

# NurseryPro® Fish Retailing System

## Caution!!!

To avoid fish kills allow 6-8 weeks for the biological filtration system to become established. We strongly recommend you start off with a **small amount of inexpensive fish** during this “break in period”. Fish loads and fish quality can gradually increase as the biological filtration establishes itself. Regular water testing will help indicate the development of the biological filtration system. Water changes should be performed weekly after stocking fish to reduce spikes in the nitrogen cycle. Read through this entire owners manual before adding fish! **Remember...start out with conservative fish loads and gradually increase over the course of several weeks.**

## PROPER FISH LOAD

Even though the Fish Retailing System is designed to handle large biological loads, steps must be taken in order to not overload the system initially. Since it generally takes 6-8 weeks for the cycling process to take place, it is crucial that the initial fish load be kept to a minimum.

It is recommended that no more than **75 inches** of fish be stocked into the system during the cycling period. During this time the water should be tested weekly in order to monitor how far along the cycling process is. Water changes should also be carried out at least once a week during this time. About 25% of the water should be changed at a time.

After the cycling period has finished, more fish can be added to the system, but at a gradual pace. You **DO NOT** want to add too many fish at one time. For example, if you cycled the system with 12 six inch fish, you do not want to add an additional 20 six inch fish the next day. The addition of more fish will take time as the bacteria bed of the FRS matures. To put it simple, the longer the system has fish in it, the more beneficial bacteria that will grow, resulting in an overall greater fish load. The maximum amount of fish that will be able to survive in the FRS is going to be dependent on the age of the system and the regularity of maintenance (ie; water changes, replacement of carbon, changing of the UV bulb, etc).

# **NURSERYPRO® FISH RETAILING SYSTEM NO LONGER A RETAILING CHALLENGE!**

## **FRS W/ UVC & NON UV-C SYSTEM**

In the retail setting, water draws consumers like a magnet. Lawn and garden retailers have creatively maneuvered fountains, ponds and waterfalls into key areas to increase traffic flow. The sound of water attracts consumers, who will meander to its source. At water's edge, most will look for signs of life, as human curiosity dictates!

When we think of life in the water feature, we think fish! A variety of goldfish and koi have established themselves as the number one inhabitants of garden ponds throughout the world. As the popularity of water gardening continues to rise, water gardening retailers have come to justify the inclusion of livestock as an appropriate addition to their water gardening department. This allows consumers the complete one-stop shopping experience, further enhancing the retailer's image while increasing sales.

Bringing fish into the retail environment is a task that should not be taken lightly. As the old adage goes; measure twice; cut once. Retailing fish should be taken seriously and based on sufficient research. Following these basic guidelines for the NurseryPro® Fish Retailing System will help you take the plunge in retailing fish.

### **1. GETTING TO KNOW YOUR FISH RETAILING SYSTEM**



With the NurseryPro® Fish Retailing System, everything comes in a self contained package! The modular tank has a rectangular viewing area with rounded corners to protect the fish from damage. The bright blue tank color allows for the fish to be viewed easily. The 160 gallon capacity allows for a fair mixture of fish and yet keeps enough open space available to maneuver nets and easily net and bowl fish as needed.

Structural benefits of the tank surpass the state of the art construction. The durable double-walled polyethylene construction will never bow from the pressure of the water. And for ease of movement for setup and teardown, the bases of the units are molded to accept forklift/pallet jacks.



Keeping a proper environment for the fish has proven to be the number one factor in the success of fish retailing. The proper environment for fish is water – pretty simple! What complicates this is the fact that there will be a huge percentage of fish in a small volume of water. Fish holding systems are NOT meant to house a huge number of fish for tremendous durations. Do not confuse a retailing system with a water garden. The prevailing concept amongst the two is: the nitrogen cycle. With appropriate turnover, all should go well if an appropriate filtration system is provided on the onset! An oversized combination of mechanical, biological filtration and photological (UV) filtration is the best option. Because tanks that are interconnected share the same water quality and water quality issues, the drawback is the potential spread of disease and water quality problems. This is detrimental from the retail aspect as all sales must be halted until proper treatment is administered and the problem is cured – loss of time and sales.

Remember, not everyone will be bringing in a large shipment of fish. Upon finding an appropriate filtration system, allow the tanks to go through a cycling period for bacterial colonization. As we all know, there is a multitude of products available for facilitating bacterial seeding in filters (NatureClear, Ecosystems' Nature's Choice, etc.).

NurseryPro® Fish Retailing Systems provides an ideal combination of both mechanical and biological filters with optional UV sterilization. Skimming action occurs 24/7 with a wet/dry trickle over (1) filter pad on top of BioBalls. Water is then pumped (via 1000gph Ultra Pump) into the biological chamber. This is where minute particulates separate and flow upwards through BioBalls and two filter pads. Once water travels through this upflow chamber, it overflows via a waterfall weir, returning into the fish holding area.

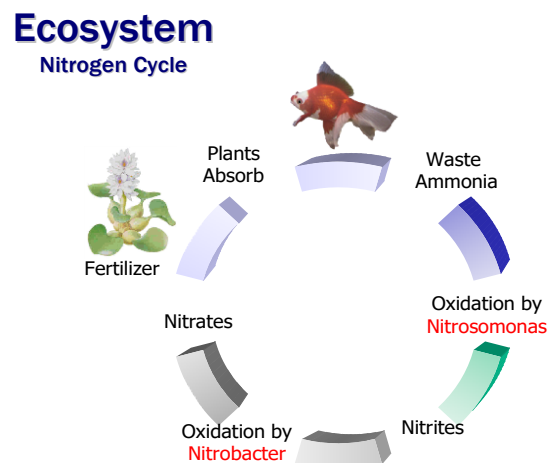
## HOW IT WORKS

1. Self contained unit
2. Filtration flow-in occurs through the skimming weir.
3. Filtration flow-out occurs through the waterfall weir.
4. The filtration media collects fine particulates improving filter efficiency.
5. Green water also effectively remedied by the UVC (UVC version only).
6. Filter cleaning has been dramatically reduced through the use of unique skimming and biological filtration.
7. Ease of tank maintenance handled through simple bottom drain and ball valves.
8. **Bio-Balls** help to create healthy water for fish through biological filtration.
9. Additional aeration handled through skimming action and water differential and NurseryPro's Pond Aerator 2 units aerating dual chambers.

## The NITROGEN CYCLE: BASICS OF WATER ECOLOGY

A naturally occurring process, the nitrogen cycle (nitrification), is a process in which ammonia is broken down into nitrites and ultimately into nitrates. This promotes tank health because ammonia and nitrites are dangerous to fish. High levels of beneficial bacteria are a critical ingredient to the nitrogen cycle as they act in converting these toxins into a less harmful form.

Fish waste, decomposing debris and uneaten fish food all contribute to an increased ammonia load. The nitrosomonas bacteria convert ammonia to nitrites. However, nitrites are also harmful to fish. Nitrobacter bacteria convert nitrites to nitrates, which are much less harmful and can be used by aquatic plants as fertilizer. Fish have a difficult time surviving unless the levels of ammonia and nitrites are kept in check. The figure below shows how the nitrogen cycle works.



## 2. LOCATION OF THE TANK



The FRS should be located on a firm and level base on the ground. It is critical for proper skimming and return action that the weirs for both, waterfall and skimmer be level (front-to-back and side-to-side). Shims may be used to achieve this level. Locate units in an area conducive for water changes.

As with any effective merchandising, it only makes sense to keep fish within close proximity of the remainder of the water gardening department. As previously mentioned, the inclusion of fish will act as further attraction to consumers. As we observe consumers, parents often follow their children, who manage to find the most interesting and entertaining thing upon entry – in this case, FISH! Without a doubt, the traffic flow will be great in these areas, and thus you must have sufficient space for both onlookers and active consumers.

With this in mind, the area must be appropriate for the fish, the retailer, and the consumers. Proper lighting, shade, and consistent temperatures will help in the ease of fish husbandry. The location must have good circulation, as it will have significant amounts of water and fish, which equate to humidity and odors (if indoors).

NurseryPro® Fish Retailing Systems should be under a shade structure (pergola, lattice board, shade cloth, etc.) in outdoor settings. Too much light can affect the overall system. Excessive light will not only raise temperatures, but cause excessive algae growth on the walls of the tank (though certain algae growth is good) and may lead to a single-celled algae bloom turning the water pure green. Not only will this be unattractive, but consumers won't be able to see your fish and excessive algae blooms will consume much needed oxygen at nights. Consider providing supplemental lighting both indoors and outdoors for the sake of viewing.

## 3. INSTALLATION OF THE FISH RETAILING SYSTEM

### COMPONENTS

1. FRS tank
2. Bottom drain assembly (pre-installed) (main vault)
3. Bottom drain assembly (pre-installed) (biological chamber)
4. Bottom drain screen
5. (3) BioBalls (qty 3 boxes)
6. NPU1000 pump
7. Pump assembly
8. Pond Aerator 2
9. Filter rack
10. (3) Filter pads ( 2 in the biological chamber and 1 in the skimmer vault)
11. (2) Media bag
12. (2) 3/4" PVC (slip x slip)
13. (2) 3/4" PVC spigot (slip x slip)
14. FRS cover net
15. (3) Velcro® strips to secure cover net down.
16. Activated Carbon (9lb)
17. EcoStarter (8oz)

### Optional UV Kit

- 19. NPU350 pump
- 20. UltraKlear 4000 UV (24 watt)
- 21. UV assembly

### Unpacking the System

The FRS was designed to arrive almost completely pre assembled. **Once unpacked, you must install the spigots on the drain lines, see below.** If using the UV kit please follow the installation instructions below. You are now ready to fill the unit with water. The unit should be filled so the water line in the main vault is 1" from the top of the skimmer plate openings. You are now ready to plug in the pump and air stone. For best results place the air compressor on the floor behind the unit. The velcro strips can be attached to sides of the main vault no more than 2 inches from the top. ( exact location may vary ).

### Termination of the drain lines

1. Decide if you want to terminate the discharge pipes at the edge or if you would like to extend the pipe off to one side. If you are going to terminate the pipe where it is just glue on the spigots. If you should decide to extend off the pipe glue on the elbows and cut a custom piece of  $\frac{3}{4}$ " pvc to the desired length. Glue this in place and add the spigots.



### LOCATION OF FILTER MATS AND MEDIA

The FRS is designed to have two chambers in which to place filter mats and bioballs for biological filtration. In the skimmer vault, place one media net filled with bioballs in the bottom of the vault followed a single filter mat on top. In the biological chamber, put the filter rack in first, followed by the 2 filter mats. Finally, place the Bioballs on top.





### **CONNECTING THE PUMP**

The maximum flow rate through the system is 1000gph. This flow should not be exceeded due to the clearance available in the biological chamber. The purpose of the pump is to transfer dirty water from the viewing tank through the mechanical skimming vault and into the biological filtering chamber. The pump will reside inside the skimmer vault with the pump assembly leading into the biological filter to give the best results. Be sure to remove the foam prefilter from the pump. This will prevent the pump from getting clogged as a result of a dirty prefilter. UVC models will have a separate pump (also in the skimmer vault) and a UV assembly connecting the pump to the unit with return into the biological chamber.

### **INSTALLATION OF THE POND AERATOR 2**

The purpose of the Pond Aerator 2 is to supply the Fish Retailing System with a sufficient amount of oxygen. Placement of the airstones should be in the bottom of the biological chamber and in the main vault itself.

### **CONNECTING OPTIONAL UV**

The purpose of the UV Clarifier serves two purposes. It will help prevent unsightly algae blooms from occurring and more importantly, it will help keep parasites under control. The UVC option has a 350gph pump and should not be exceeded for sterilization purposes.

1. Connection of NPU350 magnetic driven pump is done via UV assembly kit. Attach the pump to the 36" section of vinyl tubing and place in the skimmer vault. Take opposite end of tube and connect onto bottom inlet of UV. Be sure to remove the foam prefilter from the pump. This will prevent the pump from getting clogged as a result of a dirty prefilter.



2. Place UV unit into the central vault (between biological chamber and skimmer vault) with discharge facing towards the front of the tank so that water will be released into the biological chamber.



3. From the discharge of the UV Clarifier, attach the 24" section of vinyl tubing so the final lead drains into the biological chamber. Make sure all hose clamps are securely tightened.



### UV LAMP INSTALLATION & REPLACEMENT



**DO NOT TOUCH OR HOLD THE UVC BULB WITH BARE FINGERS/HANDS**

## INSTALLING THE UV BULB

### IMPORTANT

A wet test of the UltraKlear UVC under operating conditions must be carried out before the UVC or electrical supply is installed.

### WET TEST:

Connect the unit following all installation instructions.

Test for leaks after running for 24 hours.

1. Remove UVC chamber cover lid by unscrewing the green plastic screw on top.
2. Unlatch the lid by twisting in a counter clockwise direction and lift up.
3. Inspect the UV Chamber and quartz sleeve for water leaks.
4. If there are no signs of leakage, you can proceed in installing the UVC bulb.

If there has been any damage to the unit, please return to the point of purchase for inspection.

This test should be repeated whenever the bulb or quartz is changed.

### Installation of the UVC Bulb

After following the wet test procedure, ensure that the electrical supply is turned off and disconnected before carrying out any operation.

Remove the UV bulb from its separately packed box, taking care not to handle the bulb but only the bulb base, as skin oils may damage and shorten the life of the bulb.

1. Screw the UVC fully into the light fitting on the bracket inside the lid of the UVC chamber.
2. Insert the bulb into the quartz sleeve and close the UV chamber cover lid.
3. Secure the lid by latching back into place and putting the green screw back in and tightening.
4. If closure of the lid is difficult, it may be necessary to lubricate the O-ring seals with a silicone lubricant (included).



**Warning** - The cover must be completely closed before the UVC is turned on. Direct exposure to UVC light can damage your eyes or skin.

You may now connect your UVC to the electrical supply and turn on.

5. Status of the bulb can be checked via the viewing window on top of the lid.



### UVC BULBS & QUARTZ SLEEVE MAINTENANCE

1. The UV bulb must be replaced yearly. Efficiency with 24/7 usage is greatly reduced in a season's time. It is recommended that the bulb is replaced and reconnected in spring.
2. The Quartz sleeve can become coated with lime scale build-up in hard water areas. This should be carefully removed from the quartz sleeve with a soft cloth.
3. A wet test must be carried out after maintenance to ensure that there are no leaks before the UVC is reconnected.



## Electrical installation - UVC Models

The power supply must meet the specifications on the product.

The UVC is intended to be used either with a weatherproof cable connector or permanently connected to the fixed wiring in the main system other than by means of a plug and socket.

**Do not use the supply cable to lift the UVC as this may cause damage.**

For permanent installations to the mains supply, it is necessary to conform to the regulations of the local electricity authority and this would include the use of a metal or plastic conduit to protect the cable. Attention has been drawn to the fact that special rules concerning the installation of your pond UVC may exist (i.e. local building regulations).

This UVC must not be used in swimming pools, or areas where people are in contact with water.

Always disconnect the main electricity supply whilst installing, repairing, maintaining or handling the equipment. Consult a qualified electrician if in any doubt about wiring this product to the mains supply.



### Electrical/Safety

**UVC Warning: Caution:** Dangerous Ultra Violet Radiation. Rays from the UVC lamp are harmful to eyes and skin.

Always turn off UVC electrical supply before any maintenance.

To protect unit from flooding, leave a minimum 5cm showing above ground level to protect UVC electrics.

Never immerse unit in water.

Locate unit 1.2m minimum from pond edge to ensure the filter cannot fall in.

**Warning! Using pipe smaller than ¾" diameter WILL decrease the flow potential.**

## 4. MAINTENANCE & CLEANING

### Maintenance

Ensuring the environment is appropriate for fish in the selling tank environment -- includes weekly, if not daily testing of the water quality. Pay close attention for ammonia buildup (as a result of fish waste and decomposing material), nitrite buildup and nitrate buildup. In addition, pay attention to pH, temperature and dissolved oxygen stability. Appropriate water changes will aid in the efficiency of the fish holding system as long as it does not create a drastic change in the environment. Consider salting (non-iodized) your tanks for fish health so long as it does not house aquatic plants. Taking care of the water quality yields fewer problems in fish health.

With maintenance, water quality becomes the most prevalent issue. Water quality deals with the invisible characteristics of the water itself. Water quality is based on the chemical compounds present in the water. There are certain chemicals that are more likely to have a negative effect on the life in the pond, especially fish and plants, if left unchecked.

### What factors affect water quality?

There are a number of ways that water quality can be affected. The following are the main one's to watch out for.

- Chlorine & Chloramines – chlorine and chloramines are often found in tap water and can harm fish if present in large quantities.
- pH – pH is the measure of free hydrogen ions in solution. In other words, pH ratings will let you know how acidic or basic the pond is.
- Salinity – is the measure of salt found within the water. Salt exists in the water only when added by the pond owner.
- Excessive protein and nutrients – proteins and nutrients are added to the pond through fish waste and decaying debris. These proteins are the number one cause of the formation of foam
- Dissolved Oxygen (DO) – is the amount of oxygen present in the water for the fish and bacteria. 3ppm necessary to sustain beneficial bacteria, 8ppm is necessary to sustain fish.

## DECHLORINATORS

Dechlorinators are needed to render the retail tank safe for fish. Dechlorinators will remove dangerous chlorine and chloramines from tap water, which are harmful to fish when present in large amounts. They also remove heavy metals and help improve the slime coat on fish. Over time, chlorine levels in the tank can decrease as it dissipates into the air with increased turbulence. Chloramines, however, will never leave the water source without the intervention of a treatment such as a **Dechlorinator** (Ensure that the Dechlorinator treats for chloramines). All dechlorinators are fast acting and fish can be added immediately after treatment.

## AMMONIA

Ammonia is produced through fish waste and other decomposing matter inside a retail tank. Ammonia is highly toxic and high ammonia levels can quickly kill fish. A dangerously high ammonia level often occurs in newly established tanks where fish have been introduced. There is often not enough beneficial bacteria established to break down the amount of ammonia added to the system by the fish. A healthy amount of bacteria takes time to colonize in any new system. Newly introduced fish, however, take no time at all to producing waste. Intervention through ammonia removers will help render the water non-toxic to the fish. Here are NurseryPro's ammonia removers:

- EcoChoice – naturally reduces ammonia, nitrite and nitrate. Seeds biological filters and is safe for fish and plants (note: takes 6-8 weeks to become fully established).
- EcoStarter Liquid – removes and detoxifies: chlorine, chloramines, ammonia, copper & heavy metals. Adds essential electrolytes, 3 part skin slime replacer, reduces stress and instantly “ages” water.

Water changes will help in keeping the ammonia level down. An average drain of 25%-50% per week is recommended. Fluctuating bioload will dictate the frequency of backwashing necessary.

## pH ADJUSTERS

Beneficial bacteria, fish and plants are living organisms and require conditions that help them survive and multiply. pH is one of the most important of these factors, and when ideal pH levels exist in a retail tank, the fish can thrive stress free.

pH is the measure of how acidic or alkaline (basic) the water is. pH levels should be monitored and adjusted to suit the fish. It is also critical, however, to maintain a stable pH level in your pond. pH is measured on a scale of 1-14.

A pH range of 6.5 – 9 is acceptable as long as there are no quick and drastic jumps. Water is alkaline above 7.0 and acidic below 7.0. Alkalinity may be caused by excessive lime (limestone rocks, cinder blocks, concrete etc.). Acidic conditions are often caused by decomposing waste in the water. This could be fish waste, dead plant material, or just random debris that ends up on the tank. Ammonia

from waste becomes more dangerous as pH decreases. Here are some simple rules to follow when dealing with pH, and some products that can help.

- Raise pH when levels are below 6.5 (pH Up and pH Equalizer Up)
- Lower pH when levels are above 8.5 (pH Down and pH Equalizer Down)
- Use pH Equalizer to prevent pH from fluctuating after using pH Equalizer Up or Down

Sudden changes in pH are very stressful to fish. Water without the proper level of buffering capacity (alkalinity) is very susceptible to changes in pH. Properly buffered water will prevent sudden and drastic changes. "If it's not broken, don't fix it!"

## **SALT**

Adding salt to a retail tank helps fish by relieving stress caused by poor water conditions or harmful bacteria. Salt aids in what's called osmo-regulation. Osmosis is the concept that fluids diffuse through a semi-permeable membrane from a solution with a higher concentration to lower concentration. Fish expend energy keeping fluids WITHIN their system. By adding salt, this helps with osmo-regulation and less energy is wasted for osmo-regulation.

- Salting a tank as a tonic can occur in very low concentration (some is better than none concept).
- Salting a pond for micro-parasites needs to be done at a higher concentration ... 3lbs for every 100 gal (1lb. per 100 gal. everyday for 3 days)! Be aware: This is strong enough to kill aquatic plants.

Remember, salt DOES NOT leave the system without water changes. As water evaporates, the salt concentration increases.

**\*\*\*\* If using EcoRx Pond Salt follow directions on label for salting. \*\*\*\***

## **FOAM REMOVAL**

Foam may develop and collect near the source of any water turbulence in a tank. Oftentimes, foam develops and stays in tanks that have excessive organic waste such as protein. Foam removal products will remove the foam for durations; however removing the source is the ONLY way to remedy foam dilemmas in the tank. Foam removers are not permanent fixes, they do not attack the source, just the problem. The following product will help remove foam:

- EcoFoam Away by NurseryPro

Over feeding fish and having too high of a bio-load (fish load) plays a huge role in tanks with excessive foam.

## **OXYGEN REPLACEMENT**

Good oxygen levels in a pond are very important in order to support life such as fish and beneficial bacteria. Ideally an oxygen level of 8+ ppm is required to support all life in a pond. Most pond owners will not be able to test these levels, so it is important to make sure that they have a good circulation system such as a waterfall, fountain, or aeration system.

### **Routine Maintenance**

Carry out routine maintenance when the waterfall weir flow rate is visibly reduced and/or when the UV discharge has reduced water flow.

1. Switch off and disconnect the UVC from the electrical supply before carrying out maintenance.
2. Vigorously agitate BioBalls, in skimmer vault, to remove any large debris.
3. Allow pump to transfer dirty water from skimmer vault to biological vault.
4. Turn off the pump(s).
5. Thoroughly clean the pre filter on the pump.
6. **Using the Backwash System** – Open bottom drains to allow for bottom settling debris to flow out. A bottom drain exists for both the main vault and the biological vault. An average drain of 25%-50% per week is recommended. Fluctuating bioload will dictate the frequency of backwashing necessary.
7. Close bottom drains after cleaning
8. Replace BioBalls, filter pads and media bag once vaults are free from debris.
9. Switch on pump(s) (and UVC if applicable) at the electrical supply.

## **Annual Maintenance**

### **Check for wear**

Once a year you should service your UV and REPLACE UV bulb.

Dismantle the filter and examine all the parts for wear or damage, replacing any parts that show obvious signs of wear and/or damage.

Special attention should be paid to all O-ring seals.

### **Cleaning filter pads (from biological chamber)**

Over accumulation of biological debris will cause blockage in the filter pads. Avoid frequent cleaning. Rinsing with tap water will kill off a majority of the much needed biological activity. Consider knocking the pads clean on a flat, hard surface. If they absolutely have to be rinsed, rinse the pads off in the water that was taken out during the water change. Eventual wear and tear will occur on these pads, replace as necessary.

### **Winter Storage**

The filter can be run continuously if the water is heated and pump flow is maintained. Alternatively, in winter the filter may be switched off and the entire unit may be stored in a frost-free location until the following season.

## **5. TROUBLESHOOTING**

**In order to correctly identify if you have green water or cloudy/brown water, a settlement test should be carried out.**

**Fill a glass of pond water and let it settle for few hours. When the glass is stirred, a small layer of settled waste can be seen at the base of the glass. This indicates that you have brown or cloudy water and that, if you have an UVC model, it is working correctly. Lack of settlement indicates that you have green water and the UVC is not working correctly.**

### **Problem**

#### **FILTER LEAKS**

- Check that all O-ring seals are in place and are not damaged. Replace if necessary.
- Check that the canister cover sealing ring is correctly fitted and closed.
- Check hose connector seals and locking nut for damage.
- PTFE tape may be needed to give a water-tight hose to hose connector seal.
- Always secure with a jubilee clip.

### **CLOUDY/BROWN WATER**

- It takes upto 8 weeks for the bacteria to become seeded. Do not place excess fish loads in the tanks till this time.
- Be careful to not over feed the fish. Overfeeding causes the fish to produce excess ammonia levels which should be rectified with a water change.
- The flow rate/pond turnover is too high or low. Check pond volume and pump flow rate. See "Connecting your Pump"
- The filter is not being supplied with pond water 24 hours a day. Do not turn off your pump. Continuous running is needed to maintain a clean and healthy pond.
- The water is extremely dirty - remove leaves and waste - do a partial water change.
- Filter is incorrectly sized - refer to filter performance and specification chart. Calculate pond volume - see 'Connecting to your pump'.
- Inlet and outlet pipes are connected the wrong way round. Disconnect and reconnect using the flow in flow out arrows on the filter.

### **GREEN WATER**

- Settlement test the water to ensure that there is no sediment suspended in the water. If there is follow cloudy/brown water troubleshooting list.
- If you have a non UVC model this condition cannot be cleared without the use of a green water treatment.
- The flow rate from the pump exceeds the maximum for the installed filter - check filter performance and specification chart. Reduce flow if needed.
- The pump flow rate is below the minimum turnover for the size of pond. See 'Connecting to your pump' and 'Poor Flow' procedure (below).
- The filter and UVC is too small for the pond and pond conditions present - check filter performance chart for accurate filter sizing.
- The UVC quartz sleeve is dirty - clean the sleeve gently with soft cloth using a vinegar solution.
- Follow all cloudy water trouble-shooting points.

### **POOR FLOW FROM FILTER OUTLET**

- Inspect pond pump for blockage and ensure that the pump is in good working order.
- Ensure that inlet and outlet pipes are on correctly - see arrows on filter box.
- Pressure filters cause a restriction in the outlet pipe work from your pump, equivalent to a 1-2m head lift - ensure that the pump is capable of running with this back pressure plus the additional lift if the outlet is running to a water fall etc.
- Always use the minimum length of hose needed as this will keep pressure losses to a minimum.
- Ensure that the hose connector has been cut to the correct size and the smaller hosetail size removed - see 'Connecting hoses'.
- Ensure there are no kinks or folds in the hose.

## **6. TIPS FOR MAINTAINING HEALTHY FISH**

•    Always buy healthy fish from a reputable supplier. Buy fish that are active and that have no visible marks or wounds on their body. Never buy fish that have clamped fins or are just lying on the bottom. Starting out with healthy fish eliminates most problems that will occur later down the road.

•    Take time to acclimate fish into the FRS. When new fish arrive, make sure to float them for 15-20 minutes before they are put into the system. This is done so that the fish can get used to the temperature and are not shocked due to the rapid change in temperature. When it is time to add the fish, **DO NOT** add the water from the bag into the FRS. Gently net the fish from the bag and put them in. The reason to not mix the water is because the water from the bag has become heavily polluted



from the waste of the fish and mixing the two waters would cause an ammonia spike that could stress the fish out.

- Do not be afraid to add a little salt to the water when the fish first get in. This will help them osmoregulate easier and aid in the prevention of parasite formation. A first time dose of 1 pound for 100 gallons is recommended.
- It is recommended that water changes between 25-50% be performed on a weekly basis in order to ensure proper water quality. When water is added back to the FRS, make sure that it is of similar temperature to the water that is already in it. You want to make sure that the water is cool to the touch.
- When it comes to feeding fish, a little goes a long way. Only feed the fish every other day and only give them enough food that they can consume in 2-3 minutes. Any uneaten food should be removed immediately.
- If the fish become sick and medication has to be used make sure to follow the directions and provide plenty of aeration. Remove any activated carbon during the treating process because carbon will remove these medications from the water making them useless. When treatment is done, add carbon to the FRS in order to remove it from the system.
- To achieve maximum oxygen circulation put one of the air stones in the main vault and the other in the skimmer vault with the bioballs.
- **NEVER** leave the fish and FRS exposed to direct sun. Always keep them in a shaded area and away from warmer temperatures. This will prevent the fish from becoming too hot. Also, the warmer the water is, the less dissolved oxygen is in the water making it harder for the fish to obtain oxygen.

## 7. MARKETING

Proper signage as to fish variety, size, price and care information will go a long way in selling fish. All fish leaving your facility should be accompanied with a care sheet. Fish bags should be oxygenated and double-bagged for consumers. An educated staff will save time and money in the long run. Once you've invested in the proper facility for the fish, you must also ensure that your salespeople are knowledgeable enough to sell the fish. Educating the consumers (via handouts and seminars) will also pay you dividends in the long run.

With the rise of water gardening as a hobby, retailers should evaluate the logistics as to whether or not it is appropriate to bring fish to complete their water gardening department. If done correctly, it can be a lucrative addition. Take By taking the plunge into fish, you'll be serving your customers with a complete water garden selection.

## PROBLEM PROCEDURE / GUARANTEE

### FAULTS - PROBLEM PROCEDURE

This will solve most problems quickly and easily.

1. Ensure electrical procedures have been followed fully.
2. Follow routine maintenance procedure fully.
3. Check "Installation" details.
4. Ensure that the bioload is below the maximum fish load recommended for the unit performance and specification chart.
5. Follow troubleshooting guide.

6. If there is a mechanical breakdown of the pump, filter or UVC, contact NurseryPro Inc. for technical assistance or warranty claim

## **GUARANTEE**

This product is guaranteed against defects in material and workmanship for 1 year from the date of purchase, under normal use. The guarantee IS NOT VALID in case of improper use, negligence, lack of maintenance or accidental damage to either the tank, pump, filter or UVC. If the pump, filter or UVC fails due to a manufacturing fault within this period, the part will be either repaired or replaced free of charge. Liability is limited to replacement of the faulty product only; no other costs will be reimbursed. This guarantee is not transferable and does not affect your statutory rights. This guarantee does not confer any rights other than those expressly set out above. This guarantee does not cover the filter foams or UVC bulb, which will need replacing when worn or every 6 months. If any parts are needed, spares are available.