

# **AQUARIUM FISH AND THEIR MAINTENANCE**

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## **B. MAINTENANCE OF AQUARIUM FISHES**

### **WHAT IS AN AQUARIUM?**

An aquarium is a glass container which displays the aquatic organisms in a simulated natural environment by introducing aquatic plants, rocks, gravels, artificial decorative etc. Maintenance of physico-chemical and biological parameters of water inside the aquaria is of utmost importance. Different types of equipments are required for controlling aeration, water movement, temperature, suspended organic matter, illumination etc inside the aquaria. Utmost care should be taken while feeding aquarium fishes. Over feeding is always harmful to fishes.

In effect, an aquarium is a biological entity. Each of its elements – water, glass, light, sand, gravel, plants, fish, make a harmonious whole, with the same ecological balance as exists in nature.

### **A. SELECTION OF A TANK**

A tank with a water capacity of 125-250 L is most conventional. An appropriate size would be an 80 cm tank (80x40x40cm) or a meter size tank (100x50x50cm). The most popular size of home aquarium is 60 cm length x 30 cm width x 40 cm height, with a capacity of 57 L (15 gallons). Never the less, aquaria size depends much on availability of space and point of attraction.

Aquaria Tanks are usually measured as = Length x Depth x Height

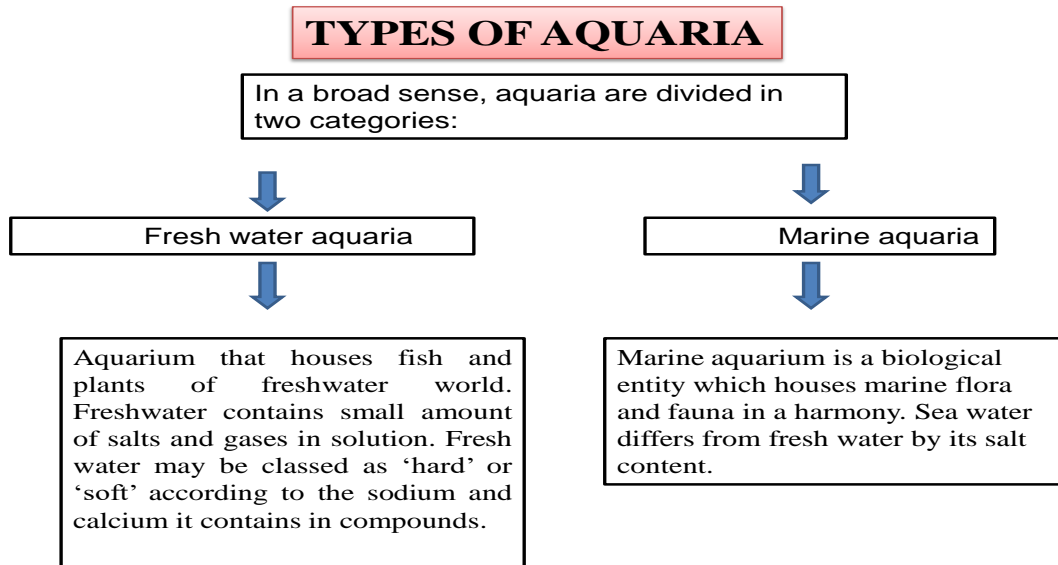
Aquarium tank is of prime importance. An aquarist must consider its shape, size and material used

Tanks may be of several kinds: Metal frame tank, Plexi-glass tank , or All glass tank

### **B. AQUARIA TYPES**

Based on water regime contained in the aquaria they may be of two types:

1. Fresh water aquaria, and
2. Marine water aquaria



### C. AQUARIA BOTTOM

The base of an aquarium is known as bottom. Over this base aquaria bed is prepared. This serves following two basic purposes:

- To make the fish feel more at home, and
- To provide a growing medium for aquatic plants.

Unless a particular species of fish has special requirements, the composition of the bed is mostly governed by the needs of the plant to be placed in aquaria bed. Plants suitable for the purpose can be grouped in following categories:

- Rooted plants – *Vallisneria*, *Sagittaria*.
- Cuttings – *Fanwort*, *Hygrophilia*, *Ceratophyllum*, *Limnophila*.
- Floating Plants – *Lemna*, *Riccia*, *Salvinia*

### D. AQUARIA STAND, HOOD AND PLACEMENT

- Aquaria **stand** is wooden/metallic structure on which aquarium is placed. This must be flat and level and capable of carrying the load of entire set.
- Aquaria **hood** is the top most covering of an aquarium to keep the fishes confined in the tank, minimize water loss by evaporation, offers more protection against intruders and helps in light attachment.

- **Placement** of an aquarium should be intended to receive maximum amount of light:

## E. AQUARIA FILTERS

Harmful substance like ammonia and nitrates are regularly produced mainly through fish metabolism as excretory product. They keep on accumulating in the aquaria water. At times, they may exceed the carrying capacity of aquaria water and cross the lethal limits and eventually poison the fish. That is why proper arrangements should be there for removing these harmful substances and getting clear water in an aquarium. This can be achieved by the process of filtration and the devices employed for the purpose are known as **filters**.

Aquaria filters are of three types:

1. Mechanical filters
2. Chemical filters and
3. Biological filters

Biological filter is again broadly divided into 3 types:

- UG filters b) Foam filters and c) Power filters.

### **Functions of filters:**

- Filters play a significant role in purification of aquaria water with the help bacteria. When ammonia loaded water is passed through the gravel bed of filter, it is subjected to the action of aerobic nitrifying bacteria that oxidize toxic ammonia into nitrite by *Nitrosomonas* bacteria. The nitrites get further oxidized by *Nitrobacter* group of bacteria into nitrates which are less toxic to the fish. They finally gets absorbed by the plants.
- The aquaria water is quite likely to get polluted due to the excretory products of fish, plants, dead organisms and uneaten food rich in nitrogen compounds, filters get rid of them by their biological and mechanical actions.

## F. DECORATION OF AQUARIA

Once an aquarium is well set and properly placed, now the time comes for its decoration. Uninterrupted supply of oxygen is of prime concern in an aquarium. Normally stone diffusers, connected to an air pump by a plastic tube, are placed inside the aquarium. However, to give aquaria an

attractive look a number of decorative toys are available in market. They include plastic bubbles in the guise (appearance) of mermaid (sea creature), under water diver, oyster shells, angler, human skull, frog etc. Coloured marble stor sea bottom ones can be spread over the sand bottom of the aquaria. Sometimes a colorful picture of sea strata or sea bottom may be placed at back side of an aquarium to look it more attractive.

#### G. WATER FILLING

Water contributes the immediate environment for the fishes. Aquarium should be filled with clear potable water. If tap water is chlorinated, it has to be aerated overnight before adding to an aquarium.

#### H. FISHES OF CHOICE

After maintenance of adequate water load in the aquarium (2.5cms of fish to each gallon of water) fishes of choice should be introduced in the aquarium. Aquarium fishes are both exotic and indigenous).Some of the popular aquarium fishes are listed below:

- (1) *Barbus tetrazona* and *B.ticto*
- (2) *Betta splendens*
- (3) *Botia dareo*
- (4) *Carassius auratus* (goldfish)
- (5) *Colisa lalia*
- (6) *Colisa chuna*
- (7) *Cyprinus carpio*
- (8) *Gambusia affinis*
- (9) *Hemichromis bimaculatus*
- (10) *Lebistes reticulatus* (guppy)
- (11) *Macropodus opercularis*
- (12) *Nemacheilus aureus*
- (13) *Poecilia reticulata*
- (14) *Pterophyllum scalare* and *P.eimekei* (angelfish)
- (15) *Tilapia macrocephala*
- (16) *Trichogaster trichopterus*
- (17) *Puntius ticto*

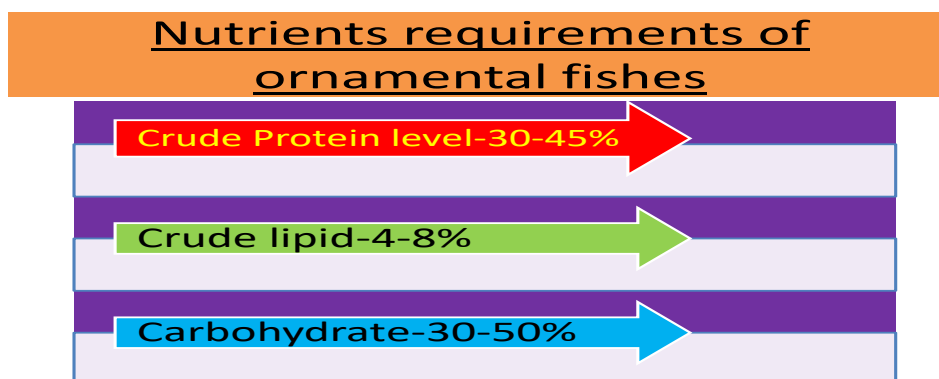
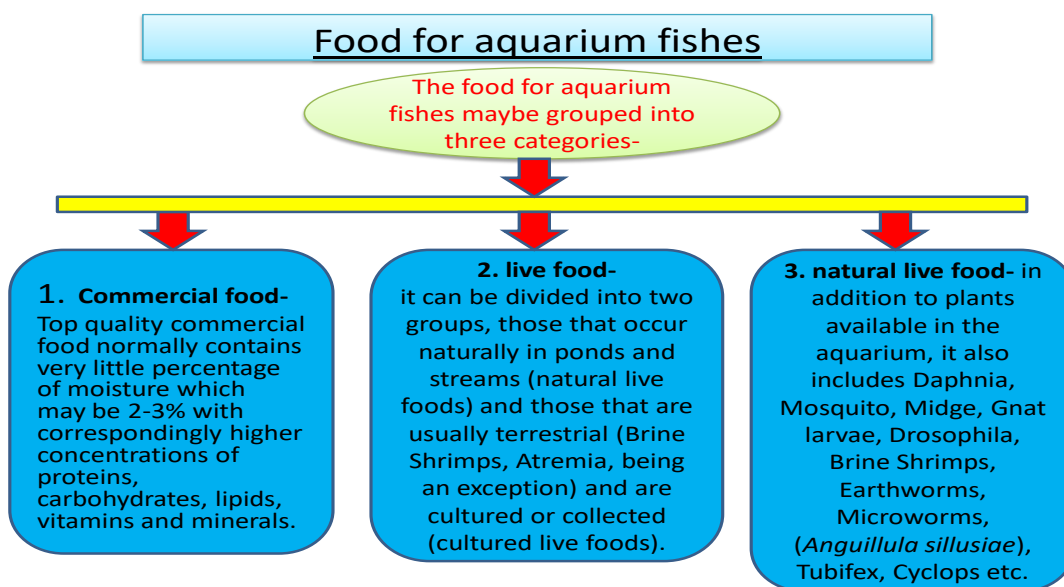
#### I. PHYSICO- CHEMICAL REQUIREMENTS OF AQUARIA WATER

Water plays an important role in survival and growth of fishes. Physico-chemical regime of aquaria water should be maintained well within the recommended limits, viz., Temperature of 76 to 80 °F, pH - 7.6 to 8.4 and

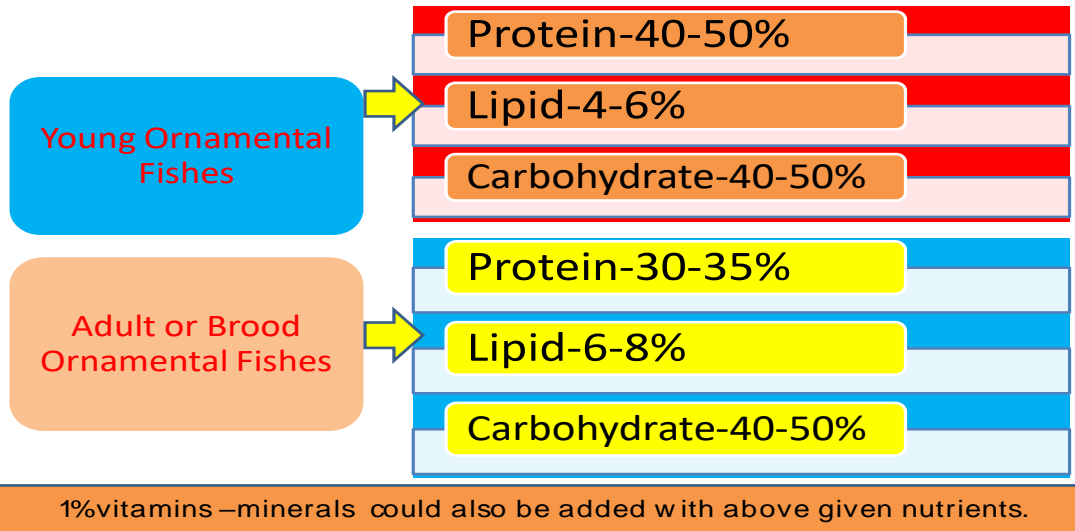
Specific Gravity - 1.002 to 1.007 (optimal). Using marine synthetic salt will improve the success in the brackish water setup compared to marine setup. The synthetic salt contains all the trace elements and buffers required to give the correct pH. The salt should be mixed at half the recommended strength.

## J. FOOD AND FEEDING OF AUARIUM FISHES

Most of the aquarium fish are carnivores and their diet should reflect this. In most cases, lots of live food will be required but this depends upon the choice of species to be kept. Synthetic aquaria foods are available in market. Overfeeding should always be avoided.



## Nutrients requirements for Young and Adult Ornamental Fishes



### **Regular maintenance :**

Important points to be looked into are:

- i) Regular water change (20-30% every two or four weeks)
- ii) Cleaning of algal scum from the glass at periodical interval.
- iii) Removal of dead fishes, if noticed inside the aquarium.
- iv) Racking the surface layer of the substrate and removal of dirt etc. by vacuum device every week
- v) Pruning of excess plant growth, when noticed
- vi) If aquarium water turns cloudy after one or two months, it indicates the need to change water.
- vii) Water loss caused by evaporation should be made up once a week

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- K. IMPORTANT PRECAUTIONS FOR MAINTENANCE OF AQUARIA
- The aquarium should not be left uncared for a long time.
- Do not over feed the aquarium fishes.
- Once the aquarium is set and balanced, the water should not be changed unless it tends to become turbid or cloudy. When the level of water falls

in course of time, it should be restored by addition of some rain water or chlorine free tap water.

- Overcrowding of fishes should always be avoided.
- For tropical fishes, a temperature of around 72° F and pH of around 7 - 7.2 is ideal.
- In changing the water of aquarium, a constant flow should be maintained with help of tubes.
- Aerator should also be frequently operated.
- Fishes should be subjected to  $\text{KMnO}_4$  or  $\text{CuSO}_4$  bath before keeping them in aquarium.
- Aquarium should be filled by water to about three fourth of its capacity.
- One type of food should not be used.
- Infected fishes should be immediately removed.
- An aquarium should always be provided with a cover.