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A word about Practical Aquaponics for Everyone.

Hello everyone.

This is the fourth edition of Practical Aquaponics for Everyone.

The number of subscribers continues to grow every week. Our magazine is made available on AquaponicsHQ Forum for members and is also emailed to those on the subscription list.

There are those who have paid subscriptions and they also receive a printed copy by mail together with a small but useful gift.

This summer has been a bad one for weather. We have had lots of rain and very mild temperatures. A bit unusual for South East Queensland. The rain has played havoc with my Aquaponics system and the systems of my friends. There has this been a terrific invasion of bugs which has resulted in poor yields in the veggie garden.

The tomatoes have fared particularly badly with more than half of the crop consigned to the compost bin.

I have tried a few pest control recipes and some work better than others.

Over this summer all my fish have grown really well.

The Silver Perch are powering along. The fingerlings were obtained in October and are now of various sizes. The largest are around 600g and the smallest would scarcely be 100g.

In a few more weeks those 600g ones will have put on enough size to seriously endanger their lives.



The Sleepy Cod are a hit with the children that visit. It is an added bonus just to see the joy it brings.

The largest of the Sleepy Cod are now approaching 100g in weight.

I will soon need to get them out of their fingerling tank into bigger quarters.....

In January, I obtained 1000 Murray Cod. I shared them with Gary D and some of the other members from www.aquaponicsHQ.com leaving me with 450 Murray Cod.

I had not planned on having any more than 200 for myself, but now I am very happy with the way it has turned out.

I have had steady losses of the Murray Cod, 29 in total. Some because the bigger ones like to eat the smaller ones, and some have died for reasons I do not understand.

Overall, they are doing very well.



I carried out a count a few weeks ago and found that I have 520. Obviously, the bloke at the hatchery gave me a few extra. Even though I had shared the others out and should have been left with 450. Everybody who obtained 50 or 100 from my batch got 4 or 5 extra fish, so the guy at the hatchery is not very good at counting or a very generous man. I prefer to believe the latter.

While counting them out I graded them into small and large. I did this to try and stop them from eating each other. The smaller ones (250 approx) are now resident in a 1000 ltr tank and the (250 approx) larger ones are still in the header tank.

I will move the bigger ones off into their own 1000 ltr tank in a few weeks time. Since they have been separated I have only had one fish loss.

Silver perch in a Balcony Kit. The large specimens are all over 1.2 Kg each. The smaller one is about 300g
www.aquaponics.NET.au

Aquaponics From A Partners Perspective

My husband has always had many interests and there is always some kind of project that he wants to try. Needless to say, I wasn't entirely surprised, when after spending a bit of time surfing the net, he told me about Aquaponics.

To start with, I must admit that I had concerns. After he had told me of the equipment that he would need to get, I was worried about the cost. We were just starting out and didn't have any place to put such a setup and, it seemed that knowing this, after a while all thoughts of Aquaponics left his mind.

That was not the case. He found a place where he could set it up and so, for the past couple of weeks, anytime he has had a spare moment, he has been doing just that. To start with, it was a bit stressful. Trying to locate all the components for the system he had designed, proved rather time consuming and at times harrowing, but he stuck it out and soon had everything that he needed. The biggest problem, and most unforgettable time of the entire project thus far, was digging a hole to sit the tank in. He found it necessary to sink the tank into the ground in order to regulate the temperature (with such unpredictable weather, I saw the necessity) as well as making it easier to access.



Laying out the roof of the enclosure, we got a much better idea of how much space the system was going to take up.

This would have been easier if the ground he wanted to dig into, didn't consist of clay. And with the heavy, near constant, rain that many had been praising, the ground was wet and heavy and the job more time consuming and back breaking than usual.

To cut a long story short, the hole was finally dug and the rest of the set up is nearing completion. Which has got me to thinking, what is it that I feel

about his Aquaponics project? So I sat down and thought about it. And this is what I have come up with.

As far as the start up cost is concerned, all of that should be made back soon with lovely fresh fruit and veg that unlike at the shops, won't cost an arm and a leg. Recently, I have discovered it has been almost impossible to get fresh fruit and veg that is good quality. I bought a bag of potatoes, thinking that they looked and felt all right, but once I cut into them, I discovered that they were inedible. I thought, wouldn't it be wonderful to go out into the yard and pick some fruit and veg right off of the plant? It would take away the worry of getting something past its use by date as well as cancelling out the worry of pesticides and other nasty chemicals that tend to be liberally sprayed over plants these days.

How do you really know that what you are getting in the shops hasn't been subjected to this very treatment? It would be great to know exactly what was being done to the plants, and not have to worry about possibly harmful chemicals all over food.

I found that I was spending a lot of time thinking about the plants and not about the important part of any system that allows the crop to grow so quick and healthy; the fish. I have always loved to eat fish. Though I have never been too keen to go to any of the local fish markets, to see what they had. I found that the smell kept me away and like the fruit and vegetables, you never know how long a fish has been sitting there. I thought that I had a solution to this problem. After all, what man doesn't like to fish? I then found out that he was not about to risk sea sickness just so that I can have a lovely, fresh caught fish.



The marine carpeting flooring or the putt-putt course as my husband calls it, certainly looks better than the dirt. The bath tub grow beds are in place.



Vic and Gloria's Tannum Sands Aquaponics....

I first heard about Aquaponics in May 2006 when I came across a short article in a gardening magazine.

The article gave the address to Joel Malcolm's web site. After reading through the website I decided to order a copy of the book "Backyard Aquaponics" In due course a flood and drain Aquaponics system was built using the principles set out in that book.

My first system was made up of 4x1sq metres of grow beds and a 1100L fish tank. The grow beds were low cost poly square tubs that are sold as cattle feed troughs. This small system was stocked with 20 Jade Perch that we obtained from an Aquaculture farm nearby.

A portable carport frame was purchased and this was erected to enclose the beds and fish tank. It was fitted with 50% shade cloth around the



My first Aquaponics system at Tannum Sands

sides and water proof plastic cloth on the A line roof.

Some of the crops we grew in that first system were cabbage, broccoli, cucumber, beans, chilli, lettuce, silver beet, strawberries and herbs. We were really impressed with the flavour and quality of those first crops.



"The Large System" The fish shed in the foreground and the greenhouses above and behind.

Next came the 'large' system. Our block of land has a very nice slope. This had an advantage – a retaining wall just over a metre high, perfect to build a fully enclosed and separate 'fish' shed below the wall, and the four portable car port frames set out on the higher side, and arranged together in a square.

These portable car port frames are relatively inexpensive and a good way to get a good size greenhouse. [Go to Page 5](#) →

Aquaponics From A Partners Perspective.....

.....Continued from Page 3

Low and behold, lovely plate sized fish can be grown in the system!

As soon as I found out this, I couldn't help it. If my other half wasn't going to take the time to set up a system that could provide lovely, fresh crops and tasty fish. I would just have to do it myself! Luckily, my husband knows the advantages of Aquaponics and has saved me from doing the work. So now, I look forward to seeing an up and running system and being able to pick the crops and eventually, having fish to go with it.....

Bernadette Curtis writes from Wynnum Queensland .



The marine carpeting flooring or the putt-putt course as my husband calls it, certainly looks better than the dirt. The bath tub grow beds are in place.

Vic and Gloria's' Aquaponics at Tannum Sands..... Continued from P4

The four frames are enclosed in one with bug net sides and a tough horticulture clear plastic film on the 'A' line roof.

This setup on the slope is perfect to run a flood and drain system using only one pump.



The row of Aquaponics Grow Beds can be seen in the back ground and the "no-dig" beds in the foreground. We have just added another 2 grow beds before we have even finished setting up. If there is room in the greenhouse it may as well be used.

The grow bed area is large enough to accommodate my Aquaponics grow beds and a good number of "no-dig" garden beds to grow root crops such as potatoes, beet root, carrots and the like. There are five fibreglass grow beds approximately 200cm x 90 cm x 30 cm deep.

The grow beds each sit on a stand made from eight besser bricks and three 25cm planks. Return water from the five beds flows into one 100ml PVC downpipe. Poly pipe was used to carry water to the grow beds.

Root crops will be grown in earth beds, as they have trouble getting their roots down in the 15ml gravel. We are fortunate enough to have a very good water supply, but Aquaponics combined with our no-dig gardens is very water wise. A percentage of the water from the fish tank is changed every week and this water will be used to water the earth beds. This gives us excellent nutrient rich water to water root crop beds. It is good to be getting two uses out of the water so used.

The 2300L fish tank has been stocked with 250 Jade Perch fingerlings. The fish tank shed has plenty of room for expansion.



Above:- We can fit another one or two 2300 ltr fish tanks if we so desire, and there is room for a nursery tank, bio filter and a work bench.



Left:- The 100 ltr sump has been converted into a stand alone nursery tank

In conclusion my wife and I would like to thank Murray Hallam for his help and advice. Also thanks for making our fibreglass beds and fish tanks and supplying pumps, bug net, etc. It has been an interesting journey that I feel has only just begun.



The 2300 ltr fish tank. Note the return water from the greenhouse grow beds coming in via the 90mm pipe. Also note the 15,000 lph submersible pump which has plenty of power to send the fish tank water all the way up, and to the most distant grow bed.

Sustainability Ideas.....

Bamboo is one of the earth's fastest growing plants. The rate it grows depends on the soil and rainfall, but for any given area it grows much faster than any other large plant . It will flourish in almost any soil type.

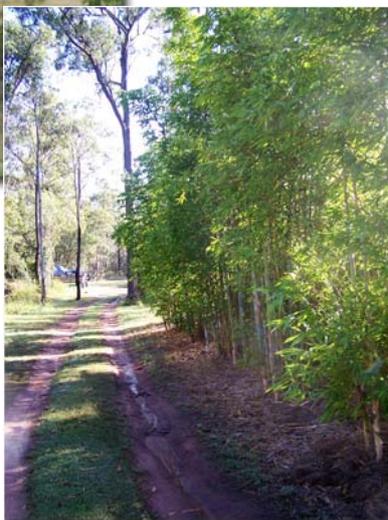


Far left:- Is a Bambusa textiles [Gracilis] or the common name is Weavers Bamboo. This Textiles is 7 years old and is a magnificent specimen being above 6 mtrs tall and about 2 mtrs Dia at the base. It has thousands of very nice slender bamboo stems.

New stems can be seen coming out of the top of the clump.

Above:- A close up of the base of the Weavers Bamboo plant.

The variety below left is Bambusa Oldhamii. It makes a very nice very tall hedge. Excellent if you need to block out the neighbours. It will grow to above 3 mtrs tall in a couple of years. This is a clumping variety and will not spread. If you wish to have a dense hedge then need to plant them 2 mtrs apart in a line. Likes a little fertiliser and moderate amount of water. Very suited to SE Qld but will withstand -8 deg of frost.



There are varieties that will grow in climates from the deep jungle tropics out to the semi arid plains and up to the alpine regions. It is said to release up to 35% more oxygen into the atmosphere than pine or hardwood trees. Bamboo needs no replanting, it can be harvested continuously leaving the core of the clump to regenerate year after year.

Bamboo grows with little or no fertilisers or pesticides.

The growth cycle is astounding. It takes a maximum of 3-5 years to the commencement of harvesting compared to 15-20 years for commercial timbers.

A huge variety of products can be made from Bamboo. Building material for home construction such as flooring, wall cladding and furniture. Paper , textiles, even food for human consumption.

Why aren't we growing it in huge plantations ?

Style & Sustainability - Come to the party!

We are proud to announce the launch of BLISS ECOWEAR - bringing more green living choices to Brisbane residents.

Manufacturing methods such as water-based dyes, solar-powered factories & local production feature in our labels.



Bliss
ecowear

From the Sunshine Coast to Northern NSW, labels such as Blessed Earth, Thea & Sami, Planet Truth, OC Advantage, Bird Textiles & Pure Pod are leading the field in establishing a greener Australian clothing manufacturing industry; not to mention the green work of our southern suppliers & our overseas labels

From socks & jocks, to jeans & T's, & outfits for work or weddings, Bliss is open from Tuesday - Friday 10am - 5pm; Saturday & Sunday 10am - 4pm.

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Basic info on Plant growth requirements.

By Stephen Mogg of Aquatic Oasis at Capalaba. Stephen has 14 years experience in the supply and commissioning of Hydroponic systems and has recently discovered Aquaponics. His experience will prove to be very valuable in Aquaponics

WATER: Quality and frequency are the two key issues. Quality is important as we don't want to introduce any disease or harmful minerals or chemical to our plants. How often you feed your plants is also very important. Too often and you may create root rot or other diseases. Too little and the plants won't get enough water and minerals and may cause plant decay or death.

MINERALS: This is the key to healthy plant growth. Without food plants will not grow. Mineral requirements vary between plants and it's important to give a complete balance of macro and micro nutrients.

LIGHT: A good light source is required (artificial or natural) to achieve optimum growth. Light is a vital input for plant growth. Similar light requirements are required as would be normal for that specific plant. Some instances may require shading like lettuce in Qld during summer.

TEMPERATURE: Air and water temperature are very important. If it's too hot or too cold, plant growth will suffer.

AIR INC CO2: Good airflow around plants is very important. It helps pollinate flowers, cool the plants, strengthen stems and allow Co2 to get around plant leaves. (Don't over crowd plants and if in a greenhouse, allow air to circulate).

DISEASE & PEST CONTROL:

Maintaining and checking for pest and disease is critical to achieve success. Pest and disease can take vital growing energy away from the plant and make it sick. This causes the plant not to produce to its full potential. In extreme cases it can even cause death of the plant.

A simple organic recipe for pest control in your garden.

Ingredients:

3 large garlic bulbs.
10 or 12 chili peppers (The hotter the better. Birds eye chillies are good.)

Method:

Chop up the garlic into medium size pieces.

Chop the chili peppers to a similar size.

Place in a large saucepan (5 or 6 litres) and bring to the boil. Simmer for about 1 hour.

Allow to cool and leave stand overnight.

Strain and bottle the resultant mixture.

Processing tips.

Keep the lid on the saucepan and have a good air flow through the kitchen. I find that the vapour will burn your eyes if you take a peak into the saucepan during cooking. (Imagine what it will do to the bugs.)

Wash your hands well after handling, unless you want to smell like a Continental Chef.

Usage:

Reduce the mixture 1:1 with plain water, and spray using a small pressure sprayer.

Add a couple of drops of a good dish washing detergent to the mixture to aid the wetting of the plant leaves.

Very effective on plants like Bok Choi and Silverbeet. Works well on Tomatoes as well.

Wash the produce well before use.

If you are in the habit of throwing a few lettuce or bok



choi leaves to your Silver or Jade Perch, you will need to wash the leaves. My Silver Perch are not all that keen on leaves that have been sprayed with the mixture.

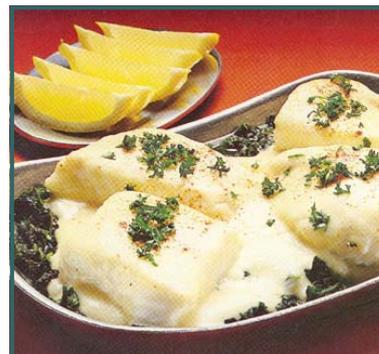
Murray

Silver Perch Florentine

In this recipe you can use either Silver Perch fillets or small whole fish. The fish bakes on a bed of spinach and is topped with Swiss cheese sauce.

Ingredients.

2 Tbs. butter or margarine
 2 Tbs. all-purpose flour
 1/2 tsp. salt
 1/8 tsp. nutmeg
 Dash EACH red pepper and white pepper
 1 cup milk
 1 egg yolk, beaten
 1/2 cup grated Swiss cheese, or cheese of your choice.
 1 pkg. 250 g frozen chopped spinach, thawed and drained. (1 cup)
 1 Tbs. lemon juice
 4 250 g Silver Perch fillets for individual servings. or 2 plate size whole fish. (600 to 800g fish)
 1 Tbs. grated Parmesan cheese
 1 Tbs. chopped parsley
 Paprika
 Lemon wedges.



Directions

1. Heat butter until melted. Stir in flour, salt, nutmeg, red and white peppers. Cook over low heat, stirring, until mixture is smooth and bubbly. Remove from heat.
2. Stir in milk. Heat to boiling, stirring constantly for 1 minute. Remove from heat. Stir in beaten egg yolk.
3. Return to heat. Add cheese. Continue to cook and stir until cheese is melted. Set aside.
4. Spoon spinach into buttered baking dish. Sprinkle with lemon juice. Arrange fish on spinach. Spoon sauce over fish. Sprinkle with Parmesan cheese.
5. Bake uncovered at 175 C for 20 to 25 minutes or until fish flakes. Sprinkle with parsley and paprika. Serve lemon wedges on the side.

Comments

Good served with buttered boiled potatoes, lettuce and tomato salad and iced tea.

Sunshine Coast TAFE

Aquaculture students are learning how to diversify and be kind to the environment through a new Aquaponics program where waste water from fish tanks is being used to grow leafy green vegetables.

Aquaponics is the combination of aquaculture and hydroponics and is now being taught at the Nambour TAFE as part of the aquaculture program.

As part of the process, waste water from the aquaculture tanks where fish are grown to maturity, is fed into two 6m by 1.8m trays where crops of lettuce and bok choy are grown.

Sunshine Coast TAFE Aquaculture teacher Stuart Whitney said the system was set up with the help of the TAFE Horticulture staff and students.

"Currently we use our aquaculture production unit to provide nutrients for the plants which are grown with no chemicals and require ten per cent less water than if they were grown in the ground," Mr Whitney said.



Sunshine Coast TAFE Aquaculture student Ashley McKinley pictured with Bok Choy grown in the TAFE Aquaponics system.

"When applied in a commercial sense this technology will allow fish farmers to diversify with other income source and increase profits."

Mr Whitney said plans were underway to develop a short aquaponics course suitable for hobbyists and people interested in permaculture

"The reality is that once you know how you can grow enough fish and crops like lettuce, Chinese cabbage, and Asian greens you can feed the whole family in quite a small space," Mr Whitney said.

"The advantage of doing it this way is that you produce high quality fish as well as chemical and pesticide free vegetables in your back yard."

Sunshine Coast TAFE offers a range of highly successful

aquaculture programs from the Nambour TAFE, and students can also study on-line.

For more information about Sunshine Coast TAFE Aquaculture Programs phone the TAFE call centre on 5459 3000 or visit www.sunshinecoast.tafe.qld.gov.au

Backyard Aquaculture = Growing fish for your own consumption.

Have you ever thought how great it would be to go out into the backyard and catch a fish when ever you felt like doing so?

Every fisherman wants to be able to catch a fish, and in recent times that desire is becoming very difficult and expensive to fulfill. "Gone-fishin' " has more elements to it other than just eating the fish. Some just like to get away and relax, while others like the idea of having freshly caught fish as part of their regular diet. For me, I very much like the idea of being able to have one or two fish dinners a week.

There has been much in the public media in recent times regarding the benefits of including regular amounts of fish as part of your weekly meals. Having fish in your diet, in general, is very good for your health. A large proportion of the populace has taken this on board and edible fish sales are up.

Just a few days ago we had been out visiting friends, and on the way home we decided to have "fish and chips" for Saturday night tea. I guess I have an unusual interest in edible fish, but I was astonished by the prices being paid by customers for fresh fish.

It is becoming a very expensive exercise to include fresh fish in one's diet.

Why eat more fish?

The health benefits are well documented. Nutritionists consistently urge us to eat more fish for better health and the reasons for doing this are now becoming clearer.

Research into the fish-consuming Eskimo and Japanese populations highlighted the low prevalence of heart disease.

This observation led to many studies investigating the effect of fish oil extracts on heart disease pre-

vention. The fish oils are a concentrated source of omega-3 (or n-3) fatty acids.

Some fish-consuming populations have a low prevalence of heart disease.

Fish oils are a concentrated source of omega (or n-3) fatty acids

Three to five fish meals per week should provide a useful amount of omega-3

Source = CSIRO Diet & Nutrition Research

Interestingly, Jade Perch are very high in Omega 3. Much higher than Atlantic Salmon and the like. Silver Perch and Murray Cod while not as high as Jade Perch are very good sources of Omega 3 fatty acids. Source = CSIRO Research.

Aquaculture, the farming of fresh fish, is rapidly expanding. This is in part due to declining wild stocks of both fresh water and sea water fish. Secondly, the demand for fish and fish products is on the rise. Increased fish consumption brings with it some difficulties.

There have been a number of warnings regarding imported fish. Some imported farm fish are raised in very unhealthy conditions with very poor farming practices. Authorities in some countries have taken the step of banning fish imports from certain countries.

Mercury and other dangerous chemical residues are now common in ocean caught fish with some species being worse than others.

Even though retailers are required by law to specify the country of origin on fresh produce, there is no guarantee that the labeling is always correct. As a result, eating fish for improved health could, in some circumstances, have the reverse effect.

Why not grow your own? —————>



The **Balcony Basic** kit, is the kit to get you started into **Aquaponics, or Home Aquaculture**

Suitable for the suburban home or home unit where space is limited.

This kit will grow out 30 Murray Cod or Silver or Jade Perch.

Imagine having your own fresh fish, clean and chemical free.

This kit will grow a steady supply of tomatoes, lettuce, silver beet, or strawberries, in fact any green leafy vegetable can be grown.

See our website for the possibilities.

Expandable.....

This kit is able to run additional grow beds. These can be added later if desired. This volume of fish tank together with the appropriate number of fish, is capable of running an additional 2 grow beds.

A rewarding, wonderful hobby..See www.aquaponics.NET.au (07) 3200 0272

See www.aquaponics.NET.au for details of kit inclusions.

So, !

It is much easier to grow your own than most people think. Small scale or home Aquaculture can be carried out in a tank as small as 500 liters or as big as the farm dam. The size of the project depends on the space available and the quantity of fish you intend to be harvest. It is very possible to have a tank based system that will produce a fish dinner for two persons every week, year round.

A home based aquaculture system will provide you with a regular supply of chemical and disease free, convenient and economical source of very fresh fish for your table

Now, that is really a very desirable outcome. Naturally that outcome can be scaled up or down as desired.

We are really blessed here in Australia with a good variety of native species that are well suited to tank culture. Species such as Murray Cod, Sleepy Cod, Silver Perch, Jade Perch, and Barramundi, just to list some of the more popular fish available. The above species readily adapt to, and are very happy being raised in tanks at home or on the farm.

Tilapia is a very good tank culture species that is commonly used in the US and other overseas places. Tilapia is totally banned in most states of Australia being regarded as a threat to our native species.

Advantages of growing your own.

Food security. I want to be able to have some control over the supply of food to my table, increasingly we as a society are becoming disconnected from the food production process.

While our western economies continue to be relatively prosperous, food security in the strictest sense is not an issue for most of us. But that may not always be the case, and now is a good time to get up to speed on home food production.

Beef, Lamb, Poultry and Fish meat prices have skyrocketed in recent months.

As oil prices continue to rise, home produced food will become more important, and far less expensive than supermarket food.

Economical. It makes good sense to grow your own. The inputs of power and fish food are low by comparison to the cost of raising other forms of protein. Fish convert food to weight very efficiently. The cost of home raised fish is very low compared to store bought fish.

Farmers exclusively using a pelleted diet in Australia can expect a food conversion ratio of between 1.2:1 and 2:1. That is, it takes between 1.2 and 2.0 kilograms of feed to produce 1 kilogram of fish. The variation in feed conversion rates is due to variations in management practices, methods of feed application and feed formulation.

Source = NT Barramundi Farming Handbook.

Home growers can use commercially available feed or they can opt to produce their own feed in the form of earth worms, black soldier fly larvae, glass shrimp, duck weed or a combination of them all. It all depends on how much effort you want to put into the project. Commercially available pellets are easy and convenient.

A small typical home aquaculture system will consist of a 1000 litre fish tank, a bio filter, a water pump, an air pump and some basic water test equipment.

A system of this size is capable of producing 50 to 60 kilograms of fresh fish per year.

Like all forms of animal husbandry, care and some skill is required to raise your own fish. It is not a "set and forget" situation. On the other hand, it is not all that difficult either.



Above:- Gary Donaldson's "Micro Fish Farm"
A very neat, tidy and functional fish raising system.

Basic hardware components required for a home fish farm are,

- 1 Fish Tank
- 2 Biological Filter
- 3 Water Pump with hose and taps.
- 4 Water test kit.
- 5 Aerator pump.

Extra equipment is advisable, such as a backup power source.

1 Fish Tank.

The fish tank should be of sufficient capacity to afford the fish a reasonable living space. Fish stocking densities are a constant matter of discussion, but for your first home system a safe stocking density would be one fish per 20 liters of water. Therefore a 1000 litre tank could safely hold 50 fish. As you gain experience this stocking density can be increased.

The fish tank should have a water depth of at least 500mm. The fish feel more secure with some depth of water. Fish that are happy and contented grow better. The fish tank should be covered. In Queensland it is a requirement that the fish tank be covered so as to prevent the ingress of rain. Providing some shade also assists in the control of algae.

2 Biological Filter.

Simply put, the bio-filter is the device that provides the space and media to house the colonies of beneficial bacteria that convert the ammonia produced by the fish, to nitrates. Ammonia is deadly to fish and must be dealt with constantly. Nitrates are not deadly to fish but must ultimately be disposed of to keep the system healthy.

Various forms of bio-filters can be employed, but in the end they all perform the same task.

In Gary Donaldson's system pictured on the previous page, the bio filter is a 250 litre grow bed filled with clay pebbles.

This bio filter has plenty of capacity to deal with the 925 litre capacity fish tank in Gary's system.

This bio-filter works by passing the water from the fish tank through the clay pebble mass. The water is pumped up to the top of the bio-filter and the bio-filter is flooded. An auto-siphon device is installed in the bio-filter which automatically drains when it becomes full.

The pump is operating continuously filling the bio-filter. This action provides a flood and drain cycle which completes approximately every 10 minutes.

It is a very simple and reliable setup.

The nitrates produced by the action of the bacteria on the ammonia must be used or disposed of.

Plants such as green leafy vegetables can be planted in the clay pebbles to consume the nitrates. This is a very effective way of dealing with the nitrate load. This is the

basis of the operation of an Aquaponics system. The fish provide nutrients for the plants and the plants process the waste byproducts from the fish.

A second way of dealing with the nitrates in the water is to perform partial water changes of your system once or twice a week. You will notice in the photo of Gary's system on the previous page, Gary has fitted a "T" fitting and tap with hose to the hose coming from the fish tank.

This is to facilitate regularly drawing off some of the fish tank water. This water can be used very well in watering a regular veggie or flower garden. So no water is wasted.

Fresh water is then used to top up the fish tank.

The frequency of the partial water changes is governed by the water quality in the fish tank. This will be largely determined by the number of fish you have in your system, how much food you give them and the effectiveness of your bio-filter. When it comes to bio-filters, bigger is better.

Regular water tests using a good test kit will tell you when the nitrates are reaching undesirable levels and therefore a partial water change is required. After a few weeks of operation a regular pattern will be established. "When in doubt, change the water out."

3 Water Pump with hose and taps.

A good quality pump, hose and fittings are essential. There is a good selection of pumps available in the market place. Avoid the "penny dreadfuls". A good no-kink non transparent hose that will not block up over time with bio-film is the way to go. Taps should be easy to operate and reliable with a simple on-off action.

4 Water test kit.

The water test kit should have tests for Ammonia, Nitrates, Nitrite and pH. The test kits are simple to use and it is essential to perform the tests regularly.

5 Aerator pump.

Plenty of aeration cannot be over stressed. Most fish kills in home aquaculture systems come about due to insufficient dissolved oxygen in the water.

More detailed information is found in The Urban Aquaponics Manual.

You are welcome to come and see our working Aquaponics Systems....

Murray's Aquaponics System.



We are located 45 kilometres south of Brisbane CBD towards Beaudesert Qld. Visits to see my Aquaponics system are welcome but by appointment only.
Ring 07 3200 0272 Murray Hallam

Gary's Aquaponics System.



We are located 20 kilometres south west of Brisbane CBD towards Ipswich. Visits to see my Aquaponics system are welcome but by appointment only.
Ring 07 3816 1175 Gary Donaldson

Team Economics Pty Ltd
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*Just wanted to share my
Aquaponics experience.....*

We decided to try aquaponics as we want to grow food and our previous attempts have been rather unsuccessful.

We weren't willing to spend a lot of time fussing

about and pampering plants, nor could we afford the time, the water and additional cost and labour of conditioning the soil.

There were always the issues of pests and diseases which for some reason we seemed to have had

more than our fair share. It was an up hill battle, due to our reluctance to use pesticides and chemical fertiliser. So we've settled into aquaponics and it's so far so good.

We bought the small system a couple of weeks ago, and it's great; compact, quiet, low maintenance and aesthetically pleasing as well.

Set up only took a couple of hours as we were able to visit the manufacturer, and check out a working system and ask lots of questions.

We filled the Balcony kit with dam water and stocked it with Murray Cod.

In with the dam water went mosquito fish and a lily, for fun, and they are all thriving. The cod are eating the mosquito fish.



Murray Cod.



I obtained 1000 Murray Cod fingerlings in mid January and shared them out with some other keen Aquaponics persons.

They are an amazing fish, an Australian icon. The markings on the fish are really attractive.

I feed them twice a day with floating high protein pellets and they feed vigorously. I have lost some due to them eating each other, and some unexplained deaths.

I had them housed in one 250 ltr tank and I felt that it was time to grade them into small and large. Maybe this will assist in slowing down the incidence of cannibalism.

The Murray Cod continue to grow and I am looking forward to the sumptuous BBQ's that will be happening in the future.

Murray Hallam.

Seedlings were planted after about a week, during which we sorted out how much food to give the fish.

The plants are all going really well and the growth is astounding. The kids are all interested in the processes and

eager to view it, get involved and notice growth, changes etc.

One even wants to do a talk at school about our aquaponic set up.

We are looking forward to adding to the system or maybe getting a big system so that it will supply our family's needs. It's been great to have the help and advice of someone so enthusiastic and experienced, thanks Murray.

I'll keep you posted on how it's all going, Bud.



Right:- Our system with the Kiddie Cover fitted. The air pump can be seen and the plants are coming along very well.

Right:- Adding the 50 Murray Cod fingerlings to the tank.

