

Growing made simple



AutoPot Watering Systems and Cultivation Consultancy

Why Choose AutoPot Watering Systems?

AutoPot Watering Systems and Cultivation Consultancy has been created to help support and advise the increase in demand for outdoor and indoor commercial crop production. In recent years, many companies have recognized the benefits of commercial production, whether under artificial lighting or under glass, with more new investors entering an increasingly popular market, we decided to create a dedicated consultancy that would help support and advise new companies on both growing methods, indoors and outdoors in conjunction with our irrigation technology. We are fully confident that once businesses are aware of our irrigation technology the choice will be quite straightforward... Growing in AutoPot Watering Systems is **simple, streamlined** and **highly productive**.

The consultancy is overseen by Jason S Ralph-Smith who is the designer of the AutoPot Watering Systems technology, he is also a director of AutoPot Watering Systems USA and the owner and Managing Director of the UK division AutoPot Global Ltd, which has been trading for over 20 years and supplies its products to over 50 countries around the globe.

Jason's knowledge, especially in commercial crop production is vast, he has been a horticulturalist for over 30 years. 20 years ago he was regarded as one of the foremost experts in the up and coming US indoor horticultural market, now 20 years later his knowledge is proving to be invaluable and extensive. Currently he is consultant to one of only two Home Office approved UK cultivation facilities.

In addition to Jason's work in the United Kingdom we are also currently consulting on commercial operations in the Mainland Europe, North and South America, Africa and Asia.

Our vast knowledge over many years in the horticulture business provides us with a huge advantage over our competitors, as we are not simply a company selling an irrigation system we also provide quality understandable advice. Our advice does not stop once the system is sold, we continually support our growers. We remove the uncertainty and alleviate any potential issues by helping with all horticultural aspects.

Offering our support and experience has proved invaluable as many business we have dealt with over the years have been new ventures, sometimes with little commercial crop production knowledge. With our continual help we very quickly assist in making them streamlined and profitable. All start-up ventures need support when entering into a new market. We are fully confident that with our technology, unparalleled advice and knowledge they will be a success.

What we Offer:

- **Complete turnkey Growing Operation from Stock Plant Area to Production Areas**
- **CAD 2D platform to help create growing areas or plant layouts of any size or shape**
- **Full horticultural back-up support**
- **Flexible consultancy packages to suit all business models**
- **Free Skype advice service**
- **Unrivalled horticultural knowledge**
- **Over 25 years of experience in horticulture, in over 50 countries**

Advantages and Benefits:

1. All of our watering systems operate without the need for power, pumps or timers. Straight away this offers a huge saving in power consumption.
2. Our watering systems **ONLY** require simple gravity pressure from a reservoir of any size to function.
3. AutoPot Watering Systems are the only systems in the world that allow the plants to be in control of their own requirements. This simply means that each plant in each tray will control its own watering and feeding requirements, in conjunction with the AQUAvalve.
4. No water or fertilizer is ever wasted, every drop supplied to each plant is consumed, AutoPot Watering Systems have proved that its technology saves between 40-45% of all water and fertilizer used. No other irrigation system can boast this claim. Our irrigation technology has been proven to be one of the most water and nutrient efficient irrigation systems worldwide.
5. Hand Watering is undoubtedly the most common method of irrigating plants worldwide, this can be very time consuming and is not efficient when considering a business in commercial crop production. AutoPot Watering Systems will supply water and fertilizer to plants only when they require it. In case studies where previous clients have traditionally hand watered, we have shown that human intervention and knowledge are not as accurate as the plant itself. One case study revealed that a grower who had been watering his plants by hand for 20 years and watered his plants every day with 20 gallons of water and fertilizer, quickly discovered that his plants were actually consuming over 40 gallons per

day after switching his entire operation over to AutoPot Watering Systems he had unknowingly been under watering his plants for 20 years. In turn he increased his production by over 30% and reduced his workload by 80%. The most common problem with hand watering is how much and how often to feed, with the outcome often resulting in under watering or over watering. Using AutoPot Watering Systems these issues are completely removed.

6. All AutoPot Watering Systems are modular. Each unit or tray can be positioned at will and can be moved or re-positioned at any stage. Any system size can be created, any system can also be extended or increased at any time. This allows for total flexibility when growing with AutoPot Watering Systems.
7. Mineral Feeding - AutoPot Watering systems can accommodate either mineral feeding or organic feeding. If mineral feeding is selected as the choice of supplying the plants with food, the fertilizer is simply added to the water in the reservoir at the correct rates. So every time a plant requires water it will also receive the correct amount of nutrients. We strongly advise that if using mineral fertilizers that a water sample is collected, this water sample can then be tested and a reputable nutrient manufacturer can then create a clean fertilizer suitable for the plants in question.
8. Organic Feeding - If the grower decides to grow organically, there are two principle means of feeding. Organic time realise tablets and beneficial bacteria can be blended with the substrate and the reservoir can be used to supply water alone. In this instance tablets and bacteria should be used in accordance with the nutrient suppliers instructions. The second option is to use an organic soil that will provide sustenance to the plants for a period of time. During the useful lifespan of the

organic soil only water is supplied from the reservoir. Once the nutrients present in the soil are exhausted, organic liquid feed, either in solution or soluble form, may be administered via a second, separate reservoir. Once a week the second reservoir should be connected to the system for a period of 24 hours. After this period the plants should return to water only from reservoir one. Organic fertilizers should be mixed the day before and used within 48 hours to supply a hit of organic feed every 5-7 days. We do not advise that liquid organic fertilizers are used on a constant basis nor do we recommend use of a single reservoir if using organic nutrients. Liquid organic fertilizers SEPARATE if left in a reservoir for too long, potentially impairing the efficiency of the system and confusing correct nutrient dosage.

9. Unlike many other automated watering systems that require constant recalibration of the nutrient solution to amend pH, Ec/cF and ppm levels. AutoPot Watering Systems reservoirs never need to be re-calibrated as the water does not recirculate. This ensures that the correct ppm, Ec/cF and pH are supplied to the plants every time they require nutrient enriched water. As the water only ever travels in one direction - from the supply reservoir to the trays - the potential spread of disease is greatly reduced. In recirculating systems if one plant has a disease it's highly likely that others will also inherit the disease, potentially destroying the entire crop.

Contents

Page 2	Why Choose AutoPot Watering Systems?
Pages 4-5	AutoPot Watering Systems Technology
Pages 6-7	Stock Plant Area
Pages 8-9	Propagation Area
Pages 10-11	Vegetative Stage 1
Page 12	Production Area Option 1
Page 13	Production Area Option 2
Page 14	Production Area Option 3
Page 15	Production Area Option 4
Page 16	Tray Systems
Page 17	Rolling Benches
Page 18	Lighting
Page 19	Additional Information



AutoPot Watering Systems Technology

Tray Systems

Multiple pots fed by a single AQUAvalve, radically reducing the footprint of your system and simplifying maintenance. Tray systems allow you to take advantage of the vertical space you have without the concern of accessing a vast number of individual pots and trays. Not only are they simple to install and operate, they irrigate with zero run-off so don't require plumbing for waste water. Ideal for Production Areas featuring vertical racking. Custom configurations available.

See page 16 for further information



AQUAvalve

The patented AQUAvalve is the unique water control device at the heart of all AutoPot Watering Systems.

Once placed in the tray and connected to the water supply, the AQUAvalve will control the flow of water and nutrients to the plants by simple gravity pressure from a reservoir or tank of any size. No pumps, mains water pressure, electricity or computers are required.

In operation the AQUAvalve will open and allow water and nutrients to fill the tray to a pre-set level of 3/4" or 20mm. Once this pre-set level is reached the AQUAvalve will shut off the supply. Only once the plants have exhausted the supply of water and nutrients will the AQUAvalve reopen to repeat the cycle.

This closely mimics a wet and dry cycle but is considerably more effective as the plants are in control. At AutoPot we describe this technology as "Plant Controlled Irrigation" or PCI.

See pages 5, 6, 10 and 15 for further information



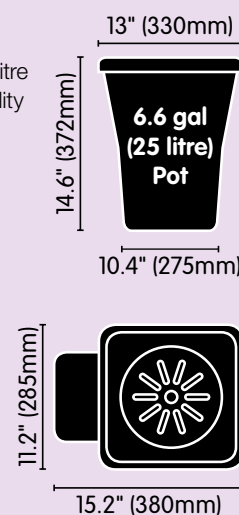
1Pot XL Module

The 1Pot XL module accommodates a 6.6 gallon/25 litre Pot. This "square-round" pot offers the grower the ability to rotate the pot, while it is still positioned in the tray.

The complete module can be positioned and re-positioned at any time, the pot and plant within can be removed and placed in another tray at any point. The flexibility and modular design enables the grower to create a layout of any shape or size, which can be altered or extended at any time.

This module can be used in the Production Area but is ideally suited to use in the Stock Plant Area where stock plants can be allowed to grow vigorously.

See pages 6 and 14 for further information



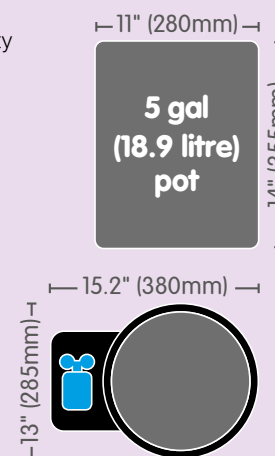
SmartPot XL Module

SmartPot XL Modules take the immense capacity and versatility of the 1Pot XL tray and incorporate the original, market-leading fabric SmartPot.

These 5 gallon/18.9 litre, BPA-free, fabric SmartPots offer growers the opportunity to raise bigger, faster growing plants in smaller pots. The porous pot sides are the key to SmartPots proven high performance, they offer:

- Air-Pruning and zero root circling - where roots contact the fabric pot sides they divide into a vast network of smaller, feeder roots rather than chasing around the inside of the pot.
- The increased number of secondary feeder roots vastly increases nutrient and water uptake.
- Increased oxygen exchange in the substrate via the porous pot sides supercharges growth.

See pages 6 and 14 for further information





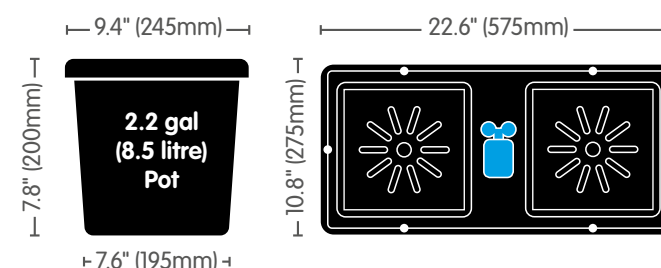
easy2grow Module

The easy2grow module consists of a double tray, that as standard is supplied with two 2.2 gallon/8.5 litre pots, this tray is also designed to accommodate the 3.9 gallon/ 15 litre pots.

The ability to interchange pot sizes between tray designs immediately offers the grower reduced transplantation times and in turn increases and speeds up growing schedules. Less transplantation between pots results in reduced transplantation shock.

As with the 1Pot XL module, all pots within the trays can be removed and repositioned at any time. Layouts can be created to suit all room designs of any shape or size, the complete easy2grow module can be moved or repositioned at will, if a room design needs to be changed or extended. Ideally the easy2grow module should be used in the Production Areas.

See page 12 for further information.



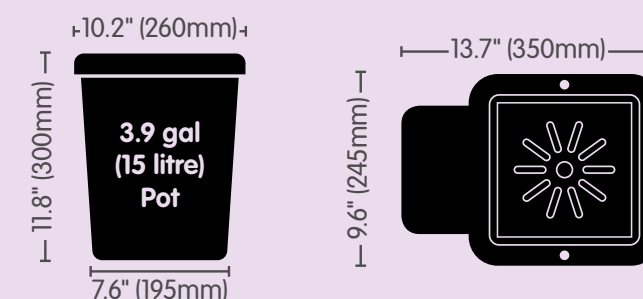
1Pot Module

The 1Pot module is a smaller version of the 1Pot XL design, as standard it is supplied with a 3.9 gallon/ 15 litre pot.

As with all our other tray designs, pots can be removed at will and repositioned to other grow areas at any time. Complete 1Pot modules can be repositioned at any time if a layout needs to be altered or extended with minimal disturbance to the plants. The 1Pot module is ideally suited to the Production Areas, as it offers flexibility to the grower, as the plants/modules, if required, can be spaced apart if plants encroach into each other.

Plants when ready can be simply placed in the 1Pot module trays in the Production Areas, resulting in a seamless transfer and assuring the grower that there is no down time or transplantation required

See page 13 for further information.



PlantSkirt

This light-tight, heat reflective shield protects nutrient solution and substrate from temperature fluctuation, algae and debris when growing in large open trays. Paired with the AQUAvalve Kit it provides a solution for growing even the largest of plants commercially.

See pages 6 and 15 for further information



AQUAvalve Kit

The AQUAvalve Kit has been designed to be used within standard flat trays up to a size of 18 sq feet / 2 sq meters.

AQUAvalve™

This method of irrigation is perfect in the early stages of plant growth and is ideal for seed trays and small pots. The AQUAvalve is simply placed directly on the flat tray surface and the AQUAvalve cover is placed over the top of the AQUAvalve. To ensure correct irrigation is maintained, we recommend that 1" / 25mm coconut matting is placed in the tray, or similar, so that seedlings and small pots DO NOT sit directly in the water. Once the AQUAvalve Kit is connected to a reservoir the tray will fill to a level of 3/4" or 20mm. As the plants are sitting on the coconut matting they do not become over saturated, only moisture from the top surface of the 1" / 25mm coconut matting will irrigate the seed trays and small pots, from below.

This simple method is very effective and accurate as the plants will access feed and water as and when they need it.



Stock Plant Area

We offer two solutions for Stock Plant Areas, the widely used 1Pot XL/XL SmartPot or the capaciously versatile PlantSkirt/AQUAvalve pairing.

1Pot XL

The 1Pot XL is ideally suited to use in the Stock Plant Area. A combination of modular design and a large size means plants can be allowed to grow efficiently, continuously and vigorously. It's modular design means that each 1Pot XL can be repositioned or removed without difficulty or detrimental effects on the system as a whole. This is essential in Stock Rooms where young plants are typically huddled together, thus reducing the lighting requirements. As the plants mature in the 1Pot XL they can easily be spaced apart. Plant development in the 1Pot XL is unhindered by the need to transfer to a larger pot such is the module's exceptional capacity.

Once the plants are established and have a good strong canopy they should be given 9 sq ft / 1 sq m of growing space for each 1Pot XL module. Ideally stock plants should be replaced every 12-18 months to ensure healthy cuttings are taken as plants can become tired and exhausted and can often harbor viruses and certain diseases that are ultimately transferred to cuttings (this is dependent on plant variety).



Suggested Temperature/Humidity Levels

The Stock Plant Room should be maintained at a constant temperature of between 72°F – 75°F. These temperatures should also be maintained during the dark period as huge swings in temperature must be minimized to ensure that good even growth is maintained at all times, if CO₂ is being used temperatures can be increased by 5-10 degrees. Humidity levels should be maintained between 55% – 65% at all times, once again these parameters need to be maintained during the dark periods.

As plants grow larger they will transpire more and in turn produce more natural humidity. Allowances will need to be taken into account to ensure that these parameters are maintained. Ensuring that all environmental conditions are maintained will help greatly towards healthy plant growth and in turn help the grower produce healthy, strong cuttings.

Suggested Lighting

HID lamps have traditionally been used in the Stock Plant Room to ensure optimum growth. Recent developments in lighting technology have also seen commercial cultivators adopt LED and Plasma fixtures.

Please go to page 18 for further information on suggested lighting.

XL SmartPot

The XL SmartPot utilises exactly the same tray as the 1Pot XL and retains all its modular benefits. However it also incorporates a custom made version of the market-leading 5 gallon fabric SmartPot.

As SmartPots typically produce bigger plants more quickly the benefits of such a module in a Stock Room area are clear; you stand to see fully developed mother plants sooner rather than later. This has implications for your entire commercial facility in terms of set-up time as the cuttings from these plants will ultimately populate your Propagation, Vegetative and Production Areas.

AQUAvalve with PlantSkirt

Growers wishing to cultivate longer term, larger stock plants may wish to incorporate a larger capacity pot of their choice with the AQUAvalve, PlantSkirt and open trays. AQUAvalve Kits can be placed in any garden tray in order to create an AutoPot Watering System. PlantSkirt protects the nutrient solution and exposed pot sides, in the otherwise open garden trays, from the adverse effects of heat, light, algae and debris.

Using such an arrangement in a Stock Room holds several great advantages for the grower. Options for pot and tray configurations are manifold. Growers operating under low plant counts also benefit from the scope to cultivate plants of an immense size.

For growers using the AQUAvalve/PlantSkirt pairing with garden trays plants can easily exceed 18 sq ft / 2 sq m in size depending on the pots used and varieties grown.



Above: Plants growing in 40 gallon/150 ltr fabric SmartPots sitting in 2.5 ft/80cm trays, protected by PlantSkirt and irrigated by AQUAvalve Kits.



Plants in Stock Plant Area growing in 1Pot XL Modules, provided with enough space to develop into large bushes so that 100s of cuttings can be taken.



Left and Right: Super hot chillies grown using XL SmartPot Modules (L) and 1Pot XL Modules (R)

Propagation Area

From the Stock Plant Room, cuttings are taken and then placed into seed trays, using a suitable substrate. To maximize space within the propagation area suitable staging/shelving should be designed.

Each shelf will accommodate a flat tray, within each tray a suitable platform for the seed trays to sit on is required, ideally coconut matting with a minimum depth of 1" (25mm) can be used to great effect, the matting is laid out in the tray, the seed trays will then sit on the coconut matting. A corner of the coconut matting is cut away so that the AQUAvalve Kit can be placed directly on the trays surface. Once all the trays are in position, the coconut matting has been placed in each tray and the AQUAvalve Kit is positioned in each corner of each tray, the AQUAvalve Kits can be connected to a reservoir via a network of pipe/tube, the reservoir will need to be higher than the highest shelf, to ensure gravity pressure from the reservoir is maintained. Once all the AQUAvalve Kits are connected to the reservoir and the tap is turned on, water will travel via gravity along the network of pipes to the AQUAvalves positioned in each tray. Our 4' by 2' easy2Propagate contains a flat garden tray, coco matting, root control sheet, humidity dome and AQUAvalve Kit.

The AQUAvalves will then allow water to fill each tray to a pre-set depth of 3/4" (20mm). Once this level is reached the AQUAvalve in each tray will shut off the incoming water. No further water will be provided to the plants until all the previous water has been consumed. As the small seed trays are sitting on the layer of coconut matting (above the 3/4" (20mm) flood level) they will never become water logged, simple capillary action between the surface of the coconut matting and the base of the seed trays provides gentle, even moisture to the base of the trays. To ensure that capillary action is started between the seed trays and the surface of the coconut matting ALL seed trays should be gently watered through with warm water from above once only. After this time the AQUAvalve Kits in each tray will ensure that all cuttings receive water as and when they require it. If required a quarter strength soluble fertilizer can also be added to the reservoir so that the young cuttings receive water and feed at the same time.



Suggested Temperature/ Humidity Levels

Ideally temperatures in the propagation area should **NEVER** drop below 80°F. It is extremely important that a constant temperature is maintained at this stage of the plants life as there is no root system. How fast the root system is generated depends on constant and even temperatures and humidity levels. Humidity should **NEVER** drop below 80%, although the room may be maintained at 80%, a common mistake is not measuring the humidity around the plants that are below the lights. Generally this will be lower due to the dry heat that radiates from the propagation lights.

A good suggestion is to cover all young cuttings with humidity domes/covers. This will in turn help maintain constant humidity levels around the plants, where it is needed. Ensuring good, even temperatures and humidity levels will ensure that root production is at its maximum, resulting in cuttings rooting within a period of 10-14 days. Propagation domes/covers are often supplied with adjustable vents, as the plants begin to root the vents can be gradually opened to introduce gentle air flow and exchange. This practice will also help harden the plants off, once the propagation covers are removed after 10-14 days. Very little air movement is required at this stage of the young cuttings life. **DO NOT** use large fans in the propagation area to move the air, it is not necessary and will only reduce the relative humidity around the plants.

Suggested Lighting

To ensure optimum growth T5 lighting should be used in the Propagation Room. T5 lighting is gentle, cool and has the correct spectrum for this stage of plant growth. Lights should be suspended above the height of the cuttings at a height of approximately 18".

LED lights are also an option, if LED lighting is to be used, lighting panels will need to be further away from the plants and consideration concerning localized humidity will need to be taken into account as they can emit quite an amount of dry heat, which is not conducive at this stage of the plants life. Please go to page 18 for further information on suggested lighting.



Multiple easy2Propagate systems raising thousands of cuttings with minimal human intervention

50 to 100 litre / 13 to 25 gallon reservoir supplying water to plants below via gravity

Alternatively one reservoir connected to a float valve can supply water and fertiliser (if required) to hundreds of easy2Propagate systems

Propagation domes to maintain relative humidity around young cuttings

Seed trays sat on coconut matting

Vents should be opened gradually to help harden young plants off once rooted

Vegetative Stage 1

From the Propagation Area the small hardened off cuttings should be potted up into the next size pot. Ideally small square pots should be used, up to 0.13 gallon or 1/2 litre pots are suitable. This set up to irrigate your plants is identical to the propagation area, using the AQUAvalve Kits. Staging should be used as the plants will only be grown for a short period of 2-3 weeks and to a height of 8-12" / 20-30cm before they are moved on to their final position. Fabric and biodegradable pots can also be used with great success, quite often reducing transplantation shock, as the plants do not need to be removed from the small pots when potted up.

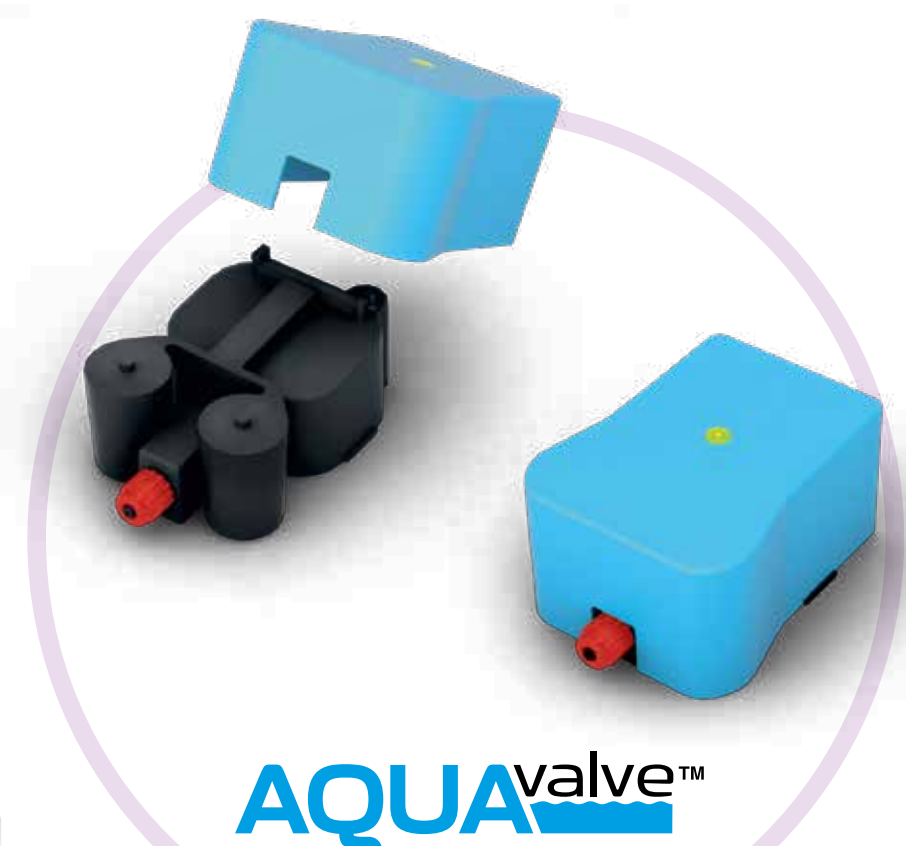
Once the small cuttings are potted up into the small pots they should be placed on the coconut matting positioned in the trays. Once in position they should be watered through from the top once only, using warm water and a watering can with a rose. This will ensure that the capillary action starts between the base of the pot and the surface of the coconut matting.

Once all the small pots are in position, the coconut matting has been placed in each tray and the AQUAvalve Kit is positioned in each corner of each tray, the AQUAvalve Kits can be connected to a reservoir via a network of pipe/tube, the reservoir will need to be higher than the highest shelf, to ensure gravity pressure from the reservoir is maintained. Once all the AQUAvalve Kits are connected to the reservoir and the tap is turned on, water will travel via gravity along the network of pipes to the AQUAvalves positioned in each tray. The AQUAvalves will then allow water to fill each tray to a pre-set depth of 3/4" (20mm). Once this level is reached the AQUAvalve in each tray will shut off the incoming water.

No further water will be provided to the plants until all the previous water has been consumed. As the small square pots are sitting on the layer of coconut matting (above the 3/4" (20mm) flood level that the AQUAvalve provides) they will never become water logged, simple capillary action between the surface of the coconut matting and the base of the small pots provides gentle, even moisture to the base of the pots. After this time the AQUAvalve Kits in each tray will ensure that all plants receive water as and when they require it. If required a half strength soluble fertilizer can also be added to the reservoir so that the young plants receive water and feed at the same time. This is dependent on the substrate used in the pots.

Suggested Lighting

To ensure optimum growth T5 lighting should be used in the Vegetative Stage 1 Area. T5 lighting is gentle, cool and has the correct spectrum for this stage of plant growth. Lights should be suspended above the height of the young plants, at a height of approximately 18". LED lights are also an option, if LED lighting is to be used, lighting panels will need to be further away from the plants and consideration concerning localized humidity will need to be taken into account as they can emit quite an amount of dry heat, which is not conducive at this stage of the plants life. Please go to page 18 for further information on suggested lighting.



Suggested Temperature/Humidity Levels

Ideally temperatures in the Vegetative Stage 1 area should **NEVER** drop below 70-75°F. It is important that a constant, even temperature is maintained at this stage of the plants life. Once again how fast the plant develops depends on constant and even temperatures and humidity levels. Humidity should **NEVER** drop below 60-70%, at this stage of the young plants life. Although the room may be maintained at 60-70%, a common mistake is not measuring the humidity around the plants that are below the lights.

Generally this area will be lower due to the dry heat that radiates from the T5 lights. Ensuring good, even temperatures and humidity levels will ensure that plant growth is at its maximum. However with the plants sat on coconut matting and a level of water below the plants, the heat from the T5 light below each tray helps warm the water in the tray above and in turn creates natural evaporation and in turn humidity around the small plants, creating a beautiful environment for the young plants to flourish in, until they are ready to be potted up and moved into their final positions. Gentle, even air movement should be provided in this area, **DO NOT** blow air directly onto the plants.

Nutrient enriched water
supplying young plants below

50 to 100 litre/13 to 25 gallon reservoir supplying water
to plants below via gravity. Alternatively one reservoir
connected to a float valve can supply water and fertiliser
(if required) to hundreds of easy2Propagate systems

Warmth radiating from T5 below
will warm water above creating
humidity, providing an ideal growing
environment for the young plants



½ to 1 litre/0.13 to 0.26 gallon square
pots spaced out on coconut matting

Production Area – Option 1

Using easy2grow Module

AutoPot Watering Systems provide tray and pot designs to suit all types of growing. From small salad varieties or herb crops to vine to huge specimen plants, our technology has the ability to grow any crop. easy2grow modules are ideally suited to short, bushy varieties like herbs or strawberries, or tall growing vine plants. easy2grow can be positioned to suit any area of any size though our commercial clients typically arrange multiple kits end-to-end in Production Areas. All AutoPot Watering Systems are modular, so easy2grow modules can be added, repositioned or removed from a layout at will without any effect on system performance. The extent of a system using easy2grow modules is potentially limitless. Naturally this is a feature of great appeal to those of our commercial clients aspiring towards phased expansion.

Depending on plant size the trays can be laid out to suit the grower's requirements



Pot sizes are interchangeable

Module Technical Specifications

Module: easy2grow

Pot Sizes: 2.2 gallon/8.5 litre or 3.9 gallon/15 litre pot.

Footprint: Up to 12 pots (6 easy2grow trays) per 9 sq ft/1 sq m

Plant Establishment: Allow 5-10 days Min. before turning system on.

Reservoir can be positioned in or outside growing areas to suit the grower's needs.

Large reservoirs can supply 1000s of plants over large distances

Production Area Overview

During this stage you will transfer your plants into the AutoPot module of your choice. Having established and grown to the required height in the Vegetative Stage Area your plants can now be repotted into their final pot. Once potted the plants should be watered through from above and allowed to drain. Care should be taken to ensure that the pots are clean on the outside and base. The pots are then simply placed into the module trays.

At this point it is not necessary to turn on the system. Plants should be allowed to establish properly in the pots before the system is activated. The time required for plants to establish will vary depending on the growing conditions, the type of plants being grown and the modules being used. Please see Module Technical Specifications for details of the optimum establishment period in the case of each module.

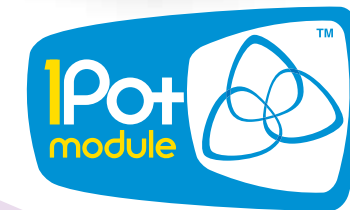
After the time required for plant establishment has elapsed simply turn on the tap at the reservoir in order to activate your system. Water will then travel along the network of pipes, using only gravity pressure, and into the AQUAvalve sitting in each module tray. The AQUAvalves will now control the distribution of water and fertilizer to the plants in accordance with your plants requirements.

Production Area – Option 2

Using 1Pot Module

If the plants in your Production Area require a larger individual footprint, typically achieve greater height, or grow over a longer period then the 1Pot Module represents an excellent option. 1Pot is extremely versatile and can be used for a wide range of plant types and sizes. Seasonal flowering plants and perennial shrubs thrive and produce an abundance of blooms and foliage. Modules are supplied with a 3.9gallon/15 litre pot but the module tray will also perfectly accomodate our 2.2gallon/8.5 litre pot, allowing you to alternate between crops with ease.

As with all AutoPot Watering Systems the 1Pot Module is self-contained, with each tray driven by its own AQUAvalve. Modules require no plumbing for recirculation or waste water so they can be added or removed from a layout at will. The only limit to the potential scale of your system is the space you have available.



Gravity pressure allows the nutrient enriched water to travel along the pipe work and into every AQUAvalve in each tray

Module Technical Specifications

Module: 2.2 gallon/8.5 litre or 3.9 gallon/15 litre pot

Pot Sizes: 6.6 gallon solid pot or 5 gallon fabric SmartPot

Footprint: Ideally 4-6 modules but up to 12 pots per 9 sq ft/1 sq m

Plant Establishment: Allow 7-14 days Min. before turning system on.

For an overview of Production Areas see page 12

For Suggested Lighting and Suggested Temperature/Humidity see page 19

Production Area – Option 3

Using 1Pot XL or XL SmartPot Module

For a Production Area populated with very large plants we recommend the 1Pot XL Module. This original design has a clam shaped tray that accommodates the large volume 6.6 gallon XL pot. The round based pot enables the grower to easily rotate a big plant while the pot is still in the tray.

AutoPot XL SmartPot Modules take the immense capacity and versatility of the XL System and incorporate the original, market-leading, fabric SmartPot. All models in the 1Pot XL range are now available with the no-cost option of 5 gal SmartPots, custom produced to fit the 1Pot XL tray.

SmartPot's porous, BPA-free, lead-free fabric sides allow for air pruning which effectively eliminates root circling and gives you bigger plants from smaller pots. This same porosity also increases oxygen exchange in the substrate which supercharges growth.



Module Technical Specifications

Module: 1Pot XL/XL SmartPot

Pot Sizes: 6.6 gallon solid pot or 5 gallon fabric SmartPot

Footprint: 1–6 modules per 9 sq ft/1 sq m

Plant Establishment: Allow 10–14 days minimum before turning system on.

For an overview of Production Areas see page 12

Production Area – Option 4

Using AQUAvalve Kit and PlantSkirt

We have irrigation solutions for even the very largest plants under commercial cultivation. These are ideally grown in large pots placed in heavy-duty garden trays, fed and watered by our AQUAvalve Kits and protected by the AutoPot PlantSkirt.

Each AQUAvalve Kit includes a weighted, weatherproof cover. This kit allows you to turn any tray into an AutoPot Watering System. However, large, open garden trays lack the protection to substrate and nutrient solution which is normally afforded by the snug-fitting pots, trays and lids found on our modules. This problem is resolved by the PlantSkirt. Secured around the middle of the pot and around the outer rim of the tray this innovative shield prevents temperature fluctuations in substrate and nutrient solution. The heat and light that would otherwise cause nutrient solution to evaporate is instead reflected back onto the plant to its greater benefit and invasion by algae or debris is averted.



Inset and Background: Plants shortly after planting at 6" / 15cm height (Inset) and plants five months later (Background) just prior to harvesting at 10-12ft / 3-3.5m height and up to 6.5 ft / 2m in diameter.



Module Technical Specifications

Module: AQUAvalve and PlantSkirt

Pot Sizes: Solid or fabric pots up to 28" / 0.7m Ø trays up to 48" / 1m Ø

Footprint: Dependant tray size tray easily exceeding 1 per 18 sq ft/2 sq m

Plant Establishment: Depends on size of pot and variety.

For an overview of Production Areas see page 12

For Suggested Lighting and Suggested Temperature/Humidity see page 19

AQUAvalve and PlantSkirt are an ideal solution for growers cultivating large plants in glasshouses or polytunnels, or indoor growers operating under low plant counts

Tray Systems

Realise the full potential of your growing space

www.autopotcc.com

Our tray systems allow you to maximise your growing space. These highly efficient irrigation solutions were developed with our commercial partners in order to extract the greatest possible ROI from their facilities. AutoPot tray systems achieve this by irrigating multiple pots in a single tray and lid assembly, all fed by a single AQUAvalve, radically reducing the footprint.

In commercial facilities maintenance overheads can be a key obstacle to utilising available space. If you want to grow plants on shelving that can be double or triple height, reducing maintenance duties is essential. It's challenging to tend to your plants and irrigation system when they are placed ten or twenty feet above ground level. Tray systems allow you to take advantage of the vertical space you have without the concern of accessing a vast number of individual pots and trays. Not only are they simple to install and operate, they irrigate with zero run-off so don't require any plumbing for waste water.



Auto9 XL has the capacity to hold nine 6.6gal / 25ltr XL solid pots or nine 5gal / 18.9ltr fabric SmartPots in a tray measuring 16 sq ft / 1.2 sq m

AUTO9XL



Above: We now provide a custom design service for commercial growers and have produced bespoke trays for clients across North America based on their racking design and pot configuration.

Tray systems allow you to irrigate multiple pots in a single tray and lid assembly all fed by a single AQUAvalve.

Cultivating with tray systems benefits growers in three key areas:

1. Growing Space

Tray systems make maximum use of the available area. Their low maintenance design makes them ideal for moveable racks and rolling tables where access can be a challenge.

2. Overheads

The systems draw no more water than the equivalent number of single modules. A reduction in the number of components means vastly reduced maintenance duties.

3. Plant Health

Unlike a large, single, flat tray the moulded base minimises standing water. The lid blocks light and prevents algae or debris from entering the tray.

Rolling Benches

Effective use of space and light, optimising potential growth

Rolling Benches have been used with great effect for many years in commercial horticulture. Using rolling benches effectively will increase your production area by 30%. Your walk ways will be minimized as the benches simply slide in sections across the growing area, allowing the grower access as normal between each rolling bench section.



If growing in a controlled environment under artificial light, serious consideration should be taken into account if rolling benches are suitable. Being able to increase your growing capacity by 30% and reducing your walk ways to a minimum should persuade the grower on the benefits of their use. All the AutoPot tray designs are easily adapted when used in conjunction with rolling benches. Where each rolling bench separates simple coupling connectors are used, to disconnect/re-connect the pipe

work, with isolator valves connected in-line to stop any water flow when the benches are separated and access is required.

Once access is no longer required the benches are simply slid back into position and the couplings are clicked back into place and the in-line isolator valves re-opened. Rolling benches can be designed to suit your production area and can be positioned at a suitable height that is ideal for the plants in production.



Irrigation system uncoupled to allow movement of benches

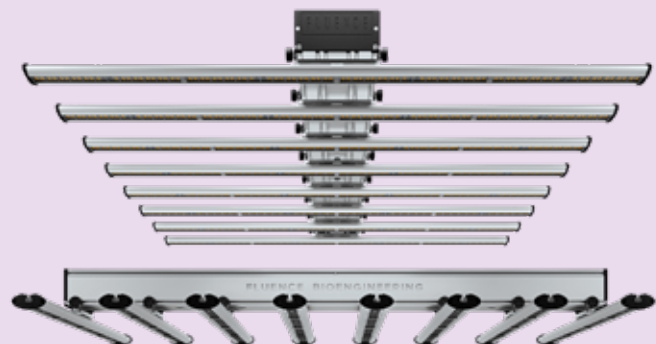
Lighting

CMH Lighting

Ceramic Metal Halide lighting may represent a more expensive alternative to HID in terms of equipment outlay, but CMH lamps hold certain long-term advantages. The claims of higher yields and improved quality of end product are attributed to the full spectrum of light that CMH produces compared to traditional HPS, providing superior plant health. The power efficiency of CMH lamps is proven to the extent that they have attracted business incentives as energy-saving devices. Their low wattage of CMH cuts power use to the unit and low heat output reduces air conditioning costs. Ideal for Stock Plant, Vegetative and Production Areas.

LED Lighting

LED lighting is now recognized as a worthy alternative to conventional plant lighting systems. LED's are widely used in commercial horticulture for propagation, supplementary lighting and also as a single light source for the production of low lying plants such as salads and herbs. With the advent of 3w and 5w Light Emitting Diodes there are now units available that are capable of producing significant levels of PAR and μmol output and these are ideal for adding additional light with minimal heat output. Suitable for all stages of growth.



T5 Lighting

Widely used in commercial horticulture for propagation and vegetative stages of plant development, high output T5 fluorescent lamps use relatively little power and generate minimal heat output. This means they can be placed very close to young plants (within a few inches) and are ideal to use on propagation shelving as the lighting units are just a few inches deep. The blue/white light output encourages vegetative growth and promotes tighter internode spacing, producing strong, stocky plants. T5's can be used as a single light source for vegetative growth, producing similar results to metal halide HID lamps.



HID Lighting

HID lighting is ideal for Stock Plant Rooms and Production Areas. We recommend selecting high frequency fixtures, similar to those used in Dutch greenhouses. These complete lighting fixtures drive professional high frequency, double-ended 400v HID lamps using a domestic or three phase power supply and offer 10-25% more usable output than conventional HID fixtures.



Plasma Lighting

Although fantastic results can be achieved by using HID lighting alone, no HID lamp offers a comparable spectrum to natural sunlight. By supplementing HID lighting with a Plasma light growers can provide their plants with true full spectrum lighting, in particular the inclusion of UVA and UVB. Plasma lights can be used in Stock Plant and Production Areas as it not only increases the rate of growth, but the inclusion of UV light in the spectrum is proven to increase the quality of the final produce.

Additional Information

Substrate

AutoPot Watering Systems are extremely versatile and can be used with the growing medium of your choice, whether it's soil, coco or a hydroponic substrate. A popular blend of substrate for use with AutoPot Watering Systems is a 50% mix of perlite or clay pebbles with either soil or coco. Whichever substrate you decide to use, make sure the blend of substrate remains capillary active and has the ability to hold plenty of air within the structure. Always use reputable brands, if in doubt please contact AutoPot and we will provide advice on a suitable choice from a quality manufacturer.

Fertilizer

Mineral fertilizer selection along with the formula/recipe is very important. It is also imperative that high quality ingredients are used from a reputable manufacturer. All high quality mineral fertilizers work well with the entire AutoPot range. It is advisable that a water sample is obtained from the site and analyzed in order to determine the water quality. This information can then be used to help formulate a suitable mineral fertilizer. Avoid adding viscous additives to the supply reservoirs, quite often they separate in the water supply and cause blockages and they will not be necessary if a well-balanced mineral fertilizer has been formulated.

AutoPot technology is also designed to perform with organic cultivation practices. No soluble fertilizer is added to the reservoir. Only water is supplied. Food for the plants is provided by adding suitable time release organic tablets/pellets to each pot. Organic time release additives should be blended to the soil in the correct quantities dependent on plant type and growth duration. AutoPot can offer advice on all aspects of fertilizer applications, to ensure successful growth.

CO₂

CO₂ is an important building block in plant photosynthesis, maintaining optimum levels of CO₂ within a controlled environment will significantly speed plant growth and has been used successfully in commercial facilities for many decades. The benefits of CO₂ when used correctly and in a controlled manner are significant. Using CO₂ allows the grower to grow in higher temperatures.

Maintaining optimum levels of CO₂ within a controlled environment means all intake and extractors are closed, with just air movement. New air should, in a controlled manner, be introduced and old stale air exhausted to ensure excessive fluctuations with temperatures and humidity levels do not occur.

Suggested Temperature / Humidity Levels

Ideally temperatures in the production areas should not drop below 70°F or rise above 80°F. It is important that a constant, even temperature is maintained at all times, both during the daylight period and the night period. Humidity levels, dependent on plant variety, should ideally range between 55%-70% at all times. Maintaining your temperature and humidity levels so that minimum changes occur and the parameters are maintained is extremely important to successful cultivation. Constant, even air movement throughout the cultivation area should be provided at all times, never blow air directly onto the plants with fans or intake air.

Growing Environment

Growing commercially in a controlled environment either under lights or under glass is a challenge. Ensuring that your environment is correct for the plants being grown is one of the most important factors that commercial growers should consider. Dependent on plant type and growth stage, temperatures and humidity levels should always be maintained, with minimal fluctuations. Any deviations from high to low affects plant growth and production.

Please seek advice or employ an experienced Heating and Ventilation company that can provide the correct advice. Controlled environments should be designed/constructed to allow for four exchanges of air, if required, within one hour. Air flow within a controlled environment should be constant and even at all levels within the growing area, at no time should air be blown directly onto the plants.

Lighting

The most commonly used lights for crop production are HID lights, suitable bulbs can be utilized to create varied growing conditions to suit all crop types. LED lights are being utilized in many places around the world to grow low, quick crops such as lettuce as well as fruiting plants and are quickly gaining ground. Plasma and CMH lights are now being made available and beginning to stake a place in the horticultural world. Historically HID lighting is by far the most popular at present and should be considered when deciding which lighting is required. Always speak to an experienced lighting manufacturer to discuss your needs.



Bell peppers growing in coco and pumice stone
in AutoPot easy2grow Modules 15 ltr/3.9gal at
Kunya Beach Nursery, Siaya, Kenya

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