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Ornamental Fish Farming in India

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Over 195 native species from the North-East and Western Ghats sectors, as well as about 400 species outside of marine the preferences, can be found in India's inland and coastal regions. Wild fish species that were gathered from rivers in the North-East and Southern States make up about 85% of India's total export of every kind of ornamental fish. Among the 195 fish species that have been found in the North-East Region, 155 have been defined as having ornamental value. The area also shows excellent biodiversity and a high degree of endemism in freshwater ornamental fishes. Among them, Loaches, Eels, Barbs, Catfish, and Goby stand out. On the other hand, the Western Ghats of India are one of the 34 "Biodiversity Hotspot" Areas in the world. The Western Ghats have been home to 40 species of ornamental freshwater fish, 37 of which are indigenous to the area.

Keywords

Loaches, North-East Ghats sectors, Ornamental fish, Barbs, Biodiversity Hotspot

Introduction

The application of fish as ornamental jewellery is a wonderful ecological invention. Ornamental fish keeping, the second most popular hobby worldwide, is gaining popularity as more people become aware of the numerous options it provides for business development and revenue generation. Various governmental entities offer promotional programmes that could be beneficial to aspiring business owners. The technology is really simple, quick to comprehend and successful. The term "aquaculture" is used to describe the technique of breeding ornamental fish. The discipline of raising colourful, eye-catching fish with a range of distinguishing characteristics in a small aquatic environment is known as ornamental fish culture. Most farmers and enthusiasts grow it. It's common to hear the phrase "living jewels" when referring to ornamental fish. Ornamental fish make up approximately 800 of the more than 30,000 species of fish that have been reported as existing globally. Fish that are kept as ornaments are often freshwater species. They are member of the closely related families Anabantidae, Callichthyidae, Characidae, Cichlidae, Cobitidae, Cyprinodontidae, Cyprinidae, and Poeciliidae. Around 1% of the ornamental fish trade worldwide is made up of fish from India. 54 tonnes of these fish, having a market value of Rs. 13.08 crore, will be shipped in 2020–21. It increased in both volume and value in Indian Rupees by 66.55% and 20.59%, accordingly. India has a great deal of opportunity for producing ornamental aquatic creatures due to its wide variety of species, ideal climatic conditions, and availability of cheap labour. In India, Kerala, Tamil Nadu, and West Bengal are the main regions where ornamental fish breeding is conducted.

Native and exotic species are the two subcategories of ornamental species. This nation's ornamental fish industry has grown significantly thanks to the wealth of native species. West Bengal, Kerala, Tamil Nadu, and the north-eastern states are blessed to have

prospective native species. 90% of native species—85% of which are from northeast India—are collected and grown for export. Fish from around 100 natural species are currently produced for aquariums. Exotic species are also in high demand because of their distinctive hues, forms, and looks. The fish for ornamental purposes trade includes more than 300 foreign species, even though there is a higher demand for these. In India, 200 species are raised. Kolkata accounts for 90% of India's exports, followed by Mumbai with 8% and Chennai with 2%.

Fish kept in aquariums can be split primarily into two types: egg layers (oviparous) and live bearers (ovo-viviparous). The majority of fish species that inhabit aquariums lay eggs, and external reproduction typically takes place.

Commercially important Ornamental species

Commercially important indigenous species

- Reticulated Loach - *Botia lohachata*
- Zebra Fish - *Brachydanio rerio*
- Glass Fish - *Chandra nama*
- Knife Fish - *Notopterus notopterus*
- Rosy barb - *Puntius conchonius*

Commercially important exotic egg layers

- Oscar- *Astronotus ocellatus*
- Siamese fighting fish - *Betta splendens*
- Gold Fish - *Carassius auratus*
- Koi carp - *Cyprinus carpio var koi*
- Angel fish - *Pterophyllum scalare*
- Kissing gourami- *Helostoma temmincki*

Commercially important exotic livebearers

- Guppy - *Poecilia reticulata*
- Molly - *Poecilia Sphenops*
- Sword Tail - *Xiphophorus helleri*
- Platy - *Xiphophorus maculatus*

Zebra Fish (*Brachydanio rerio*)Rosy barb (*Puntius conchonius*)Gold Fish (*Carassius auratus*)Siamese fighting fish (*Betta splendens*)Guppy (*Poecilia reticulata*)Molly (*Poecilia Sphenops*)

Conditions required for the cultivation of ornamental fish

- The location and layout of the unit, coupled with the use of appropriate management methods during breeding and growing, are crucial elements in the success of the production of ornamental fish. Fundamental requirements include an ongoing source of high-quality brood stock and a sufficient quantity of fresh water. The location and layout of the unit, coupled with the use of appropriate management methods during breeding and growing, are crucial elements in the success of the production of

ornamental fish. Fundamental requirements include an ongoing source of high-quality brood stock and a sufficient quantity of fresh water.

- The farmer must set aside at least 500 square feet of land for small-scale farming in order to build a few rectangle concrete tanks. Large projects require more than 1 hectare of land, several clay ponds, and cement tanks to be able to grow koi carp, catfish, gourami, and barbs.
- The farmer must set aside at least 500 square metres of land for small-scale farming in order to build a few square concrete tanks. Large projects require more than 1 hectare of land, numerous clay ponds, and cement tanks to be able

- to grow koi carp, catfish, gourami, and barbs.
- It's crucial that the breeding and raising units have an adequate supply of water and energy.
 - The decision on the purchase of a high-quality brooder is the factor that will have the biggest impact on the success of the unit. While a few species prefer hard water that is alkaline for breeding, others prefer soft acidic water.
 - Fish such as Angel, Discus, Tetra, Oscar, and Loaches prefer soft acidic water, whilst livebearers typically prefer to reproduce in hard alkaline water. Nevertheless, some fish that lay eggs, including as goldfish, danio, catfish, rosy barb, and fighter fish, can endure a variety of water conditions.
 - For the production unit to manage the water quality effectively, a bio filter is required.
 - Aim to avoid breeding the same fish for longer than two years to improve breeding viability. Instead, fish must be gathered for many different locations.
 - Various agricultural by-products can be exploited to make farm-made aqua pellets, however a small pelletizer is needed. The market-available commercial fish and prawn feed is a further choice for the farmer.
 - For brood fish and larvae, live food such as zooplankton, Tubifex, blood worms, chopped earthworms, etc. is also crucial.
 - Better communication infrastructure (roadways, rails, and airports) is needed close to the farm in order to properly market fish. The farmer will benefit from maintaining constant contact with small, middle, or large dealers in order to promote his goods.
 - Future farmers can benefit from training and new method demos to learn about the most recent information in their specific area of interest and expertise. Integrative systems,

including ornamental fish-Vermicompost, vegetable farming/backyard kitchen gardens, and aquaponics, can be utilised to increase profits.

- At the point of entry to any fish farm, a few concrete and glass tanks must be built for appropriate oversight and quarantine before adding to the current populations.
- Any unfavourable situation, such as mass mortality or not known signs and symptoms in farmed fish, must be resolved swiftly by requesting a specialist's help.

Avoid water which has become highly alkaline or involves iron because many fish won't breed in it.

Benefits of ornamental fish rearing as a hobby

- This keeps both young and old folks happy.
- It induces mental relaxation, which helps people lead healthier lives.
- Children understand more regarding nature and make good use of their free time.
- It provides up the opportunity for self-employment.

Conclusion

To gain knowledge and maximise market potential, novices to the breeding and husbandry of aquatic ornamental fish must receive hands-on training. It is always better to begin with livebearers like Guppy, Platy, Swordtail, and Molly because they are simple to breed. They can then attempt to breed and nurture egg layers like Koi carp, gourami, goldfish, barbs, fighter fish, etc. once they have gained some experience. A farmer should normally focus on one species rather than trying their hand at several, as each needs a different type of husbandry.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work, and approved it for publication.

Conflict of interest

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