

# Times of Agriculture

*A Resonance in Agriculture*  
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Issue - 26

## FISHRIES AN OVERVIEW





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*“Times of Agriculture”* is agriculture monthly e-Magazine initiated for the purpose of providing information about recent innovations and technologies in agriculture and allied sectors. This e-Magazine gives a platform to dignitaries like scientists, researchers, scholars, students and innovative farmers to share their views and vivid ideas about agriculture. The main objective of this e-Magazine is to provide an open access platform for authors to get on the soapbox and spread awareness regarding the technologies and awareness in agriculture sector by e-publishing articles addressing the upcoming needs in the field agriculture.



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# FISHRIES

## AN OVERVIEW

### Cover Story

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# AGRICULTURE UPDATES

# INDIA BANNED WHEAT EXPORTS

On 14<sup>th</sup> May 2022, **India banned wheat exports** with some exceptions. This announcement came days after the central government had announced that this year record shipments of wheat are being targeted this year. The government's move came after a day when it was reported that over 4,000 wheat-laden trucks were stuck in a queue outside Kandla port and four ships were also stranded at the port.

**A quantity of more than 1.6 lakh tonnes was to be loaded on these ships but as soon the ban came into force, the loading was stopped.**





# AMMONIA POWERED TRACTOR

An startup sponsored by **Amazon's Climate Pledge Fund**, has achieved a huge milestone by powering the **world's first tractor using ammonia**. The tractor runs on **ammonia as fuel**, which is split on demand to power a **100kW hydrogen fuel cell**.

These energy-intensive applications demand a power source that is dense in energy, and Amogy Inc. believes that ammonia meets this requirement precisely.



# MAHARASHTRA 'GENE BANK PROJECT'

Maharashtra Cabinet approved the '*Maharashtra Gene Bank*', a *first-of-its-kind project in India*. To conserve genetic resources in Maharashtra including marine diversity, seeds of local crops, and animal diversity.

*'Maharashtra Gene Bank Project'* will work on seven themes:

1. *Marine biodiversity.*
2. *Local crop/seed varieties.*
3. *Indigenous cattle breeds.*
4. *Freshwater biodiversity.*
5. *Grassland, scrubland, and animal grazing land biodiversity.*
6. *Conservation and management plans for areas under forest right.*
7. *Rejuvenation of forest areas.*



# FIRST SOFT WHEAT VARIETY, PUSA SOFT WHEAT-1 (HD 3443)

Indian bakery makers, who import wheat at double the price of domestic rates, will soon become Atmanirbhar as scientists at *Indian Agricultural Research Institute (IARI)* has developed the country's first soft wheat variety named **Pusa Soft Wheat -1 (HD 3443)**, which is suitable for growing in all producing States.

“While **Pusa Soft Wheat -1 (HD 3443)** is already registered with Protection of Plant Varieties and Farmers' Rights Authority, the next line is also ready.



# INDIA'S FIRST 'LAVENDAR FESTIVAL'

Union Minister **Dr. Jitendra Singh** has inaugurated the country's first '*Lavendar festival*' at **Jammu's Baderwah** where the cultivation of lavender has transformed the economy of the mountainous area.

Baderwah in the **Doda district** is the birthplace of India's '**Purple Revolution**'.

Lavender has changed the fortunes of farmers in Jammu and Kashmir under the '*Aroma Mission or Purple Revolution*'.

The aim of the mission is to support the domestic aromatic crop-based agro-economy by moving from imported aromatic oils to home grown varieties.



# GOVERNMENT REVISES **WHEAT** **PRODUCTION ESTIMATE** **DOWNWARDS BY 5.7%**

The government has revised downwards the estimate for wheat production by **5.7 % to 105 million tonnes in the 2021-22** crop year ending June from the **earlier projection of 111.32 million tonnes**, as the crop productivity has been affected due to the early onset of summer.

**India's wheat production stood at 109.59 million tonnes** in the 2020-21 crop year



# IIM-AHMEDABAD LAUNCHES AGRI LAND PRICE INDEX

**IIM-Ahmedabad** has collaborated with **(SFarms India)**, an e-marketplace for agricultural land to develop a **farm land price index** that is based on the purchases and sales done on the platform. This index has been designed with the aim of recording and presenting quality-controlled data on the prices of agricultural land in India.

*This index is being launched under the Misra Centre for Financial Markets and Economy at IIM-Ahmedabad and will be hosted on its official website.*



# WORLD BIODIVERSITY DAY 2022



International Day for Biological Diversity or World Biodiversity Day is observed on **22<sup>nd</sup> May** every year to increase awareness and understanding of the issues of biodiversity.

## Theme

“Building a shared future for all life”



# WORLD MILK DAY



## 2022

World Milk Day was celebrated on **1<sup>st</sup> June in 2022**. World Milk Day was first observed in 2001 and was celebrated in a number of nations throughout the world.

**The FAO designated June 1<sup>st</sup> as World Milk Day in 2001.**

Theme of World Milk Day:

***'Dairy Net Zero'***



# WORLD FOOD SAFETY DAY 2022



Every year on **June 7<sup>th</sup>**, World Food Safety Day is celebrated to highlight the importance of healthy eating habits. According to the WHO, this day is observed to *"bring attention to and mobilize action to prevent, detect, and manage food-borne risks and increase human health."*

**Theme: "Safer food, Better health."**

Cover Story



# FISHERIES

## AN OVERVIEW



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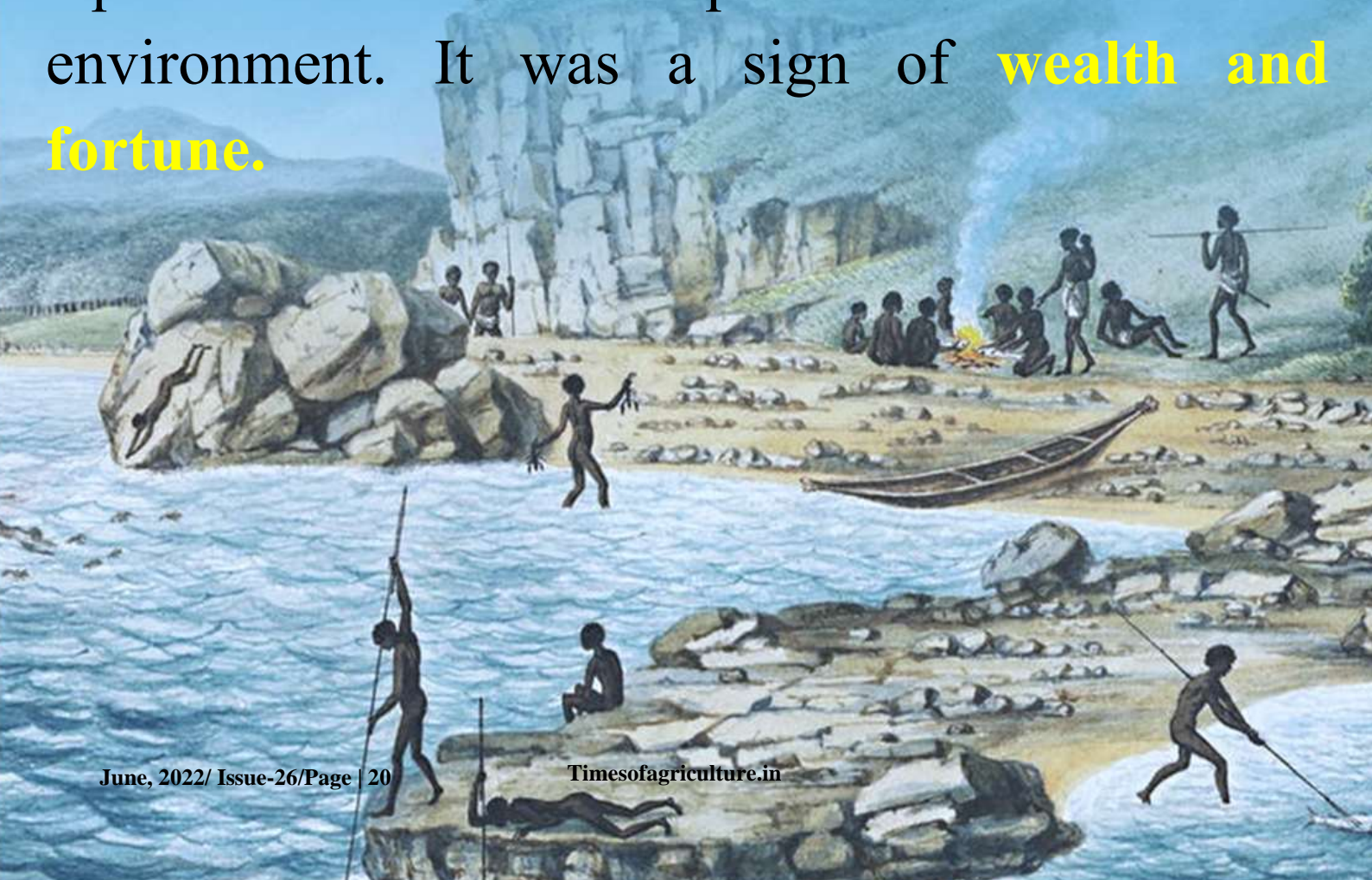
Indian fisheries sector represents an economically important and fast-growing production sector and contributing significantly to the national economy in terms of food, nutrition, socio-economic development and providing livelihood to a large section of the society.

Fisheries and Aquaculture constitute an important economic activity, with a vast potential for sustainably harvesting a wide variety of inland and marine fisheries resources in the country.

# HISTORY

The history of fish farming goes back to **1000 BC** where it was *first started in China*. Aquaculture developed there in many folds as it evolved from **one culture species (monoculture) to polyculture** (culturing many species together). Also, integrated agriculture-aquaculture farming was developed in China.

In Europe it began in **Rome**. **Romans developed the concept of a vivarium**, where aquatic animals were kept alive in an artificial environment. It was a sign of **wealth and fortune**.



To raise seafood output and exports and promote sustainable aquaculture, the Government has constituted an independent **Ministry for Fisheries in 2019.**

The Fisheries Science Division under the Indian Council of Agricultural Research (ICAR) coordinates and monitor the research and academic programmes in fisheries and aquaculture of five resource specific fisheries research institutes *viz.*,

1

**Central Marine Fisheries Research  
Institute (CMFRI),  
Kochi, Kerala**



2

**Central Inland Fisheries  
Research Institute (CIFRI),  
Barrackpore, West Bengal**



3

**Central Institute of Fisheries  
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4

**Central Institute of Freshwater  
Aquaculture (CIFA),  
Bhubaneswar, Odisha.**



5

**Central Institute of  
Brackishwater Aquaculture  
(CIBA). Chennai, Tamil Nadu**



# Importance

Fish plays an important role in nutrition and food security. Fish is *“nature's superfood”*. Fish is a great source of protein and essential fatty acids like *omega-3, EPA and Decosa Hexanoic Acid (DHA)*. That's why aquaculture is an important measure to safe guard country's nutritional security.

Fish have one of the highest bio-diversities and play a crucial role in maintaining aqueous ecosystems. One of its main essential benefits of aquaculture are **oxygen generation, coastal protection, climate moderation, and of course sea food.**

Aquaculture also makes critical contributions to development in the areas of employment, with over **41 million people worldwide**, the vast majority of whom live in developing countries, working in fish production.



# Statistical data on Fishries

India is a major maritime state and an important aquaculture country in the world. **India ranks 2<sup>nd</sup> in Aquaculture and 3<sup>rd</sup> in Fisheries production.** It contributes **7.96 % to global production.** The fisheries and aquaculture production contributes around **1.24% to India's Gross Domestic Product (GDP) and 7.28% to the agricultural GDP.**

Among the States, **Andhra Pradesh (27.4%)** and West Bengal (13.8%) together produce about 41% of the country's total fish production. The state leading in **marine water aquaculture production is Tamil Nadu,** whereas **Andhra Pradesh** is the leading state in freshwater aquaculture.

**2<sup>nd</sup>**

India ranks 2nd in  
Aquaculture

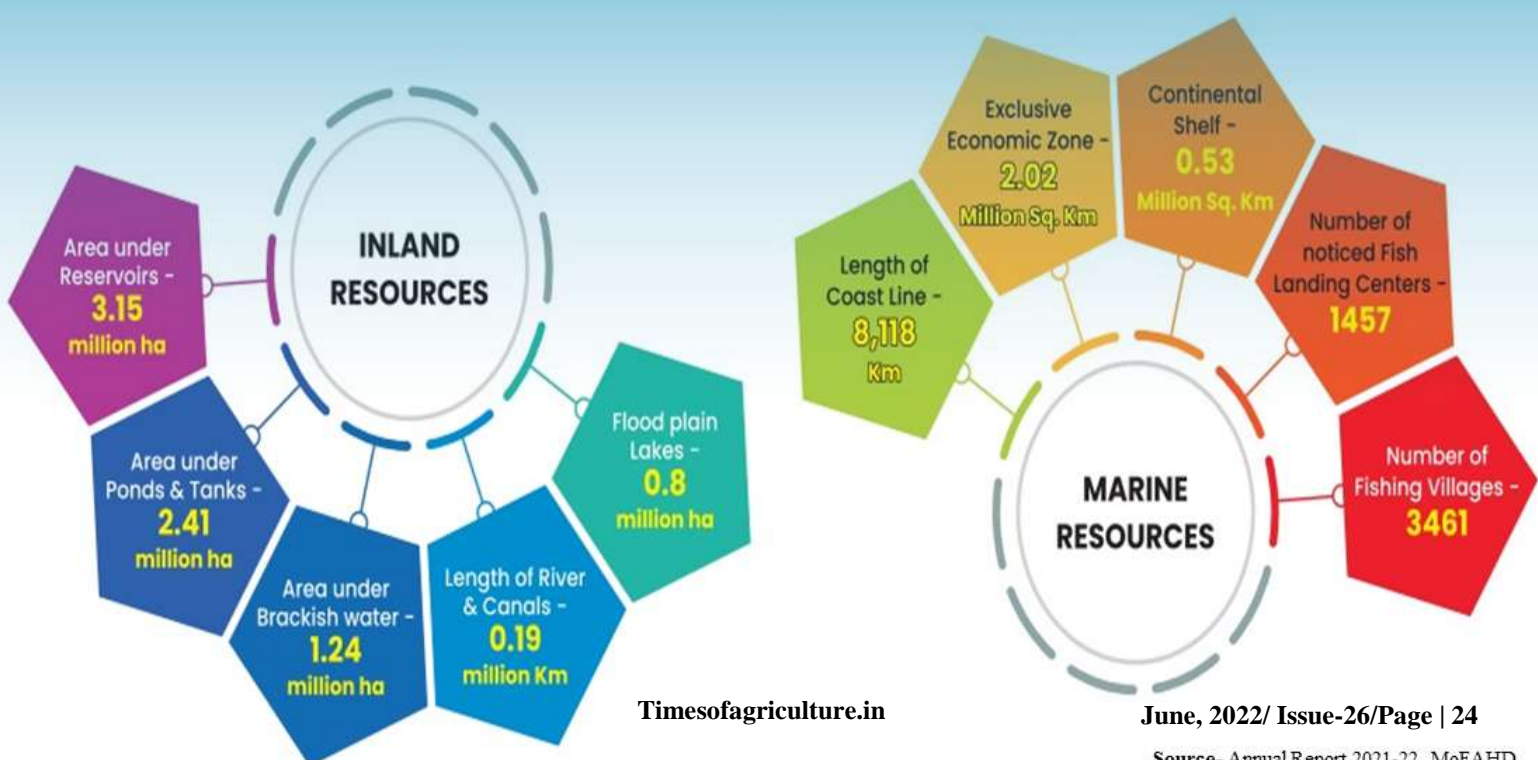
**3rd in Fisheries  
production**

**3<sup>rd</sup>**

World aquaculture production attained another all-time record high of **114.5 million tons** in live weight in 2018, with a total value of **USD \$ 263.6 billion**.

In financial year 2021, the export value of fish and fishery products from India was about **1.1 million metric tons amounted to over 441 billion Indian rupees**.

The annual per capita consumption of fish for the entire population is estimated at **5-6 kg**, whereas for the fish eating population it is found to be 8-9 kilograms. However, according to the Indian Council of Medical Research, recommends this to be **12 kg per annum**.





**14.73**  
**MMT**

**Total Fish production**  
*(FY 2020-21)*

**Target Fish production**  
*(by 2024-25)*

**22**  
**MMT**

**Tamil Nadu**

**Leading state  
in marine  
aquaculture**

**Andhra  
pradesh**

**leading state in  
Freshwater  
Aquaculture.**

**Fisheries contributes**

**1.24% in India's GDP and  
7.28% in Agricultural GDP.**



**Per capita  
consumption**

**5-6 Kg/Person/year**

**Per capita  
recommendation**

**12 Kg/Person/year**

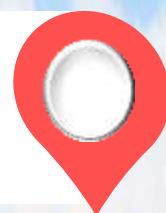
# Nutritive value



**Carbohydrate:** The shell fish has less fat and more carbohydrate than fin fish. In the live fish, glycogen is the source of stored energy.



**Protein:** They contain around 20 % of protein. Fish is rich in lysine and methionine.



**Fat:** The lipid content of both fish and prawns is very low and varies 1-2.8 %.



**Minerals:** Fish is rich in calcium particularly small fish when eaten with bones. Marine fish are good source of iodine, selenium and fluoride.



**Vitamins:** Sea foods contain significant amounts of vitamin B12 especially shell fishes. Fish liver oils are excellent source of fat-soluble vitamins. Rohu contains vitamin C.



# Major Government Initiatives



Life originated from water. About 71% of the earth's surface is covered by water. It is second most abundant and a very crucial part of the ecosystem. With a growing population, food availability is becoming scarce. That's why we need some other sources of food production. That can be achieved through aquaculture.

**India aims to double the marine product exports to**

**Rs. 1 lakh Cr. in next 5 year**

The upcoming target is that fish farming will provide close to **two thirds of global food fish consumption by 2030**. The report predicts that **62% of food fish will come from aquaculture by 2030**. With the world's population predicted to increase to 9 billion people by 2050 - particularly in areas that have high rates of food insecurity - aquaculture, can make a significant contribution to global food security and economic growth. Aquaculture in the upcoming future, if developed responsibly, can prove to be a strong pillar for India's GDP.

\*\*\*\*\*





# MAJOR INDIAN FOOD FISHES & ORNAMENTAL FISHES



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The planet Earth in which we live is referred to as **“Blue planet”**. **Why so???** Water covers about 71 percent of the Earth’s surface and hence the planet looks blue.

These waters are filled with numerous life forms. In particular, fishes add beauty to these waters. With their vibrant and lively colours these fishes attract the humans to a greater extent. The different under water ecosystems such as coral reefs, kelp forests, sea grass beds, seaweed beds and estuaries are fascinating places to be seen and enjoyed once in life time by everyone.

Fishes are **cold blooded (*poikilothermic*) vertebrate organisms which have paired and un- paired fins for locomotion and pharyngeal gills and gill slits for respiration**. They are highly adapted to extreme conditions and are ubiquitous in nature.



# Major Food fishes

## 1- Freshwater Food fishes

### Catla (*Gibelion catla*)



- ❖ Largest Indian Major Carps.
- ❖ Fastest growers amongst the IMCs.
- ❖ Have a big head ,an upward facing mouth.
- ❖ Tey are surface feeders.

### Rohu ( *Labeo rohita*)



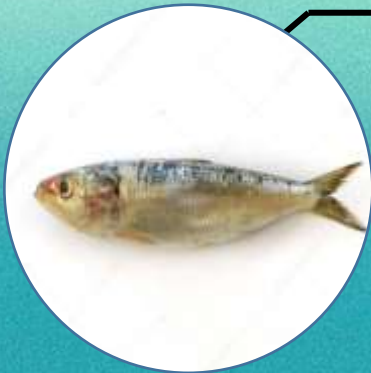
- ❖ Tastiest fish amongst the IMCs.
- ❖ Blackish in the dorsal side while silverish in the belly region.
- ❖ They are column feeders
- ❖ Have a arched head with lower lips frill like.

### Mrigal (*Cirrhinus mrigala*)



- ❖ Endemic to Indo- Gangetic riverine system.
- ❖ One of the three Indian major carps cultured in South East Asian countries.
- ❖ Head is small and mouth broad and transverse.
- ❖ They are bottom feeders consuming primarily dead and decaying matters.

## 2- Marine Food Fishes



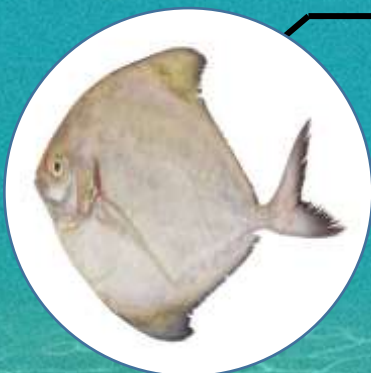
### **Indian oil Sardine (*Sardinella longiceps*)**

- ❖ Body sub-cylindrical and has a distinct black spot at hind border of gill cover.
- ❖ Feeds on phytoplankton and zooplankton.
- ❖ Commercially important fish in India.
- ❖ Fish oil is mainly extracted from this fish.



### **Indian Mackerel (*Rastrelliger kanagartha*)**

- ❖ Silvery body with dark strips in upper body region and has finlets.
- ❖ It is found in Indian and west Pacific Ocean.
- ❖ It is a commercially important food fish.
- ❖ It is mainly feeds on phytoplankton and zooplankton



### **Black pomfret (*Parastromateus niger*)**

- ❖ Other major pomfrets present in Indian waters include
  1. Silver pomfret (*Pampus argenteus*)
  2. Grey pomfret (*Pampus sinensis*)
- ❖ Black pomfret contributes majority to local fisheries
- ❖ Carnivore type of feeding habit.
- ❖ Usually found in between 15-50m depth in the ocean.



# Ornamental Fishes (Living jewels)

## 1- Indigenous Freshwater Ornamental Fishes

### Indian glass fish (*Parambassis ranga*)

- ❖ Transparent body revealing its internal structure.
- ❖ Dyes are used to produce painted glass fishes for aquarium purpose.
- ❖ Schooling fishes by nature



### Scarlet badis (*Dario dario*)

- ❖ Native to India. Especially found in Brahmaputra River.
- ❖ Males with seven distinct dark vertical bars across sides of the body.



### Dwarf pufferfish (*Carinotetraodon travancoricus*)

- ❖ Carnivorous freshwater puffer
- ❖ Used to control snails in aquariums
- ❖ Attractive colours (Greenish – yellow body with brown-black iridescent patches)



## 2- Exotic Freshwater Ornamental Fishes

### Common Gold fish (*Carassius auratus*)

- ❖ Most popular aquarium fish
- ❖ Gold fish breeds vary greatly in size, colour and body shape.
- ❖ They are egg layers. Their eggs are adhesive in nature



### Guppy (*Poecilia reticulata*)

- ❖ They are live bearers, directly give birth to young ones
- ❖ Popularly referred to as million fish or rainbow fish
- ❖ Most widely distributed aquarium fish.



### Siamese Fighting fish (*Betta splendens*)

- ❖ Thailand's national aquatic animal.
- ❖ Referred to as the “Designer fish of the aquatic works” due to the level of selective breeding carried in the particular species



### Silver Arowana (*Osteoglossum bicirrhosum*)

- ❖ Considered to bring fortune and hence referred to as “Vasthu fish”
- ❖ Highly predatory in nature and has the ability to jump out of water and capture its prey.



## 3- Marine Ornamental Fishes

### Orange Clown fish (*Amphiprion percula*)

- ❖ Lives in symbiotic relationship with anemones
- ❖ They exhibit protandry, all fishes are born male but changes to female if the breeding female dies.
- ❖ Bright orange with three distinct white bars



### Blue Damsel (*Chrysiptera cyanea*)

- ❖ Bright blue in colour. Males have a yellow snout and tail and females lack them.
- ❖ Aggressive and territorial in nature
- ❖ Hardy species and is preferable for beginners.



## **Conclusion:**

India is blessed with immense freshwater, brackish water and marine water resources. About 3200 species of fish have been identified till now from the Indian subcontinent which accounts for 9.7% of the total number of fish species in the world. These valuable resources if utilized sustainably will help our nation prosper both environmentally and economically.



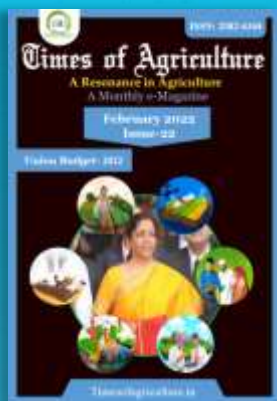
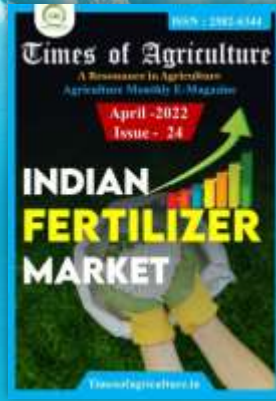
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