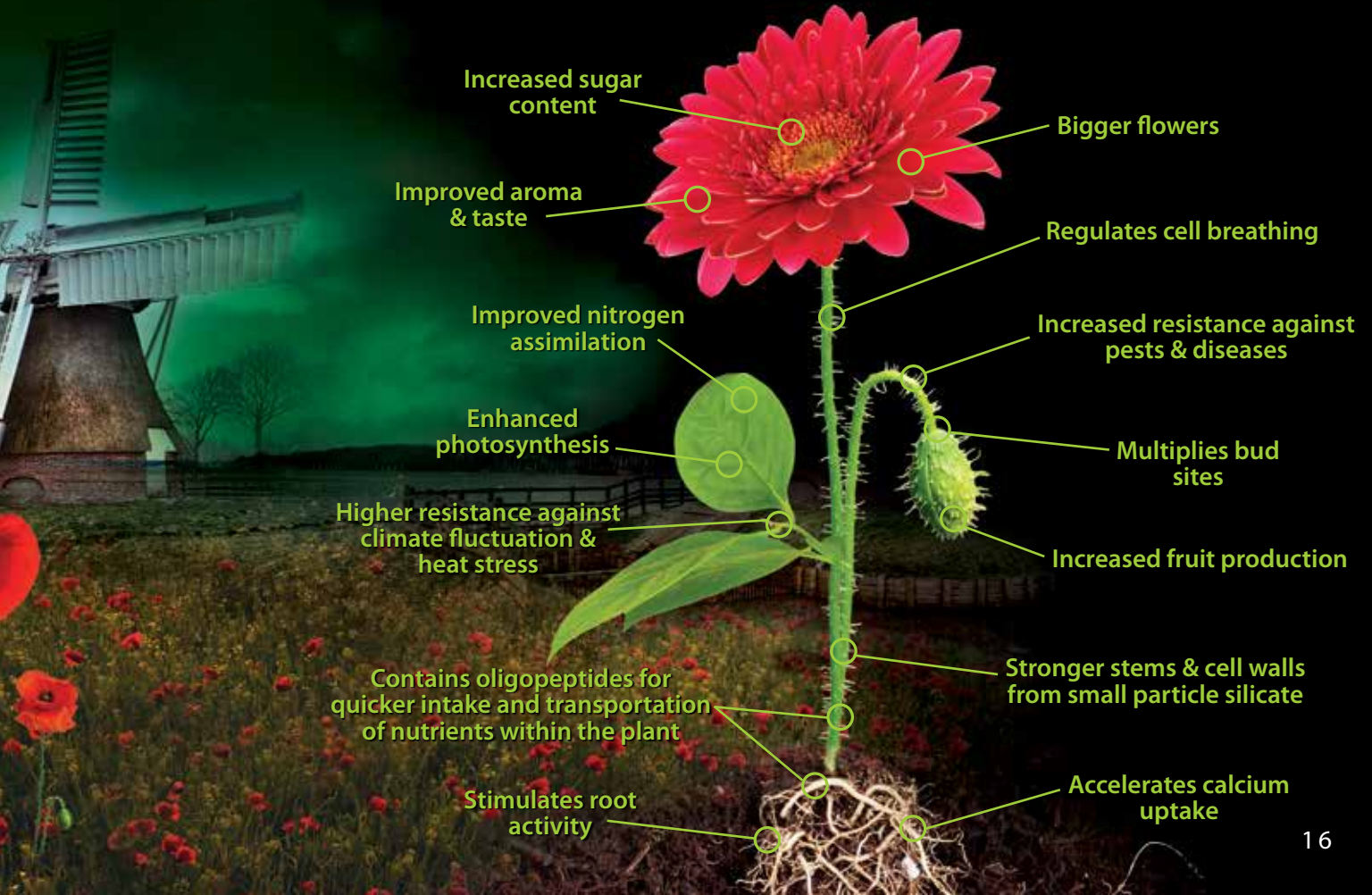
GROWTH



BLOOM

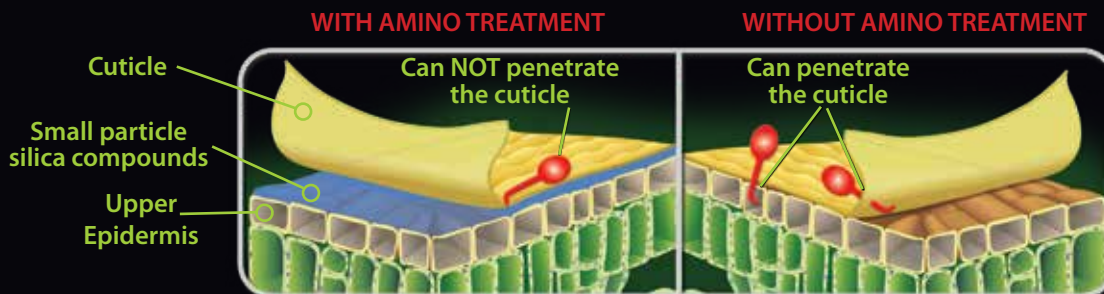


WHY AMINO TREATMENT?



MORE GREAT REASONS TO USE AMINO TREATMENT

SILICA - why it is so important for your plants?



Silicon reinforces plants defense system both physically and chemically. Physically, solidified silicon deposits just below the leaf surface increase the resistance to penetration by fungal spores and insects. Silicon is now considered to have a catalytic role in the expression of physiological resistance. Soluble silicon absorbed by plants acts as a catalyst in the plants resistance mechanisms. Hence, pest, disease and pathogens attempting to feed on silicon positive plants will struggle to feed without interference by natural plant defense compounds.

Silicon nutrition has also proven to demonstrate more heat tolerance in crops.

SEED EXTRACT - The power of new life.

I discovered a very powerful substance in plant seeds; I managed to isolate this material and started combining it with other substances. This effort resulted in an extremely powerful new plants food for the industrial market: Amino Treatment!" William van der Zwaan – Creator of Amino Treatment

- *Promotes incredible vigour and rapid growth.*
- *Enzymes act to stimulate plant biological processes.*
- *Amino acids increase sugar content within fruit.*





AMINO[®] TREATMENT

HOW TO USE AMINO TREATMENT EFFECTIVELY TO GET THE BEST RESULTS

Amino Treatment is a powerful growth stimulant that will provide enhanced root, shoot and leaf development. For best possible practice, ensure to follow the below recommended feed charts and these two helpful tips:

1. Amino acids help increase chlorophyll concentration in the plant, leading to a higher rate of photosynthesis.

This makes crops lush and green, increasing plant vigour and overall yields. Your crop will require a slight increase in watering when compared to non-amino treated crops, but always be careful not to over water in moisture retentive substrates (ie. Coco Coir)

2. Stressed? Try the Amino Therapy!

The concentrated complex sea kelp component of Amino Treatment helps to relieve stress in traumatised plants. Increase dosage to maximum ratio (1ml/L) immediately after transplant, heat/cold or environmental disturbance.

GROW



FLOWER



DRIP CLEAN

House & Garden Drip Clean is safe for all varieties of plants and is effective in tap or filtered water. Drip Clean uses a form of 'magnetised' potassium molecule to isolate select compounds and prevent salt build-ups in your pipes and growing medium.

Salt accumulations can cause nutrient toxicities and negatively affect plant growth. Drip clean works to effectively clean your plumbing and growing substrate. House & Garden's secret formula also helps to reduce flush times at the end of a harvest!

Drip Clean is compatible with all mediums and existing nutrient solutions. Using an ultra efficient dosage of 0.1ml/L, we recommend administering Drip Clean at every feeding.

House & Garden Drip Clean can be used effectively in a range of substrates including Coco Fibre, Rockwool, Perlite and Clayballs. It is effective in both recirculating and run-to-waste systems.

• Dosage: 1ml/10L

Available in 250ml, 500ml, 1L & 5L



GROWTH



BLOOM



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STOP BLOCKED PIPES

AND REDUCE YOUR NEED TO FLUSH

Mega
Concentrated
0.1ML/L

With
Drip Clean
NO
Drip Clean

Blockage due to
build up of salt,
dirt and grime
= Restricted
flow

Keeps poly
pipes, joiners
and spray jets
etc... Clean and
free of debris.

Water flows
with ease

Water

Nutrient

Salt

Drip Clean helps
prevent salt
accumulating in coco
and soil substrates

Drip Clean separates
the salts particles
from your nutrients,
allowing them to be
more soluble.



MASTER BLOOM ADVICE

WANT BIGGER FRUIT AND FLOWERS?



Find out how with our 5 secrets to booming blooming!

We understand that floras utilise different ratios and quantities of mineral nutrient during the distinctive stages of growth and according to their environmental conditions. When flowering the growth patterns and internal chemistry changes, stems elongate, leaf structure varies, green chlorophyll production slows and less nitrogen is required.

To reach the plants floral genetic potential we need to understand and recognise these physiological changes in our crop so we can adjust accordingly. Try following our 5 steps for booming blooming and see the results first hand!

1. Nutritional Demands for Macro & Trace elements

Plants biologically require a complete balanced profile of macro and trace elements throughout all growth stages. Inadequate or excessive quantities of any essential macro or microelement will negatively affect plant growth. Ensure you're following our precisely calculated feed charts; we've done all the hard work for you.

2. Organic is always essential

Organic biostimulants such as kelp, amino acids and enzymes aid in overall plant health through a variety of biological processes. Amino acids for example, incite enzyme production and promote the natural breakdown of nutrients within the medium for increased plant consumption. Organics also encourage far greater beneficial bacteria, trichoderma and mycorrhizal activity. This aids plant development in a beautiful symbiotic relationship.

3. Environmental Control

For generative growth in photoperiodic plants we understand the required lighting is usually 12hrs / 12hrs off. We need to remember the changes that occur as lighting can drastically influence temperature and humidity levels. Always ensure you have appropriate environmental control to account for increased night time humidity spikes as well as daytime heat and humidity control. Aim for 50-60% humidity and you shouldn't encounter any problems.

4. Make your plants work harder

Crop manipulation and selective training will ensure you can maximise your spatial efficiency and get the most from every plant. Investigate the best relevant practices for your crop species but always be tender so as to not shock the plant. De-leafing, topping, supercropping and LST are all different methods of adapting the plant to better suit their surroundings. If done effectively, this can increase airflow to the plant and reduce problems with mould and bacteria on flowers.

5. Select your genetics carefully

For the best possible results in any field of horticulture it's essential to begin with the best possible genetics available for the selected plant species. My favourite homegrown strawberries came from a rare hybrid that my aunty had produced on her farm outside of Sydney. Regardless of the seasonal weather and how much I neglected them, they still outperformed my average store-bought strawberry seedlings. Try searching online for the elite providers of your desired plant species, and try to pick genetics that suit your current climate.



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TOP BOOSTER

House & Garden Top Booster has been precisely designed to alter the nutritional ratio of your feed according to plant demands. This encourages a more enthusiastic reproductive cycle (floral growth) from the plant. The PK aids in fruit set development, fruit bulking, stem and root expansion and uptake of other minerals.

Top Booster also incorporates a specific form of Eddha-Fe (Iron) as this reduces chlorosis in leaves and triggers the production of autumn hormones, namely ethylene, to promote additional floral development and to regulating the ripening of fruit.

- *Initiates flowering.*
- *Stimulates flowering.*
- *Improves plant respiration.*
- *Better than straight pk13/14. with additional EDDHA-Fe Iron.*
- *Larger fruits.*
- *Dosage:1.5ml/L*

Available in 1L, 5L, 10L & 20L

Warning: Do not use at the same time as other PK based additives

PK 13/14
WITH ADDED IRON!



BUD-XL

House & Garden Bud XL has the unique ability to extract sugars from the leaves of the plant and transfer them to the fruit. The fruit is made sweeter and its taste is improved.

Bud XL will also increase the size and robustness of the plant's fruits, which in turn will result in an increase in the final yield. It has been known for a century that enzymes act as a transporter and distributor of sugars in the plant. Bud XL uses these enzymes to extract the sugars and give you the grower heavier and denser flowering sites

Start adding Bud-XL to the nutrient after the first flowers are formed. This is the period that the big bract loses its function. By adding Bud-XL you ensure that the plant's energy is no longer used for keeping the bract, but is directed to forming flowers and fruits.

- *Enzyme based booster.*
- *Redirects stored sugars and carbs to the fruits/flowers.*
- *Uses the plants own resources.*
- *Enhances essential oil production.*
- *Dosage: 1ml/L*

Available in 500ml, 1L, 5L & 20L



BLOOM



SHOOTING POWDER & TOP SHOOTER

House & Garden Shooting Powder and Top Shooter are the secret behind every successful grower. These bud expanders are the absolute best in the field of flowering stimulators. Giving visible results and works brilliantly with all base nutrients. Our revolutionary flower expanders are available in powder or liquid form, same great results, the choice is yours.

House & Garden Shooting Powder and Top Shooter are extremely powerful stimulants so only use if your plant is significantly healthy as it is a very strong agent that demands much from the plant.

- *Triggers your plants into initiating a second cycle of new flower development.*
- *Continuous cell division.*
- *Foaming bloom expander.*
- *Visible results in 2 days.*
- *Builds flowers on flowers on flowers.*
- *Outweighs the competition.*

Shooting Powder Dosage: *1-2 sachet/100L*
Available in 5 sachet and 20 sachet packs

Top Shooter Dosage: *0.5-2ml/L*
Available 100ml, 250ml, 500ml & 1L



Powder *on* **Liquid**
the choice is yours

WHY SHOOTING POWDER IS SO BENEFICIAL

Restimulates the flowering process



WEEK 6

The flower is forced into a new flowering cycle after the first cycle has ended. Results are visible in 2 days.

The flower starts new cell division



WEEK 7

The flower becomes noticeably bigger as the new flowering process grows on top of the existing flower

Bigger Results



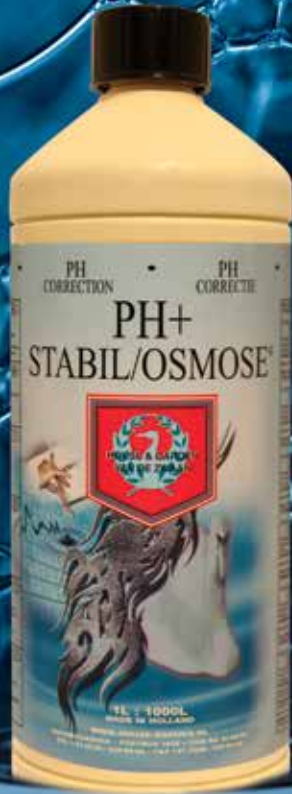
WEEK 8

The flower is much bigger and heavier with a tighter overall density. Essential oil production is increased which could increase yield up to 30 % or more.

THE WORLD'S FINEST BLOOM EXPANDER

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PH STABILISER



House & Garden pH Stabiliser has been developed in order to balance the pH in hydroponic systems. pH Stabiliser adds essential carbonates that allow for stable cation exchange when using A/B nutrients. pH Stabiliser should be added to any systems using Reverse Osmosis filtration, or extremely soft base water sources. pH Stabiliser will harmonise with the base nutrient and ensure pH consistency and effective nutrient absorption. Recommended for use for up to 10 days in recirculating systems or reservoirs.

A correct pH value leads to better absorption of the main and trace elements. Therefore, maintaining a correct pH value results in better growth and higher yields.

- *Stabilises pH for up to 10 days .*
- *Eliminates pH fluctuation in RO and rainwater.*

• *Dosage: 1ml/L*

Available in 1L



STARTER KIT

The House & Garden Starter Kit provides growers with our complete range of base nutrients and stimulants. This is a precisely calculated feeding regime with each unique essential component provided in their specific bottle for seriously impressive results.

Using the complete range of H&G Nutrients ensures your plants reach their genetic potential. Prize winning results can be achieved as we have included all required macro and trace elements, enzymes, co-enzymes, amino acids, vitamins and stimulants to achieve those maximum yields!

House & Garden Starter Kit contains:

- 1 x 1L H&G Base Nutrients A+B set (Cocos, Hydro, Aqua Flakes or Soil)
- 1 x 250ml Drip Clean
- 1 x 250ml Multizyme
- 1 x 250ml Bud XL
- 1 x 250ml Nitrogen
- 1 x 250ml Top Booster
- 1 x 100ml Roots Excelurator
- 1 x 100ml Amino Treatment
- 2 x Sachet Shooting Powder



COCOS



House & Garden Cocos is a natural plant substrate made from the cleanest coco peat available in the world today, direct from one of the leading substrate manufacturers in The Netherlands. H&G Cocos is not sterilised or treated with harmful chemicals to retain the natural beneficial of the cocos substrate. H&G Cocos has a perfect air/water ratio is washed in fresh water, has a low E.C. level and is pH stable. For best results use with H&G Cocos A+B base nutrient.

Coco Coir is a sustainable and environmentally friendly, organic growing medium. It has incredible nutrient and moisture retention properties, making it a favourite for hobby and commercial growers alike!

- RHP quality, suitable for horticulture.
- Produced by one of the largest substrate manufacturers in Holland.
- Washed in FRESH water in Holland.
- No Chemical treatment.
- Non Methyl Bromide fumigated.
- Natural Trichoderma and beneficials.
- Low EC, natural PH.
- For best results use with H&G Cocos A+B base nutrient.

Cultivating Connoisseur Champions in Coco Coir

Coco coir is an organic substrate used extensively throughout many commercial agricultural sectors. Shredding and pulverising used coconut husks provides a sustainable and potent grow 'media' that has amazing moisture and aeration capacity. In protected cropping coco provides the ability to consistently feed and irrigate our plants whilst encouraging the benefits of healthy microbial activity.

Coco coir is used in a variety of different growing methodologies but predominantly commercial production irrigates using an A/B nutrient in a 'run-to-waste' system design. Using our specific H&G Coco A/B nutrient allows for the correct ratio of macro and trace elements to account for the coco substrates' existing characteristics. Our additives also stimulate incredibly organic microbial growth in coco coir; perfect for prize winning flowers!

Coco coir is an incredibly effective soil replacement for production horticulture, however it is still essential to question the source and processing of all coir products. Our H&G Coco is always double-rinsed using pH balanced, Dutch tap water and RHP Certified for horticulture. This ensures clean, consistent and reliable substrate that can be used in hobby gardens, commercial agriculture and research applications alike.

Coco coir is a forgiving and productive method of growing heavy yielding plants – ask your local retailer about the various coco-based systems and H&G Coco nutrients available!





CLASSIC NUTRIENT FEED GUIDE

COCOS - HYDRO - AQUA FLAKES - SOIL



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GROWTH STAGE



FLOWER STAGE



PRODUCT	GROWTH STAGE				FLOWER STAGE					FLOWER STAGE		
	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8
COCOS / HYDRO & AQUA FLAKES A&B	1.5ml/ltr	2ml/ltr	2.5ml/ltr	2.75ml/ltr	2.75ml/ltr	3ml/ltr	3ml/ltr	3ml/ltr	3ml/ltr	1.5ml/ltr	1.5ml/ltr	1.5ml/ltr
OR	Do NOT use Cocos / Hydro / Aqua Flakes or Soil base nutrient at the same time											
SOIL A&B	2ml/ltr	2.5ml/ltr	3ml/ltr	3.5ml/ltr	4ml/ltr	5ml/ltr	5ml/ltr	5ml/ltr	5ml/ltr	2ml/ltr	2ml/ltr	2ml/ltr
NUTRIENT STRENGTH 700 - EC/PPM	1.2EC 840PPM	1.4-1.6EC 960-1140PPM	1.6-1.8EC 1140-1260PPM	1.8EC 1260PPM	1.8EC 1260PPM	2.0EC 1440PPM	2.0EC 1440PPM	2.0EC 1440PPM	2.0EC 1440PPM	1.2EC 840PPM	1.2EC 840PPM	1.2EC 840PPM
ROOTS EXCELURATOR	0.3ml/ltr	0.3ml/ltr	0.3ml/ltr	0.3ml/ltr	0.3ml/ltr	0.3ml/ltr				0.3ml/ltr	0.3ml/ltr	0.3ml/ltr
AMINO TREATMENT	0.2ml/ltr	0.25ml/ltr	0.35ml/ltr	0.5ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr				
MULTIZYME	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr
MAGIC GREEN	0.5ml/ltr	1ml/ltr	1.5ml/ltr	2ml/ltr	Foliar spray - Apply maximum twice a week Do NOT add to reservoir							
BUD XL								1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr
DRIP CLEAN	0.1ml/ltr	0.1ml/ltr	0.1ml/ltr	0.1ml/ltr	0.1ml/ltr	0.1ml/ltr	0.1ml/ltr	0.1ml/ltr	0.1ml/ltr	0.1ml/ltr	0.1ml/ltr	0.1ml/ltr
TOP BOOSTER									1.5ml/ltr			
SHOOTING POWDER										1 Sachet per 100ltr	2 Sachet per 100ltr	2 Sachet per 100ltr
OR	Do NOT use Shooting Powder and Top Shooter at the same time											
TOP SHOOTER										0.5ml/L	1ml/L	1ml/L

Always take the EC/PPM value first. EC/PPM values of base water differ per region. All measurements are in metric litres. H&G accept no responsibility for user error.

For more information and nutrient calculator please visit: www.house-garden.com.au



PRO NUTRIENT FEED GUIDE

COCOS - HYDRO - AQUA FLAKES - SOIL



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GROWTH STAGE



FLOWER STAGE



PRODUCT	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8
COCOS / HYDRO & AQUA FLAKES A&B	1.5ml/ltr	2ml/ltr	2.5ml/ltr	2.75ml/ltr	2.75ml/ltr	3ml/ltr	3ml/ltr	3ml/ltr	3ml/ltr	1.5ml/ltr	1.5ml/ltr	1.5ml/ltr
OR	Do NOT use Cocos / Hydro / Aqua Flakes or Soil base nutrient at the same time											
SOIL A&B	2ml/ltr	2.5ml/ltr	3ml/ltr	3.5ml/ltr	4ml/ltr	5ml/ltr	5ml/ltr	5ml/ltr	5ml/ltr	2ml/ltr	2ml/ltr	2ml/ltr
NUTRIENT STRENGTH 700 - EC/PPM	1.2EC 840PPM	1.4-1.6EC 960-1140PPM	1.6-1.8EC 1140-1260PPM	1.8EC 1260PPM	1.8EC 1260PPM	2.0EC 1440PPM	2.0EC 1440PPM	2.0EC 1440PPM	2.0EC 1440PPM	1.2EC 840PPM	1.2EC 840PPM	1.2EC 840PPM
ROOTS EXCELURATOR	0.3ml/ltr	0.3ml/ltr	0.3ml/ltr	0.3ml/ltr	0.3ml/ltr	0.3ml/ltr				0.3ml/ltr	0.3ml/ltr	0.3ml/ltr
AMINO TREATMENT	0.2ml/ltr	0.25ml/ltr	0.35ml/ltr	0.5ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr				
ALGEN EXTRACT	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr
MULTIZYME	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr
NITROGEN	0.25ml/ltr	0.5ml/ltr	1ml/ltr	1ml/ltr								
MAGNESIUM MgO 8%	0.5ml/ltr	0.5ml/ltr	0.5ml/ltr	0.5ml/ltr	0.5ml/ltr	0.5ml/ltr	0.5ml/ltr	0.5ml/ltr	0.5ml/ltr	0.5ml/ltr	0.5ml/ltr	0.5ml/ltr
MAGIC GREEN	0.5ml/ltr	1ml/ltr	1.5ml/ltr	2ml/ltr	Foliar spray - Apply maximum twice a week							
BUD XL								1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr	1ml/ltr
DRIP CLEAN	0.1ml/ltr	0.1ml/ltr	0.1ml/ltr	0.1ml/ltr	0.1ml/ltr	0.1ml/ltr	0.1ml/ltr	0.1ml/ltr	0.1ml/ltr	0.1ml/ltr	0.1ml/ltr	0.1ml/ltr
TOP BOOSTER									1.5ml/ltr			
SHOOTING POWDER										1 Sachet per 100ltr	2 Sachet per 100ltr	2 Sachet per 100ltr
OR	Do NOT use Shooting Powder and Top Shooter at the same time											
TOP SHOOTER										0.5ml/L	1ml/L	1ml/L

FLUSH • FLUSH • FLUSH • FLUSH • FLUSH • FLUSH • FLUSH • FLUSH • FLUSH • FLUSH • FLUSH • FLUSH • FLUSH



Notes



HYDROPONIC SYSTEMS

CHOOSING THE RIGHT SYSTEM

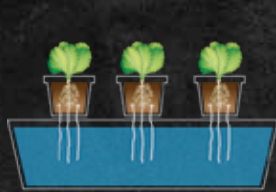
There is an infinite amount of possibilities when designing a hydroponic system, and there is no perfect answer as to which is best. It all depends on the selected crop variety, the external environment, your desired output and many other factors. Always take the time to properly plan and prepare your hydroponic system to maximise yields. It's also very important to design for easy management and low ongoing maintenance.

Hydroponic systems are generally classed into two categories – 'Run-to-waste' or 'Recirculating'. Both have their advantages and disadvantages for both the grower and the crop. Variations in energy usage, feeding method, growing medium, delivery mechanisms and irrigation arrangements will all affect the crop growth.

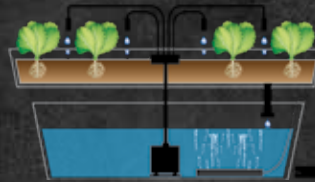
Here are some of the more common arrangements for hydroponic systems; it's always worth discussing with your local retailer about which design is best suited for your needs.



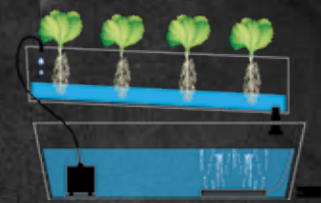
VARIOUS TYPES OF GROW SYSTEMS



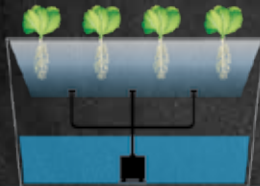
Wick



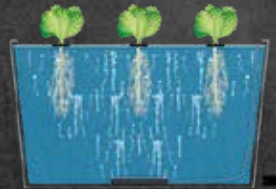
Drip



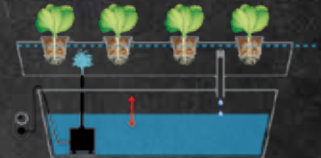
NFT



Aeroponics



DWC - Deep Water Culture



Ebb & Flow



Hand water



Run to waste system



Willma



NUTRIENT MIXING INSTRUCTIONS

HOW TO GET THE BEST RESULTS

When using a complete nutrient feeding schedule it's important to know the best way to apply your plant food. Our bottled regime has been precisely calculated to ensure the unique ingredients in each bottle assimilate perfectly when mixed into your reservoir; but it's still important to follow the following key guidelines:

1. Don't mix the concentrated ingredients together, ever!

Our mineral nutrients, additives and stimulants have been carefully separated into their individual bottles and must be diluted with water before combining. When mixed in their pure form, negative reactions, mineral lockout and coagulation can occur. If you're using more organic additives, or a range of nutrient brands, we strongly recommend mixing the concentrate into a smaller quantity of water before adding this to your main reservoir or watering can.

2. Test, test again and calibrate... regularly!

A reliable and trustworthy pH and EC tester are your most essential tools. These are scientific measuring devices, treat them carefully and always remember to clean regularly. Discuss the most appropriate model with your local hydroponic retailer and try to stick to recognised and reliable brands (we recommend Bluelab or Milwaukee). It's essential that you calibrate both pH and EC devices at least once per month.

3. Understand what you're giving your garden.

It might sound straightforward but always read the label and research the products that you decide to feed your garden. If you're growing a consumable crop, always ensure you utilise healthy and food/technical grade ingredients. It's worth researching the different hydroponic nutrient brands and products to understand their best practice usage.

GENERAL MIXING INSTRUCTIONS

- Check the starting pH and EC/PPM of your source water

**Caution: H&G Feed Guide and dilution rates are calculated using reverse osmosis filtered water, always ensure to measure accordingly.*

- **Add Base Nutrient A** - mix thoroughly and let stand.
- **Add Base Nutrient B** - mix thoroughly and let stand.
- Check EC/PPM levels
 - Add more nutrient or water until the desired EC/PPM level is reached
 - See our Feed Guide for approximate EC targets throughout the plant life cycle
 - Account for additives potential slight influence on pH and EC
- **Add Additives & Stimulants** as directed by the H&G Feed Guide - mix thoroughly and let stand
- Check your EC/PPM levels.
- Check pH and adjust if necessary: Hydro: 5.5 - 6.0
Aqua Flakes: 5.6 - 6.2
Cocos: 5.6 - 6.2
Soil: 5.8 - 6.5

Always ensure regular monitoring of your nutrient solution and key parameters (pH, EC and water temperatures) as these can drastically affect crop performance.

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A person wearing a black tuxedo jacket, a white shirt, and a black bow tie is holding a yellow and blue bottle of 'DRIP CLEAN' disinfectant. The bottle has a label with a red circular logo and some text. The background is dark and textured.

GROW ROOM ETIQUETTE

WHY ITS IMPORTANT TO BE CLEAN

The ultimate lesson for new growers is that cleanliness is key. Prevention of pest and disease infestation is significantly easier than fixing a problem in an enclosed environment. It's imperative that you keep all floors, surfaces, tools, equipment and clothing clean and disinfected throughout a crop. Here are some other aspects of growroom etiquette to keep your harvest happy and healthy.

1. Disinfect tools and pots before each use:

Use isopropyl alcohol or alcohol wipes to thoroughly clean all tools and equipment before each use. It's worth having a separate set of tools specifically for your growing environment. Scalpels, scissors, pruning shears and your hands are all effective vectors for pests and pathogens. Try to prevent cross contamination by sterilising tools in between different rooms, plants and varieties.

Always wash your hands (and shoes) before entering a sealed growing environment!

2. As a good life lesson, always wear clean clothes!

Depending on your circumstances it can be useful to keep a sterile/clean pair of clothes or shoes only for use in your growroom. In commercial greenhouses, all staff are required to wear protective cotton jackets and hair nets to prevent any potential contamination.

3. Keep up a healthy flow:

Salt build-ups and toxicities can occur in plumbing, pumps, reservoirs and within your substrate. Always ensure to use Drip Clean and flush according to the system demands to prevent clogged pipes and nutrient lockout. This will encourage the longevity of your system and allow for better tasting fruits at the end of a harvest!

Always remember to use H&G Drip Clean to prevent build ups and keep your pipes clean!

4. Pets are not good for plants!

Always ensure that pets don't sneak into growrooms or visit while you're working on the crop. Pet fur and their lack of sterile practices can cause havoc in a sealed environment, and some have a habit of nibbling at delicious fruit or flowers!

5. Smoking is bad for your plants too!

Cigarette smoke and certain infected tobacco products can contaminate workers hands. Cigars, cigarettes, and pipe tobaccos can be infected with tobacco mosaic virus. This causes drastic leaf discolouration and mottled colours; distortion of fruit set and heavily reduced harvest. TMV is often mistaken for herbicide damage or mineral deficiency. The carcinogens in the smoke is also extremely toxic to your plants, always ensure you take cigarette breaks in responsible locations and make sure to thoroughly wash your hands after smoking!

Planning and appropriate preparation is essential for beautiful plants and a healthy harvest. It's always better to err on the side of caution with production horticulture hygiene practices. Clean initial working practices will also save you money throughout the life of the crop; no wasting money on expensive remedies for problems!



IDENTIFYING INSECTS AND PESTS

PREVENTION IS ALWAYS BETTER THAN REMEDY

Troubleshooting for protected cropping requires a comprehensive and multifaceted approach. Often plants will show signs of suffering through different symptoms that may be a result of environmental, nutritional and/or pests and diseases. It can be difficult to precisely pinpoint a problem but if you're looking for the right signs, you can narrow down the potential cause for distress.

Pest infestation can cause a range of symptoms during the different stages of the pest's life cycles. Some issues are easily noticed and obvious however some can require the use of magnification and extremely regular observation. Always check your plants daily for signs such as eggs, damage to leaf or stem structure, tracks or other indicative marks.

Pest and disease infestation is usually caused by poor sanitary conditions and lazy workplace procedures in the garden. Constantly ensure to follow strict cleanliness processes to prevent contamination. It is essential to wear protective attire and always disinfect your tools.

It's recommended to install sticky traps (yellow and blue) for simplified pest ID and to accurately monitor pest populations. A jeweller's loupe, magnifier or microscope may be necessary to correctly identify a disease or pest problem.

We have included the 6 most common protected cropping pests and how to identify them before they cause too much damage.

IDENTIFICATION OF PESTS

Fungus Gnat (Sciaridae fly)



Small black, mosquito like flies.

Larvae are primarily fungus feeders but will feed on roots, root hairs, callus, organic matter present in the growing media. Large larvae may feed on the insides of roots.

Greenhouse Whitefly



Look like a small, white moth.

Whitefly hide underneath leaves and suck sap from them resulting in the stunting of new shoots. May cause white speckles, known as stipples on the tops of leaves.

Two-Spotted Spider Mite



Tiny pinkish-red mites.

Mites mostly appear on the underside of the leaves where they pierce plant cells and suck out their contents, thus leaves turning completely yellow. Nymphs and adults both produce webs.

Thrip



0.5mm – 15mm long and range in colour from white to yellow to black.

Thrip attack the flowers, fruit and foliage of a variety of plants. Thrip lay eggs inside plant tissue and unopened buds, the pupae feed on plant juices.

Aphids



Small soft bodied, pear-shaped insects - variety of colours.

Aphids use their piercing sucking mouthparts to feed on plant sap. They usually occur in colonies on the undersides of tender terminal growth. Leaves may pucker or to become severely distorted.

Green Caterpillar



Green soft bodied larvae

Droppings accumulate on the plant and between buds. They eat floral clusters from the inside out. Caterpillars also act as a vector for disease. Most leaf eating varieties spend time manipulating and eating leaves.



IDENTIFYING PLANT DEFICIENCIES

HEALTHY PLANTS = HEALTHIER YIELDS

Horticultural crops can be grown with a variety of different nutritional sources but the quality, quantity and residual contaminants of the end harvest will be drastically influenced. With the proper nutrient formula and the right conditions crops can be cultivated to reach their true genetic potential.

Fruiting crops require the non-mineral nutrients Carbon, Hydrogen and Oxygen to manufacture energy and develop. Carbon from the air is secured via photosynthesis and Hydrogen atoms are sourced almost totally from water. The oxygen in the atmosphere is used in respiration and other plant processes. The rest of the elements (mineral nutrients) are absorbed from the growing medium and nutrient solution. These supplemental nutrients in the form of fertiliser fulfil the complete needs of the plant to ensure it develops naturally.

Nutrients are classified into 2 main categories: Macronutrients (primary nutrients) and Micronutrients (Trace elements) depending on the ratio of how much of each compound the plant requires. Liebig's 'law of minimums' states that there are 16 essential elements required for the complete plant growth. Organic additives and biostimulants interact with bacterial life to influence the uptake and distribution of these elements.

Nutrients are also classified into mobile, semi-mobile or immobile depending on their ability to translocate from one part of the plant to another as needed. Mobile nutrients show symptoms on older, lower leaves first as the compound is drawn to the younger leaves.

Once you understand the way the plant interacts with its nutrient and the growing medium, it's much easier to diagnose and remedy any potential issues.

PLANT NUTRIENT DEFICIENCIES

Calcium (Ca)

New leaves misshapen or stunted. Existing leaves remain green.

Sulphur (S)

Leaves light green. Veins pale green. No spots.

Manganese (Mn)

Leaves pale in colour. Veins and venules dark green and reticulated.

Phosphorus (P)

Plant short and dark green. In extreme deficiencies turn brown or black. Bronze colour under the leaf.

Nitrogen (N)

Stunted growth. Extremely pale colour. Upright leaves with light green/yellowish. Appear burnt in extreme deficiency.

Iron (Fe)

Chlorosis of leaves pale. No spots. Major veins green.

Magnesium (Mg)

Paleness from leaf edges. Bronze or brown spots with cup shaped folds.

Potassium (K)

Small spots on the tips, edges of pale leaves. Spots turn rusty. Folds at tips.





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