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FINFISH CULTURE IN INDIA - AN OVERVIEW

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Finfish culture is an ancient occupation in India and it assumed various levels of importance during its development, through many centuries. At present finfish and shellfish culture received considerable national importance in view of the recognition of fish and other aquatic organisms as a source of high quality protein food for the people in many parts of India. Besides, planned development of aquaculture would generate numerous employment opportunities, especially in the rural areas.

Resources available for finfish culture:

India is endowed with large water resources suitable for finfish culture and numerous species of finfish (Table 1) amenable for culture under a variety of environmental situations. Although the total area available for freshwater fish culture in ponds and tanks

is estimated as 1.6 million hectares, only about 0.6 million ha is at present utilized for fish farming (Jhingran, 1982). The area under brackishwater culture (both fish and prawns) is about 50,000 ha (Natarajan, 1985), though an estimated 2 million ha brackishwater area is available along the coastline for development. In addition to these, there are potential areas in rivers, irrigation canals, reservoirs, lagoons, bays where cage and pen culture systems could be developed. According to Natarajan (1985) about 27,300 kms of major river systems, 1.25 lakh km length of irrigation canals, and 30 lakh ha of large and medium reservoirs are available in the freshwater sector; and about 2.4 lakh ha of brackishwater lagoons, estuaries and backwaters are available in the brackishwater sector. In addition to the above, saline lagoons and bays in the islands and salt pan reservoirs are potential areas where cage culture could be developed.

#### Culture of cold water fish:

India has vast cold water resources such as lakes, streams and rivers and a good number of indigenous and exotic species of fish for development of finfish culture. Most of the cold water resources are in the Himalayas, in the States of Jammu and Kashmir, Himachal Pradesh, Arunachal Pradesh, Uttar Pradesh, West Bengal and North-Eastern Hill States. In the peninsular region Nilgris,

Munnar High Ranges, Kodai Hills have some streams and reservoirs. The most important culturable species are listed in Table 1. Unlike the warm water species, which are exclusively produced for consumption, the cold water fish culture is principally done for development of 'Sport fishery'. Among the cold water species the rainbow trout Salmo gairdnerii gairdnerii is the most important being domesticated both in the Himalayas and Peninsular High Ranges. Brown trout and brook trout are exclusively found in Himalayan region. Recently, indigenous species such as snow-trouts and mahseers are being induced bred and seed production achieved. Commercial farms have also been developed for trouts in the Himalayan region under the State fisheries development programme. A National Research Centre for Cold-water Fisheries has recently been set-up for intensification of research on Cold-water Fisheries.

Culture of warm water fishes:

Warm water fish culture is carried out in freshwater and brackish/coastal waters. The most important species are listed in Table 1. Warm water fish farming has been in vogue for centuries in both freshwater and brackish-water ponds; but the practice until recently has been exclusively of an extensive type of rearing, where the production rarely exceeded 1000 kg/ha. However, with the development of proven technologies and scientific management

strategies productions ranging from 3000-5000 kg/ha have been achieved under semi-intensive carp culture systems. Potential for achieving a production of 10 tonnes per ha for carps in polyculture systems (composite fish culture) and 55 tonnes per ha for live-fishes has been shown by the researches carried out by the Central Inland Fisheries Research Institute.

In brackishwater culture systems, production from the traditional sector varies from 500-700 kg/ha, whereas, the recently developed semi-intensive practices have shown production potential ranging from 2000-2500 kg/ha through polyculture of finfish and prawns. Experiments carried out by the CMFRI, have shown the potential of pen culture of milkfish in coastal saline lagoons, and milkfish and mullets in polythene lined ponds in coastal areas.

Some of the other potential areas for fish culture development are: cage culture of finfish in reservoirs, lakes, irrigation canals, rivers, lagoons and sheltered bays including the lagoons and bays in the islands. These aspects have received very little attention till now.

Another promising area for research and development is culture of ornamental fishes or aquarium fishes of both marine and freshwater origin as these fishes have good export potential.

Thus there is abundant scope for augmenting the fish culture production of the country, by utilising more areas for culture, by adopting new methods such as cage culture, and by intensifying the culture practices in the existing systems.

#### REFERENCES

- Jhingran, V.G., 1982. Fish and Fisheries of India. Hindustan Publishing Corporation, Delhi, 666 pp.
- Natarajan, A.V., 1985. Potential and prospects of Inland Fisheries in India. In: Harvest and Post-harvest Technology of Fish. (Ravindran et al. (eds). pp. 14-18.

Table 1. Important culturable finfish species

Freshwater species

Coldwater species:

1. Salmo gairdnerii gairdnerii (rainbow trout) a
2. Salmo trutta fario (brown trout) a
3. Salvelinus fontinalis (brook trout) a
4. Schizothorax plagiostomus (snow trout)
5. Schizothoraichthys esocinus ( " )
6. Tor putitora
7. Tor tor
8. Tor khudree
9. Acrossocheilus hexagonolepis
10. Cyprinus carpio communis (mirror carp) a
11. Cyprinus carpio specularis (scale carp) a

Warm-water species:

(a) Carps:

1. Catla catla (Catla)
2. Labeo rohita (rohu)
3. Cirrhinus mrigala (mrigal)
4. Labeo calbasu (kalbasu)
5. Labeo fimbriatus (peninsular carp)
6. Ctenopharyngodon idella (grass carp) a
7. Hypophthalmichthys molitrix (silver carp) a
8. Cyprinus carpio (common carp) a

(b) Live-fishes:

1. Clarias batrachus
2. Heteropneustes fossilis
3. Anabas testudineus
4. Channa marulius
5. Channa punctatus
6. Channa striatus

(c) Miscellaneous sps.

1. Mystus aor
2. Mystus seenghala
3. Wallago attu
4. Pangassius pangassius
5. Tilapia sps.

Brackishwater/coastal species

1. Chanos chanos (milk fish)
2. Mugil cephalus
3. Liza parsia
4. Liza macrolepis
5. Osteomugil cunnesius
6. Etroplus suratensis
7. Etroplus maculatus
8. Lates calcarifer
9. Epinephelus tauvina
10. Sillago sihama
11. Siganus spp.

(a) - Exotic species.