INTERNSHIP REPORT

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SUBJECT:-AQUACULTURE

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INTRODUCTION

Fish farming is a form of aquaculture in which fish are raised in enclosures to be sold as food. It is the fastest growing area of animal food production. Today, about half the fish consumed globally are raised in these artificial environments. Commonly farmed species include salmon, tuna, cod, trout and halibut. These “aquafarms” can take the form of mesh cages submerged in natural bodies of water, or concrete enclosures on land.

Internship in the month of December at a fish farm to learn how to maintain different fishes and aquatic plants. Learning new techniques in aquaculture like aquaponics, the farm contain

many things like ornamental fishes, commonly consumed seabass, poultry (hen) and hog farming, plant farming, red tilapia rearing etc. All of this are interrelated to each other.

AQUAPONICS

Aquaponics is a cooperation between plants and fish and the term originates from the two words aquaculture (the growing of fish in a closed environment) and hydroponics (the growing of plants usually in a soil-less environment). Aquaponic systems come in various sizes from small indoor units to large commercial units. and they can be either freshwater systems or contain salt or brackish water

One of the coolest things about Aquaponics is that it mimics a natural ecosystem. Aquaponics represents the relationship between water, aquatic life, bacteria, nutrient dynamics, and plants which grow together in waterways all over the world. Taking cues from nature, aquaponics harnesses the power of bio-integrating these individual components: Exchanging the waste by product from the fish as a food for the bacteria, to be converted into a perfect fertilizer for the plants, to return the water in a clean and safe form to the fish. Just like mother nature does in

every aquatic ecosystem.

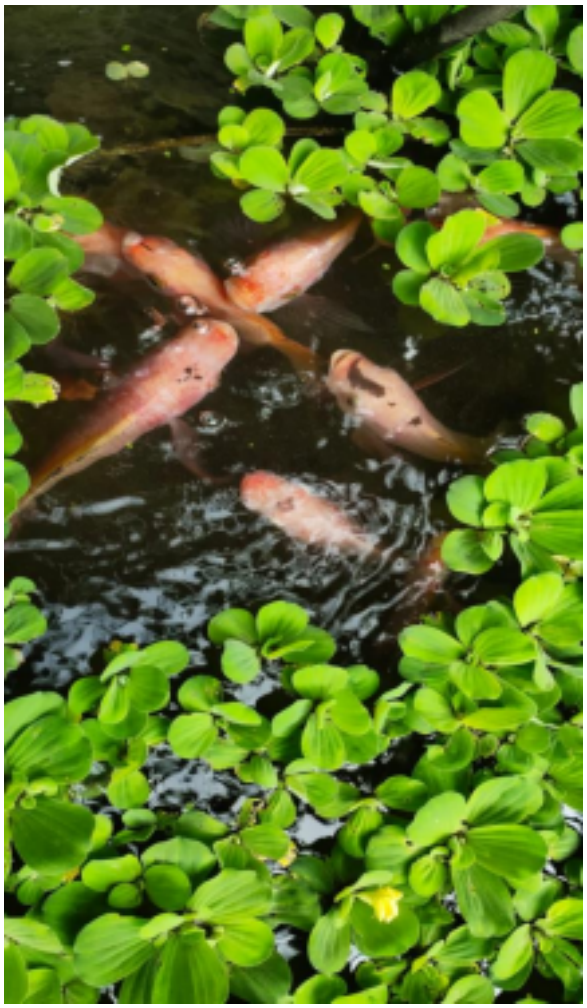
As clearly seen in the picture this is the integration between a plant and a animal system the plants are put up in the smaller tank and the fishes are kept in the larger tank below (red tilapia) the aquatic plants are kept above so that they can protect them from sun and utilise the ammonia for growing.

The water from the larger tank is pumped to the smaller tank were it cleans the water and it falls again into the large tank through a long pipe. The falling water creates bubbles which aids in more oxygen dissolve in water.

The water keep on circulating it creates a natural environment for the fishes and the tank does not require frequent cleaning.

For keeping the fishes large concrete tanks

are used after water proofing, the smaller tank contain soil gravel, coal and stones which aids in filtering the water. Small plants can be easily grown like chilies, tomato, brinjal etc.



CLEANING AND MAINTAINENCE OF TANK

- ➢ Step 1: Test the Water Quality.
- ➢Step 2: Remove Algae.
- ➢Step 3: Prune the Plants.
- ➢Step 4: Turn off Equipment.
- ➢Step 5: Vacuum the Substrate.
- ➢Step 6: Clean the Filter.
- ➢Step 7: Refill the Water.
- ➢Step 8: Turn on Equipment.

BREEDING OF BETTA

1- BREEDING TANK

The very first step to breeding bettas is to set up a suitable breeding tank. A basic setup should include at least three tanks: the male betta's tank, the female betta's tank, and the breeding tank. You could also purchase an optional fourth tank for the fry to grow up in, but you may choose to just leave them in the breeding tank.

2- CHOOSING THE BREEDING PAIR

choosing your breeding pair. Don't just pick the first two bettas you see. It's important to know what to look for in both males and females, which will give the best chance of healthy fry and happy parent bettas.

3- BREEDING ENVIRONMENT

In the wild, water changes and other environmental factors tell a betta that it's time to breed. In captivity, you need to replicate those conditions. It takes about two weeks to condition a pair of bettas. At this point, neither of your bettas should be in the breeding tank. Putting your bettas into the breeding tank and introducing them to each other is one of the final steps of breeding. Live food is the best way to condition your bettas for breeding. Frequent water changes are also a good idea. Start by feeding your bettas high-quality, live food two to four times a day. Some foods you can try include:

4- INTRODUCTION OF FEMALE

The female needs to be added to the tank first and given around 30 minutes to settle in. Use a clear container or a plastic divider so that she has her own space. It's important to use see-through dividers so that the male and female can see each other.

5- BREEDING

To breed, the male betta turns the female upside down and holds her close, so that he can fertilize the eggs as she lays them. The eggs sink to the bottom of the tank, and the male scoops them up and takes them to the bubble nest.

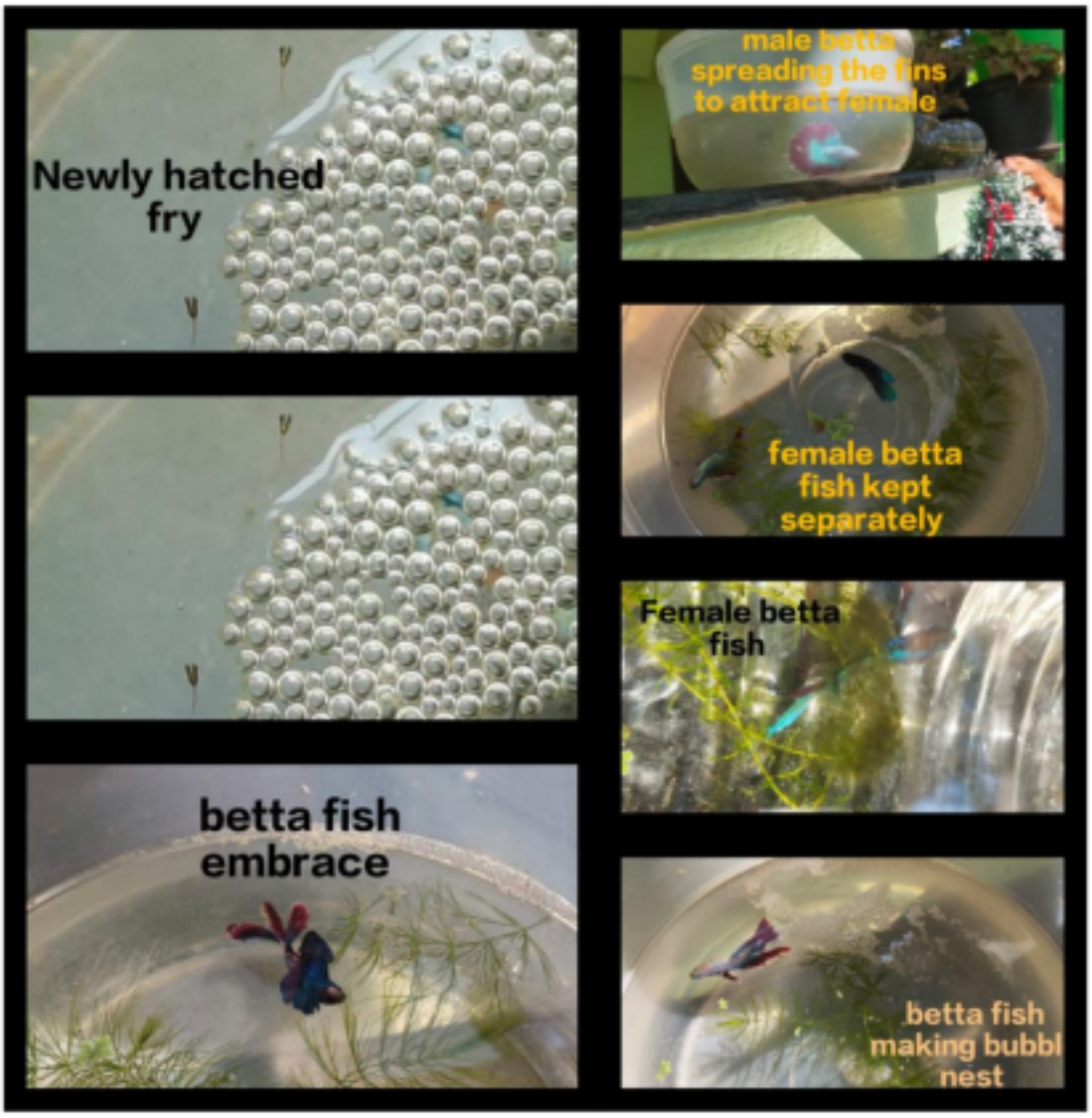
6- REMOVAL OF FEMALE

Once the mating is over and all the eggs are laid, the male should let go of the female and start busily taking the eggs to the bubble nest. Now it's time to remove the female. Courtship is an exhausting process, and there's a chance that your female betta could have been injured. The male sometimes attacks the female after breeding, seeing her as a threat to the eggs. In fact, the male could be right — some females do eat their own eggs. The male is the one who cares for the eggs, so there's no need for the female to stay in the tank.

7- MAINTANANCE OF HATCHINGS

It's important to keep the tank warm and humid. The best way to do this is by wrapping plastic wrap around the tank and keeping it in a warm environment. You might notice your male eating a few eggs. Before you panic, remember that it's unlikely that every single egg will have been fertilized, especially if there are hundreds. Your male betta could be eating unfertilized eggs. It's best not to feed the male until the eggs have

hatched. After around 36 hours, the fry will start to wriggle out of their bubble nests. It's too soon for them to hatch, and the male betta will catch them and put them back in the nest. During this time, the male betta will hang around beneath the bubble nest, keeping an eye on his young.



AQUATIC PLANTS

Hornwort:

Hornwort is scientifically known as Ceratophyllum Demursum. The plant belongs to the family of Ceratophyllaceae, and this green-coloured aquarium plant can grow up to 24 inches. The plant is a fast

grower and can be grown floating or rooted in the aquarium.

DUCKWEED

The duckweeds (genus Lemna) and related genera of the duckweed family (Lemnaceae) are the smallest flowering plants known. Individual plants consist of a single, flat oval leaf (technically a modified stem) no more than ¼ of an inch long that floats on the surface of still-moving ponds, lakes, and sloughs.

WATER LETTUCE

Water lettuce is great for cleaning the water of decomposition by-products and is often used to keep the water healthy for fish and aquatic life. This plant also reduces algae blooms by blocking sunlight in the water and by using up the nutrients needed for the algae to bloom.

PHEREMONE TRAP

Pheromones are chemicals used by insects and other animals to communicate with each other. Insects send these chemical signals to help attract mates, warn others of predators, or find food. Using specific pheromones, traps can be used to monitor target pests in agriculture or in residential areas. By constantly monitoring for insects, it may be possible to detect an infestation before it occurs. Early detection of pest insects using pheromone traps can also lessen damage to agriculture and other plants. It can also limit the presence of **stinging insects** near you.

FARM VISIT

***SETTING UP OF AQUPHONICS TANKS IN FARM**