



Waterco Case Study

Aquaponics garden

# Sustainable Aquaponics garden

## Bandar Botanic (Klang, Malaysia)

“ In the US, the Aquaponics industry had a market size of around \$180m in 2013 and this is expected to cross \$1bn in sales by 2020. ”

*says Alvin Teh,  
Waterco spokesperson.*

- AQUAPONICS IS A SYMBIOTIC SYSTEM THAT MIMICS A NATURAL LAKE
- WATERCO'S AQUABIOME MECHANICAL AND BIOLOGICAL FILTER SOLUTION
- GROW FRESH FISH AND ORGANIC VEGETABLES FREE FROM PESTICIDES

### Setting: A residential aquaponics project in the heart of Klang, Malaysia

Conceived in early 2000 by a simple philosophy - to make a difference to the way people live -Bandar Botanic is an award-winning residential township located in Klang, Malaysia which is known for its 70-acre botanical parkland. This self-sustainable freehold township was developed by Gamuda Land, the property arm of Gamuda Berhad, a public listed company and one of Asia's premier infrastructure and engineering groups.

Resident Richard Ng needed a space saving solution that would enable him accommodate a seven-tonne koi pond, 500 fish and 1,300 'cups' of assorted vegetables within 400-square feet of space.

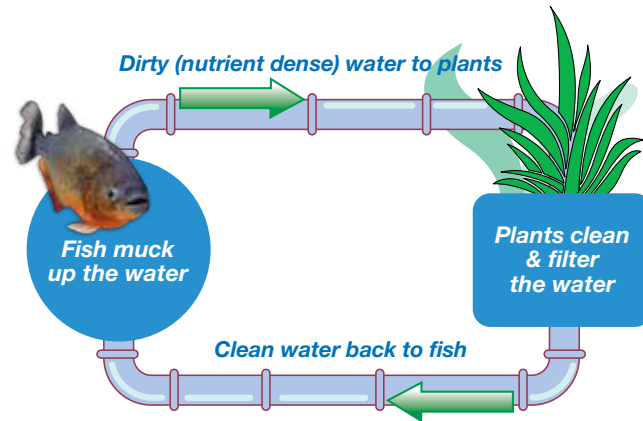


A space saving solution that would enable a seven-tonne koi pond, 500 fish and 1,300 'cups' of assorted vegetables within 400-square feet of space.

“Over a six month period I tried a number of do-it-yourself filtration systems I found on the internet, but none worked properly,” he explains. “There were lots of clogging issues, which created a large amount of unnecessary work for me.”

**Challenge: A compact, low maintenance pond filtration system**

Aquaponics is a combination of aquaculture, which is growing fish and other aquatic animals, and hydroponics, the method of growing plants without soil. This symbiotic system feeds plants with the aquatic animals’ discharge or waste. In return, the vegetables clean the water that goes back to the fish.



◀ Aquaponics is a symbiotic system that mimics a natural lake, growing aquatic animals and plants without soil.

Conventional pond filtration systems generally keep the mechanical and biological filtration separate, which often means the equipment can take up substantial floor space. In addition to the size considerations, most conventional filter systems may require a high degree of maintenance and cleaning. This can prove to be very time consuming particularly during the summer months, when the frequency of cleaning increases.



“My aquaponics system using Aquabiome filtration solution now is producing an abundance of organic produce while creating a healthy environment for my fishes to flourish.” Said Mr. Richard.



**Solution: Aquabiome mechanical and biological filter**

Specifically designed for ponds and water gardens, Waterco’s Aquabiome filter provides mechanical and biological filtration in a single housing. Its ability to support dense populations of nitrifying bacteria coupled with its reliability and easy maintenance makes Aquabiome especially suitable for high density recirculation systems. Features include:

**Mechanical filtration**

Mechanical filtration physically removes solids from the pond by trapping solids between the crevices of the filter media.

### Biological filtration

Biological filtration is the most effective method of removing toxins (ammonia) and breaking it down into nitrites and then into nitrates which provide food to your aquatic plants (referred to as the Nitrogen Cycle). This is accomplished by using naturally occurring bacteria and giving it a place to live in the Biofilter media where it is exposed to large quantities of food and oxygen.

To assist with backwashing, an air blower first agitates the biofilter media by forcing it upwards through the filter's laterals. This break up the entire media bed and loosens the trapped sediment. This further reduces the amount of time and water required for backwashing and improves biological filtration capacity.

### Conclusion: A sustainable organic crop production

Since Waterco's Aquabiome filtration solution was installed in October 2017, Richard says his aquaponics system is producing an abundance of organic produce while creating a healthy environment for his fishes to flourish.

"Waterco's Aquabiome is easy to use and understand," says Richard. "There is no longer daily manual cleaning on clogging issues. All of the fishes and vegetables are thriving."

Waterco spokesperson Alvin Teh says although Aquabiome resembles a sand filter vessel, it differs dramatically from traditional sand filtration systems.

"The Aquabiome's upward flow configuration utilises the floating nature of the bead media and eliminates clogging and channelling of water from extreme waste loads, a problem commonly encountered with sand filters," explains. "This process is ideal for aquaponics, be it residential or commercial."

Growing plants in a soilless system while simultaneously farming fish might be considered a relatively young industry, however new technologies and commercial applications will see this change relatively quickly.

"In the US, the aquaponics industry had a market size of around \$180m in 2013 and this is expected to cross \$1bn in sales by 2020," says Alvin. "We see Waterco's filtration solutions like Aquabiome a perfect fit for this growing sector."



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