HydroLush Agrotech Co., Ltd.

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Vertical Hydroponic GrowTube Systems

Welcome to the

NEW AGE URBAN GARDEN!

Introducing Vertical Hydroponic GrowTube™ Technology from HydroLush Agrotech Co., Ltd. – a new idea for growing vegetables, herbs and flowers using vetical spaces and minimal nutrient, water and other inputs.

Contents

MISSION

HydroLush Agrotech is very excited to have the opportunity to introduce our Vertical Hydroponic GrowTube™ Technology. Our systems are a new development in hydroponic technology. GrowTubes were specifically designed to efficiently grow leaf vegetables and herbs. They are cost efficient, nutrient and input economical and convenient and easy to install and maintain.

HydroLush is focused on bringing affordable hydroponics technology to homeowners and commercial growers. Hydroponic gardening does not need to be a complicated, expensive enterprise with indoor grow beds and specialized lighting.

HydroLush Vertical Hydroponic GrowTube™ Systems make growing vegetables and herbs accessible to everyone by removing much of the hassle and burden associated with soil based gardening. Using these systems, people with busy lifestyles can relax and enjoy growing their own food. For large Ag installations, vertical GrowTube™s reduce labor costs and employee fatigue. HydroLush's patented system is simple, affordable and easy to install. The system is convenient to operate, easy maintain and produces great results.

Our technology is especially suited to urban environments and other locations that lack space and arable land. GrowTube™ systems are scalable; customers can install one tube or one thousand tube systems. GrowTube™s use eco-friendly grow media and efficiently use nutrients and additives in a sustainable way. Vertical GrowTube™ systems induce faster, stronger plant growth; have reduced insect problems and are less affected by heavy rain and other extreme weather. The systems take advantage of local weather and outdoor environmental conditions and preform well installed outside in natural light or installed indoors with properly installed artificial light. We are committed to improving our technology, potecting the environment and providing friendly, efficient serve to all of our customers.

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Vertical hydroponic grow systems make it possible to cultivate high density production in a limited space. For the urban gardener, this means that areas that were small and unable to be used for growing become feasible garden spots and the grower is also able to save water and maximize crop production per area used.

Major advantages of Vertical Hydroponic Grow Systems over tradition hydroponic systems include:

* Efficient use of Space: compact towers allow higher production anywhere from 3-8 times more plants per meter with vertical growing.
* Efficient use of inputs: Less energy and less water (up to 85% savings on water)
* Flexible grow sites: install on balconies, rooftops or any outdoor vertical surface.
* Ergonomic Workflow: no strain from bending, just stand while tending the garden.

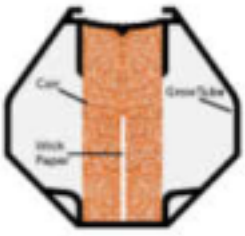


Introduction to the
HydroLush Vertical Hydroponic Growtube™ System

HydroLush Hydroponic GrowTubes™ are specially designed for use with vertically installed hydroponic systems. Your Vertical Hydroponic GrowTubeTM System also includes: nutrient solution reservoir tanks; a pump for circulating the nutrient solution through the system; and various pipes, hoses, and plumbing fittings. HydroLush GrowTubes™ are compact, light-weight and durable root zone enclosures that can be installed on existing surfaces or installed from dedicated supports.

The HydroLush Vertical Hydroponic GrowTube™ Design has several special features not available on competing systems:

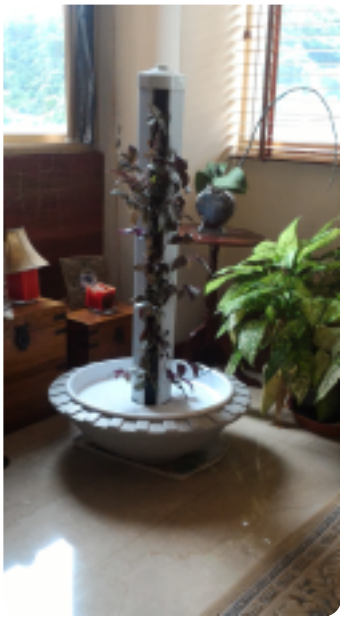
* ***Proprietary Tube Design Creates a Grow Media Pocket*** - strips quickly slide into the tube and allow you to conveniently change and maintain the grow chamber during general cleaning or a change of crop;
* ***Enclosed Air Columns on Each Side of the Grow Media*** - allow roots to breath, provide even nutrient exchange and minimize anaerobic areas in the grow media;
* ***Concave Planting Face with Splash Guards*** - helps direct water flow and minimize nutrient solution leakage;
* ***Multiple Mounting Faces*** - tubes can be suspended vertically from overhead racks, fixed to vertical supports such as walls, or joined in a free-standing array;
* ***Removable End Caps and Drainage Fittings*** - connect the GrowTube™s and ensure proper water flow.


Advantages

* *Flexible Grow Areas* - systems can be installed on balconies, rooftop or and vertical surface.
* *Ergonomic Work Positions* – vertical position allows you to stand while working with crops and reduces strain and toil of bending;
* *Better control of root zone temperature, drainage and oxygen level* - Root zone remains aerated and functioning efficiently even during excessive rainfall.
* *Crops:* arugula, amaranth, basella, lettuce, spinach, kang kong (water spinach), herbs, flowers, etc.
* *GrowTubes can be easily transported with plants intact.*
* *GrowTubes are durable, light and easy to maintain* - less expensive than any other hydroponic systems.
* *GrowTubes use Coconut Coir Grow Media* - reusable, eco-friendly and creates no waste upon disposal.

Vertical Hydroponic Growtube™ Tower Systems



PRODUCT NAME: *Single Tower Vertical Hydroponic GrowTube™ Basin System*

SKU: HL-PSYS-103

DESCRIPTION: HydroLush Single Tower Vertical Hydroponic GrowTube™ Basin System including:

- 1 GrowTube™ Assembly with Natural Coco Coir Grow Fiber Insert;
- Bottom Basin Reservoir with Lid;
- Support Base;
- DC Electric Pump with Power Adapter;
- Hoses & Fittings;
- Planting Tools,
- Nutrient Starter Kit

PRODUCT NAME: *Dual Tower Vertical Hydroponic GrowTube™ Planter System*

SKU: HL-PSYS-201

DESCRIPTION: HydroLush Dual Tower Vertical Hydroponic GrowTube™ Planter System including:

- 2 GrowTube™ Assemblies with Natural Coco Coir Grow Fiber Inserts;
- Bottom Planter Reservoir with Lid;
- Support Bases;
- DC Electric Pump with Power Adapter;
- Hoses & Fittings;
- Planting Tools;
- Nutrient Starter Kit

PRODUCT NAME: Quad Tower Vertical Hydroponic GrowTube™ System

SKU: HL-PSYS-401

DESCRIPTION: HydroLush Quad Tower Vertical Hydroponic GrowTube™ Planter System including:

- 4 GrowTube™ Assemblies with Natural Coco Coir Grow Fiber Inserts;
- Bottom Planter Reservoir with Lid;
- Support Bases;
- DC Electric Pump with Power Adapter;
- Hoses & Fittings;
- Planting Tools;
- Nutrient Starter Kit

Vertical Hydroponic Growtube™ Rack Systems

PRODUCT NAME: *4 Tube L-rack Vertical Hydroponic GrowTube™ System*

SKU: HL-PSYS-411

DESCRIPTION: HydroLush 4 Tube L-rack Vertical Hydroponic GrowTube™ System including:

- 4 GrowTube™ Assemblies with Natural Coco Coir Grow Fiber Inserts;
- Rust Resistant Steel Lrack;
- Bottom Reservoir Tank;
- DC Pump with Level Controller & Power Adapter;
- Hoses & Fittings;
- Planting Tool;
- Nutrient Starter Kit

PRODUCT NAME: *4 Tube Wall Mounted Vertical Hydroponic GrowTube™ System*

SKU: HL-PSYS-421

DESCRIPTION: HydroLush 4 Tube Wall Vertical Hydroponic GrowTube™ System including:

- 4 GrowTube™ Assemblies with Natural Coco Coir Grow Fiber Inserts;
- Rust Resistant Steel Mounting Rack;
- Bottom Reservoir Tank;
- DC Electric Pump with Level Controller & Power Adapter;
- Hoses & Fittings;
- Planting Tool;
- Nutrient Starter Kit

PRODUCT NAME: *8 Tube L-rack Vertical Hydroponic GrowTube™ System*

SKU: HL-PSYS-811

DESCRIPTION: HydroLush 8 Tube *L-rack Vertical Hydroponic GrowTube™ System* including:

- 8 GrowTube™ Assemblies with Natural Coco Coir Grow Fiber Inserts;
- Rust Resistant Steel L-rack;
- Bottom Reservoir Tank;
- AC Electric Pump with Level Controller;
- Hoses & Fittings;
- Planting Tool;
- Nutrient Starter Kit

PRODUCT NAME: *8 Tube Wall Mounted Vertical Hydroponic GrowTube™ System*

SKU: HL-PSYS-821

DESCRIPTION: HydroLush 8 Tube Wall Vertical Hydroponic GrowTube™ System including:

- 8 GrowTube™ Assemblies with Natural Coco Coir Grow Fiber Inserts;
- Rust Resistant Steel Mounting Rack;
- Bottom Reservoir Tank;
- DC Electric Pump with Level Controller & Power Adapter;
- Hoses & Fittings;
- Planting Tool;
- Nutrient Starter Kit

PRODUCT NAME: *12 Tube Sq-rack Vertical Hydroponic GrowTube™ System*

SKU: HL-PSYS-512

DESCRIPTION: HydroLush 12 Tube Sq-rack Vertical Hydroponic GrowTube™ System including:

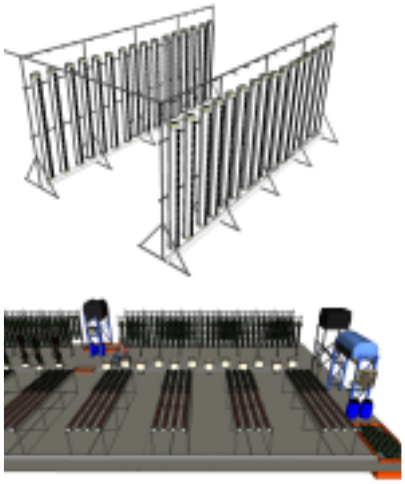
- 12 GrowTube™ Assemblies with Natural Coco Coir Grow Fiber Inserts;
- Rust Resistant Steel Square rack;
- Top Feeder Tank;
- Bottom Reservoir Tank;
- AC Electric Pump with Level Controller;
- Hoses & Fittings;
- Planting Tool;
- Nutrient Starter Kit

PRODUCT NAME: *24 Tube Sq-rack Vertical Hydroponic GrowTube™ System*

SKU: HL-PSYS-524

DESCRIPTION: HydroLush 24 Tube Sq-rack Vertical Hydroponic GrowTube™ System including:

- 24 GrowTube™ Assemblies with Natural Coco Coir Grow Fiber Inserts;
- Rust Resistant Steel Sqrack;
- 2 Top Feeder Tanks;
- 2 Bottom Reservoir Tanks;
- 2 AC Electric Pumps with Level Controllers;
- Hoses & Fittings;
- Planting Tools;
- Nutrient Starter Kit



PRODUCT NAME: AGrack Vertical Hydroponic GrowTube System

SKU: HL-PTUB-000

DESCRIPTION: HydroLush AGravk Vertical Hydroponic GrowTube System including:

- Growtube assembly with rack quoted per meter;
- Pipe rack and connector fittings;
- Top feeder tank;
- Bottom reservoir tank;
- Electric pump and controller;
- Hose Connectors;
- Planting tools;

HydroLush® Hydoponic Nutrients

Hydroponics allows the grower to finely control the amount and timing of the nutrients the plants receive. A balanced hydroponic nutrient concentrate provides the macro and micro nutrients required to maximize lush plant growth. Hydroponic nutrient concentrates contain these minerals in water soluble form specifically designed to work in a soilless hydroponic environment. They are pH balanced and formulated to stay in suspension in water during circulation.

HydroLush® Basic Hydroponic Nutrients are available in a concentrated three part formula for leafy green vegetables and herbs. HydroLush® Nutrients are convenient and easy to use. Just mix thoroughly into full reservoir tank water at the desired ratio. Separating the mineral nutrients into different components allows HydroLush® to offer products in higher concentrations. As plants grow through their life-cycle, they may require different ratios of nutrients. Plants need all three parts – just at different ratios depending on their growth stage. HydroLush®'s multi-part formula gives you the ability to adjust the reservoir mix to better suit the different stages of plant growth. HydroLush® Hydroponic Nutrients have been independently analysed and certified by the Taiwan Department of Agriculture. THDC is proud to guaranteed that these products will provide the safe, beneficial properties needed for plant growth.

Mixing Concentrations

HydroLush® MicroNutrients	1ml per 1L reservoir water
HydroLush® Green	4ml per 1L reservoir water
HydroLush® Red	3ml per 1L reservoir water

Plants in a hydroponics system require adequate amount of water adjusted in the correct pH range of 5.2 ~ 6.5 to optimize nutrient availability and maximize nutrient absorption that results in lush growth. As plants feed, the ion exchange caused from nutrient uptake causes water pH to increase. Reservoir water should regularly tested and supplemented or be changed periodically to ensure proper pH balance and optimum nutrient availablility.

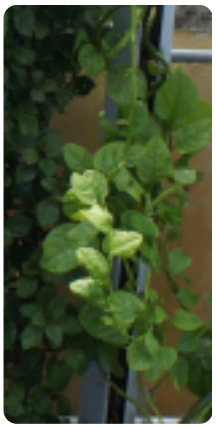
THDC calculates that the average cost of nutrients in a systems with lush growth averages approximately USD0.03 per growtube per day based on two week water reservoir changes. Nutrient concentrations can be varied to suit the plant type, stage of growth and harvest schedule.

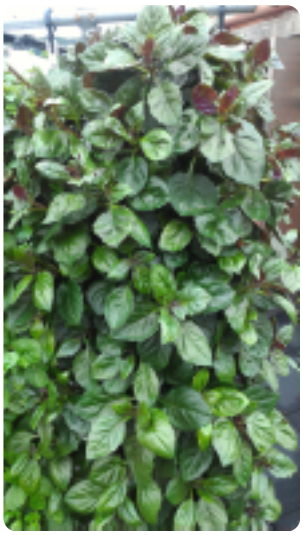
Crop Types

Many different types of leaf vegetables, herbs and even fruit can be grown in THDC vertical hydroponic GrowTube™s. GrowTube™s are not suitable for growing tubers such as carrots, potatoes, sweet potatoes, etc.

Some possible crops are arugula, amaranth, basella, lettuce, spinach, kang kong (water spinach), herbs, flowers, etc.

Leaf Vegetables: Lettuce, Basella, Chrysanthemum, Gynura, etc.



Herbs: Basil, Oregano, Mint, Sesame Leaf, etc.




Fruit: Tomato, Melons, Peppers, Strawberries, etc.




Environment, Planting, Harvest and Yield

Yields from GrowTube systems are dependent on certain conditions, including season, lighting, environment, and growing tools. Grower experience and expertise are also important as well as crop selection, nutrient feeding and pest influences.

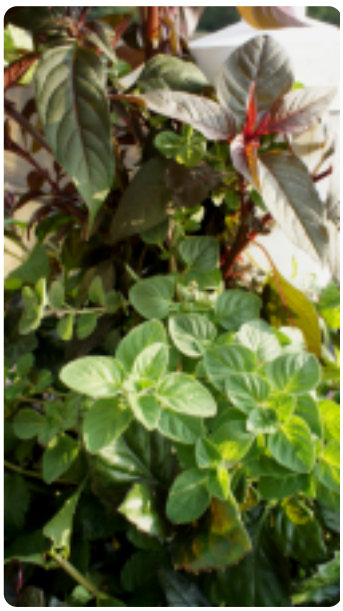
Under natural sunlight, spring and fall production can generally indicate average yields. Longer days of summer will give higher yields. There is no subsitute for light, more light means higher yields. In winter, production decreases slightly. However, seasonal fluctuations can be somewhat overcome with proper, seasonal crop selection. Basella likes the summer heat, while lettuce likes temperatures around 24•C. Yield estimates below are from a single 130cm GrowTube grown in full natural sunlight.

We provide an insert tool that allows quick and easy insertion of cuttings and seedlings into installed GrowTubes. The process is fast and conveninet, taking about 5 minutes to plant a complete, hanging tube. For new crops, old stock is cut flat to the face of the growtube and new stock is insert into the grow port. There is usually no need to remove old root matter from the growtube. In fact, leaving old root stock intact will lengthen the lifetime of the coir grow fiber. Some crops (gynura, basella, mint, oregano) can be propagated from cuttings taken from the system. Other crops (lettuce, kale) use pre-sprouted seedlings that are transplant into the tubes when about 5 ~ 8 cm with one or two sets of true leaves.

Crops can be harvested on different schedules or 'turns' according to user and market demand. Generally, the frequency of harvest depends on whether GrowTube systems are used as a home or commercial systems. Gradual harvests or pick as you need prunings are possible for many crops. Most herbs have longer and more gradual harvest cycles. For example, basil can be harvested continually or pruned three or four times at two week intervals before being completely replanted. Slow growing herbs like oregano, rosemary, and sage can be grown for 9-12 months with increasing harvests until the plants age and yields begins to decrease.

Yield also depends on the stage of development and the time the plants are allowed to mature. In a commercial system, farming can be done on either a batch or a conveyor system rotation. In batch production, all production is of the same generation. In conveyor production, GrowTubes are arranged in rows and productions is cycled from front to back. Front rows are harvested on a turn schedule and the growtubes behind are then rotated to the front. In a 5 week turn, commercial growers can employ a conveyor setup based on 5-tower rows which allows harvesting every week - a 6 week turn would be setup with rows of 6 towers for a once a week harvest.

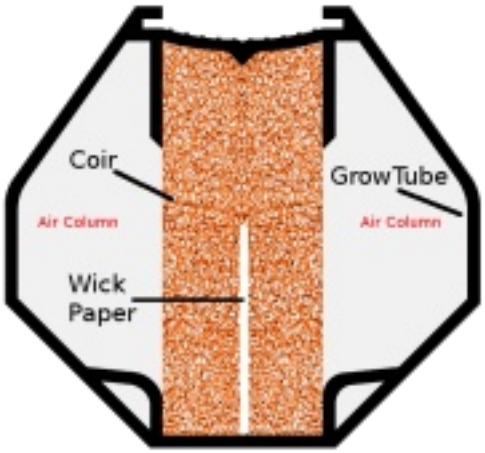
Allowing the plants to mature longer will provide higher yields. Lettuce and other leaf veggies can be grown on a 5-week turn (10 turns per year). Growing on a 6-week turn increases yield, but requires more space. The optimum harvest schedule is determined by grower space and market or user demand. In a economically designed ag installation, GrowTubes require about 0.25 sq.M of space per GrowTube, so area productivity can be calculated using 4 GrowTubes per square meter. For yield calculations, multiply the area of the setup by the number of tubes by the production per tube for that crop. HydroLush rack installations are designed for ease of maintenance and servicability. In some systems, spacing per GrowTube may be greater than in compact ag installs.

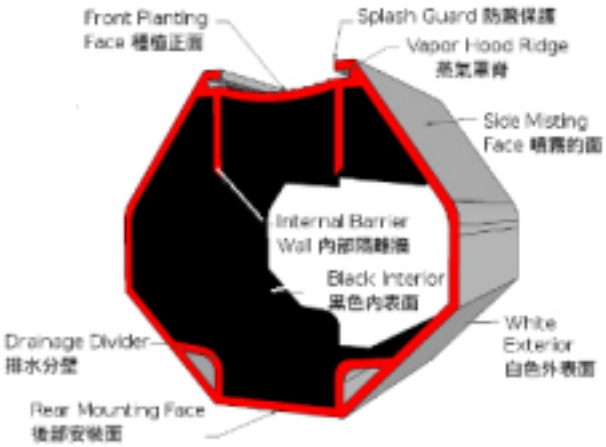


Example: Lettuce on a 6-week turn.
(2 kgs per turn)(number of growtubes)= total yield per turn

HydroLush GrowTube™ Detailed Advantages

- HydroLush GrowTubes™ are extrusion manufactured from durable PVC with a profile size of 10cm X 12cm in standard 1.3 meter lengths. Customs lengths are possible depending on quantities, the intended mounting space and the specifics of the nutrient delivery system. In most installations, the tubes are fitted top and bottom with a cap and hose fittings that connect the GrowTube™ to the plumbing network of the system.
- The GrowTube™ profile includes a front planting face, a rear mounting face and angular side faces. The front planting face is designed as a concave surface with a series of round or oblong planting ports cut at intervals along in planting face. These planting ports allow the insertion of plants into the grow media housed in the tube. Required spacing for plants on the planting face is variable dependent on plant type and maintenance requirements. Ridges on either side of the grow face act as splash guards to help prevent errant nutrient solution leaking from the planting ports.





- Narrow slots on either side of the planting face can be used to secure a vapor barrier hood or plant support inserts that can be fitted over the planting face to shield or support new plants during the incubation and rooting period.
- The GrowTube™ is internally partitioned into three cavities – a central cavity that holds the grow media strips which will anchor plant roots, and air column cavities on either side of the grow media that will provide root zone aeration and humidity protection.
- A variety of grow media materials can be fitted into the GrowTube™ including coconut coir, synthetic wool, etc.
- Air columns on either side of the grow media ensure that plant roots receive adequate aeration and humidity. These columns act as aeration zones that allow the plant roots to breathe and aerate as they grow. High humidity and aeration is maintained inside the GrowTube™ due to the constant flow of nutrient solution through the grow media.
- A emitter or dripper is fixed centrally above the grow media column that will emit nutrient solution evenly over the width of the grow media.

The system uses gravity to channel nutrient solution vertically through the grow media to the drainage plumbing installed at the bottom of the GrowTube™. Plants are inserted into the planting ports and nutrient solution is circulated through the system. Nutrient solution trickles down through the GrowTube™, over the plant roots; providing required nutrients the roots of the resident plants. As the plants mature, roots grow out of the grow media and into the air columns.

- In some installations, spray, dripper or misting nozzles maybe installed into the side faces of the GrowTube™ at various locations along the vertical length. These are used to emit nutrient solution on to the exposed roots. Runoff nutrient solution is channeled through the GrowTube™ and back to the drainage plumbing of the system.

3.3. Advantages

HydroLush Vertical Hydroponic GrowTube™ Systems help eliminate many of the problems common to horizontal NFT systems.

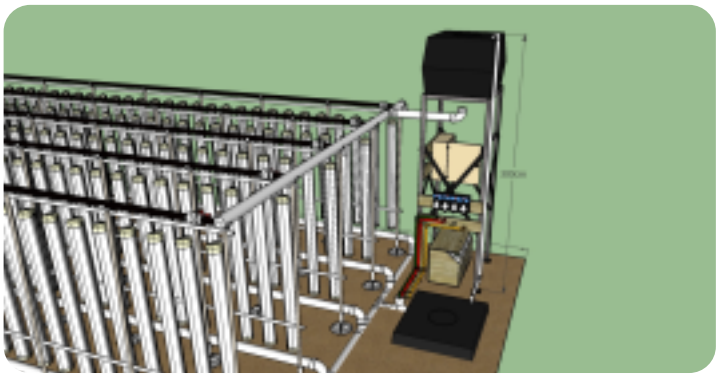
* A Vertical Flow Path Eliminates the Damming Effects of Root Growth in the GrowTube™ and allows the nutrient solution to flush any old biological material from the media without restricting nutrient solution

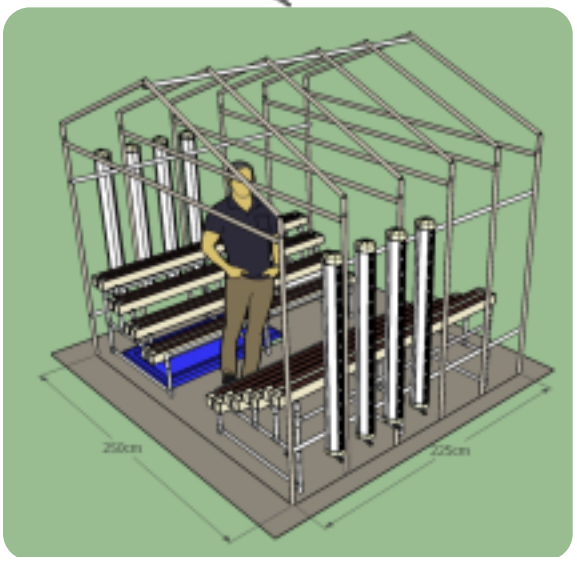
flow to other parts of the GrowTube™. This prevents anaerobic areas forming in the GrowTube™ around the root zone of the resident plants.

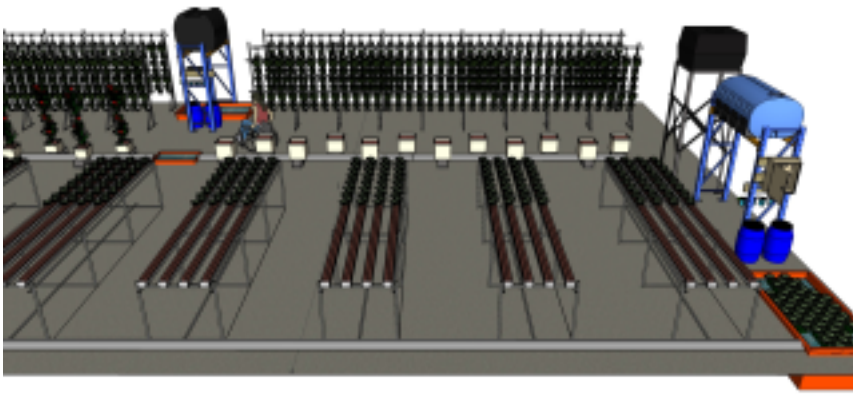
* The GrowTube™ Housing is Designed to Minimize Nutrient Solution Leakage from the system using a Concave Planting Face with Splash Guards. The planting face is formed concave to the interior of the tube to direct nutrient solution to the internal cavity of the tube. The splash guards on the side of the planting face are raised sufficient height to direct any nutrient solution that escapes from the tube along the exterior length of the tube and back to the drainage plumbing installed at the bottom.

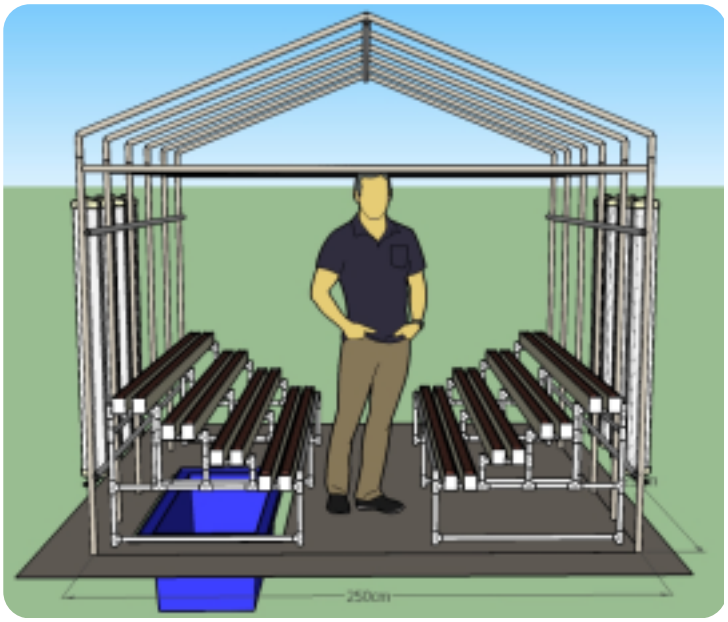
* The GrowTube™ Fiber Pocket Design with Enclosed Air Columns on Each Side of the Grow Media Allows Roots to Breath, Provides Even Nutrient Exchange and Minimizes Anaerobic Areas in the grow media. Regardless of weather, the enclosed tube with air columns allows the root zone to breathe, exchange nutrients and dissipate heat. This improves growth in hot weather (35 degree C) and during heavy rains (typhoons).

* Vertical GrowTube systems maximize use of natural sunlight in extreme northern and southern locations. Because of the sharper angle of the sun, vertical systems are better suited to make full use of any available usable light.









Warranty

Products Warranty.
HydroLush warrants all plastic parts including GrowTubes, plumbing components, hoses and tanks to be free from defects in material or workmanship under normal use and service for a period of one year; (365) days from the date of delivery.

HydroLush warrants all metal parts including rack pipe, connectors and fittings to be free from defects in material or workmanship under normal use and service for a period of one year; (365) days from the date of delivery.

HydroLush warrants that all fiber inserts to be free from defects in material or workmanship under normal use and service for a period of three months (90) days from the date of delivery.

HydroLush warrants that all electrical components (pumps, adapters, float swithes, cords) to be free from defects in material or workmanship under normal use and service for a period of one month (30) days from the date of delivery. The buyer agrees to provide power source that is of compatible voltage and stability to ensure the longest lifetime for the components supplied.

Any defective in the above parts and components found within respective warranty period and agreed to be within the scope of the warranty will be repaired or replaced by HydroLush and all charges for labor and material, will be borne by HydroLush.

All repair covered by this warranty must be done after the consent of HydroLush at such warranty repair facilities and by service personnel as designated by HydroLush.

If it is determined that either no fault exists in HydroLush, or the damage to be repaired was caused by negligence of the BUYER, its agents, employees or customers, the BUYER agrees to pay all charges associated with each such repair.
THIS CONSTITUTES THE SOLE WARRANTY MADE BY THDC either EXPRESSED OR IMPLIED. There are no other WARRANTIES EXPRESSED OR IMPLIED WHICH EXTEND BEYOND THE FACE HEREOF, HEREIN, INCLUDING THE IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL THDC BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES AND THE BUYER'S REMEDIES SHALL BE LIMITED TO REPAIR OR REPLACEMENT OF NONCONFORMING UNITS OR PARTS.

Misuse of Products
Any tampering, misuse or negligence in handling or use of Products renders the warranty void. Further, the warranty is void if, at any time, the BUYER attempts to make any internal changes to any of the components of the Products; if at any time the power supplied to any part of the Products exceeds the rated tolerance; if any external device attached by the BUYER creates conditions exceeding the tolerance of the Products; or if any time the serial number plate is removed or defaced. OPERATION OF THE Products THAT RENDERS THIS WARRANTY VOID WILL BE DEFINED TO INCLUDE ALL OF THE POSSIBILITIES DESCRIBED IN THIS PARAGRAPH, TOGETHER WITH ANY PRACTICE WHICH RESULTS IN CONDITIONS EXCEEDING THE DESIGN TOLERANCE OF THE Products.

Spares
Availability. HydroLush shall make Spares available for purchase by the BUYER for the length of this cooperation. Such spares will be available to the BUYER at prices, terms and conditions in effect at the time such spares are purchased.