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- Shyam Kumar

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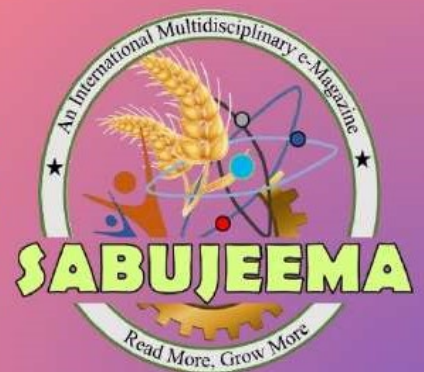
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# INDIGENOUS TECHNICAL KNOWLEDGE: ITS SIGNIFICANCE IN THE FISH FARMING

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## ABSTRACT

The term indigenous technical knowledge denotes the distinctive, traditional, local knowledge existing within and developed around specific conditions of people indigenous to a certain geographical region. It is the information based on society which enables the communication and decision making. It is very dynamic and constantly influenced by internal creativity and experimentation as well as by contact with external systems

## INTRODUCTION

Indigenous Technical Knowledges (ITKs) are basically a form of traditional kind of innovative information and treasure troves of ancient wisdom, beliefs and traditional knowledge passed on from generation to generation for preservation, effective utilisation and conservation of natural resources, soil, plant and other organisms. It is mainly passed down generations through

folklore, myths, customs, folk songs, stories, proverbs, puppetry, cultural values dances, myths, community laws, beliefs, rituals, local language and taxonomy, agricultural practices, equipment materials, plant species and animal breeds. and other traditional methods. According to World Bank, ITKs are local, tacit knowledge, transmitted orally or through imitation and demonstration, experimental rather than theoretical, learned through repetitions, and are constantly changing.

The ITK innovated by the farmers is stored in people's memories and activities, and are like thumb rule in fighting different situations and constrains faced during the culture practices. The innovations are ecologically and socially acceptable, economically viable and involve little risk. It is can be promoted through scientific approach as a mean of higher and sustainable fish production, which will be eco-friendly too.

## INDIGENOUS TECHNICAL KNOWLEDGES (ITKS) IN INDIA

India is home to hundreds of Indigenous Technical Knowledges (ITKs) from probably 2000 yers, thanks to the ancient civilisation and the localised way of cultivating crops and rearing of fish as well as livestock. These ITKs play important role in agricultural production and enhances the quality of life of great majority who live in and depend on agricultural production. The ITKs being practiced by the farmers in several area like veterinary and animal sciences, disease and pest management in crops, grain/seed storage, horticultural crops, and cropping systems and fisheries.

The fishery activity perhaps emerged when the human communities moved to



hinterland from the riverbanks. Further by, the Indian fish farmers practice their own indigenous technology as a common practice through natural resource management. In rural areas, traditionally associated technical knowledge of fish farmers followed from generation to generation to cope up with different situational constraints. The proven, tested and innovations of our ancestors needs to validated, valued and blended with new technological support.

### WAYS TO DEAL WITH INDIGENOUS TECHNICAL KNOWLEDGES (ITKs)

- Farmers' development has next to zero expense, promptly accessible, socially worthy, monetarily reasonable, and economical, imply least danger to rustic ranchers and makers, and are generally accepted to save assets.
- The native innovative information can be advanced through logical methodology as a mean of higher and reasonable fish creation, which will be eco-accommodating as well.
- The close and personal perception of ranchers through their well-established practices has fostered the aptitude of gaining information in sea-going environment specifically.
- The diverse information and ability moved by nearby individuals can generously add to useful endeavors and tries.
- The indigenous knowledge is the accumulated knowledge, skills and technology of the local farmer derived from the interaction of ecosystem.

### I. CONTROL OF UNWANTED FISHES

Expulsion of undesirable fishes is pre-essential in fish seed raising and culture for the better endurance of fish seed and development of culture fish. Farmers followed customary method to eliminate undesirable fishes prior to loading fish seed in culture lake. Use of wild plant which is commonly known as Bish lata (*Glaricidia sepium*) is normal chemical to control undesirable fishes. Concentrate arranged from 18 - 20 kg plant was adequate for one kani (0.16 ha) lake water and spreading strategy for application was utilized. Harmfulness impact of the concentrate in lake water stayed for 15 - 20 days and fish could be loaded after that.

### II. CONTROL OF SNAKES

Water snake (Chekered keelback), commonly known as Dura Saph, is a typical hunter for culture fish in numerous pieces of the state. Conventional strategy utilizing snare was used by the farmers to control water snake where koi fish (*Anabus testudeneus*) was utilized as prey for the snake. Operculum spine of Koi fish was solid and sharp enough to harm the mouth of water snake while inundating it. When the snake was harmed, the odds of assault were accounted for to be diminished.

### III. CONTROL OF TADPOLE

Presence of fledgling in fish culture lake impact the development of culture fish as it seeks food and natural surroundings in lake biological system. The farmers apply debris or lime around lake outskirts. Roughly 60-62 kg debris or 20 kg lime was applied for one ha water territory and vanishing of fledgling was seen following fourteen days of debris application and when lime is applied to control fledgling, it took lesser time (10-12 days) after application.



#### IV. Control of algal blooms

A pattern of high supplement mass or hefty metal burden makes the issue of algal sprout development in fish culture lake. Such issue influences the wellbeing and development of fish. The farmers followed customary strategies to relieve such issue utilizing a coasting oceanic plant for example water hyacinth (*Eichhornia crassipes*), which is commonly known as Kochuri phana. They utilized this intrusive plant cautiously in the lake water with algal sprout in order to assimilate the supplement and hefty metals. Other than this traditional knowledge, farmers additionally answered to apply impressive amounts of steers urine to control the issue of algal sprout arrangement in lake water. They applied dairy cattle urine @ 17 L/ha spreading it uniformly all through the lake surface.

#### V. CHECKING WATER pH

Scientific fish culture lean towards a nonpartisan to marginally basic water pH for better development of fish. The farmers followed a conventional method to check water pH utilizing smearing paper and red (*Camellia japonica*). Initially, they focused on red camellia smudging paper to make it violet-somewhat blue. At that point the violet-somewhat blue hued paper absorbed lake water. Change of the paper tone to red demonstrated acidic nature and to blue showed antacid nature, while no adjustment of shading demonstrates an impartial nature of water. Although it didn't give entire proportion of water pH, however it gave the data whether the water was acidic or soluble. In light of this rough perception, people chose to make a necessary move to address water pH reasonable for fish culture.

#### VI. CONTROL OF SNAILS IN THE POND

The farmers utilized customary method to command over population of snail that made impediment in fish farming. For that coconut leaf/ date palm leaf/ or bamboo container plays were tossed in the lake for a time of 15-20 days. It was seen by the farmers that snails utilized those materials as base. At that point those materials were eliminated from lakes alongside joined snail.

#### VII. CONTROL OF HUMUS GAS FROM POND SEDIMENT

The farmers dealt with issue of humus gas arrangement at lake base residue due to over stacking of excrements. In such cases, fish get pushed because of water quality weakening. Farmers distinguished this sort of issue by noticing stream of air rises in lake surface water from base dregs. They utilized cutting bits of dumra tree and banana stem in extensive amounts to oversee such issues. Another manual customary practice was additionally using a physically hauled bamboo shaft on a level plane at the lake base to deliver out the humus gas from silt. To make the shaft weight enough to be lowered in the water, farmers tied breaks alongside the bamboo posts.

#### VIII. REDUCTION OF WATER TURBIDITY

Many fish lake experienced the issues of turbidity, since the majority of soil of the state has red earth soils and washing was normal. To control the turbidity farmers applied impressive bits of banana leaf/stem subsequent to cutting into a few pieces. When the farmer eliminate these occasionally they improved outcome.



### **ITK RELATED TO POND MAINTENANCE**

The stocking of Calbasu (Labeo calbasu), a important groups for freshwater hydroponics in the lake @ 250 Nos/kani (0.16 ha) were discovered to be powerful by the farmers to keep away from the issues of wild feline assault. They accepted that loading of the referenced fish species (Calbasu) in the lake gives a trademark odd smell to get wild feline far from the lake. farmers utilized a neighborhood citrus organic product to be specific chalita (Dillenia indica) to deal with the issues of wild feline assault on fish. The natural products were cut into a few pieces and appropriated the pieces over the lake water. Natural product pieces that glide in lake water surface looked like the drifting fish head and it pulled in wild feline. Wild feline get up to speed those citrus organic product pieces and encountered a harsh taste. In this manner wild feline tried not to get fish.

In extreme instances of wild feline assault, farmers utilized lime and bird egg shell (poultry and duck egg shell). They topped off the egg shell with lime and kept it in the fringe of lake where the creature generally moved Wild feline benefited from egg and they inundated the lime filled egg shell mixing up it as great egg. As a prompt impact, lime of the egg shell caused consuming in wild feline's mouth hole and in this way, it kept away from the spot.

### **ITK RELATED TO POND CONSTRUCTION AND MAINTENANCE**

The fish farmer of Hilly region were seen to have chosen low-lying zones close to the home as an ideal site for building fishpond. Such lakes work with washing, washing of fabric and utensils as well as

raising fishes. They for the most part really like to develop dyke lakes to the hole lakes. This is on the grounds that developing a bank to impede a little slope stream or to raise a dike on a couple of locales in a normally encased region gets less expensive. Generally lakes are built in low-lying regions along slope streams. In such cases, filling and depleting of the lakes by gravity gets conceivable, accordingly, helping in simplicity of activity.

#### **a) Spillway**

The farmer of the area have contrived native spillway to secure their bank. The spillways are basic and proficient. The spillway comprises of empty bamboo pipes fitted in the dyke at a specific range from the base. One end of the line looking inside the lake is hindered with stone and mud soils. On occasion of extra" standard weighty precipitation, when there is a threat to the dike, the additional spillover is depleted out by opening the line. They likewise smaller the bank by utilizing little hand-held gadgets, privately known as Dhurmuch. It comprises of a castiron piece fitted toward the finish of a bamboo tube. One more basic pressure gadget is a wooden log whose one end is made tightening for aiding in activity with hands.

#### **b) Protection of pond dyke**

Since most bank lakes are built by hindering streams or by covering open sides of misery encompassed by hillocks, such dikes are ordinarily exceptionally tall and have steep sides. Since, the region encounters substantial precipitation, most dykes are inclined to disintegration and harm. To forestall this, ranchers plant estate crop like coconut and betelnut on the dykes. They additionally work on turfing of the side of the dikes with grasses following development.



## FISH SEED

### a) Natural seed collection

The fishers gather bring seeds of murrels *Channa punctatus* uncommonly from normal water of the local rivers . Produce of murrel moves in botttom and intermittently rises to the top for air relaxing. It is effectively apparent from over the water surface. The bring forth is effectively gathered by bamboo sifter or fine cross section materials like mosquito net or even neighborhood shower towels (Gamocha). It is effectively gathered by little youngsters during storm months.

### b) Transport and acclimatization

Fish seed sellers transport seed in aluminum hundies. They add around 50 ml of nearby rice brew for each 10 liters of water in these hundies. The sellers accept that the endurance of fry is better when rice brew is added into hundies during transport. Despite the fact that viability or in any case of this training couldn't be assessed, apparently the rice brew may go about as some kind of a sedative specialist during transport. The ranchers lower the hundy containing seed into lake water. They eliminate the hundy after at some point and eliminate the seeds that neglect to move out of the hundy. It is sensible on the grounds that solitary feeble seed will stay in the hundy and the more grounded one will promptly escape into lake water. The ranchers favor seed of Indian significant carps, grass carp and regular carp (red assortment). The ranchers recognize fry of catla from rohu and mrigal by its greater heads. They incline toward fingerlings to broil since they develop rapidly to table size. Be that as it may, fingerlings are hard to find in this locale and cost significantly more than fry.

## ITK RELATED TO FISH HEALTH MANAGEMENT

### 1) Management of dissolved oxygen deficiency

A large portion of the little lakes of this area will in general evaporate during winter and late spring months. At the point when the water level is diminished impressively, consumption of disintegrated oxygen particularly during morning hours becomes basic issue looked by the ranchers. The ranchers tide over this issue by numerous native strategies like channelising crisp spring water, beating the lake surface with bamboo posts or splashing water with open compartments. They proceed with this training insofar as fishes keep on getting a handle on air oxygen.

### 2) Turbidity control

Numerous fishponds experience the issue of constant turbidity, since the vast majority of the space of the area has red earth soils and washing is normal. To control tenacious earth turbidity the farmers apply paddy straws or bits of banana stem. At the point when the roughage or banana stems decay, the ranchers intermittently eliminate them from the lake. This technique for controlling dirt particles was discovered to be very compelling. Purportedly, to control algal sprout, the ranchers shower steers pee in impressive amounts on lake surface.

### 3) Control of Argulus

Numerous fishponds of the local have Argulus (a shellfish ectoparasite) disease. In such cases, the ranchers ordinarily drive bits of split bamboo into base residue so that the bamboo pieces stay in vertical situation all through water section. The ranchers accept that the fishes can dispose of Argulus bugs by scouring their bodies against the split bamboo pieces. A few farmers additionally



keep old gunny packs lowered in lake water and eliminate them intermittently to dry and slaughter eggs of the Argulus saved over them.

#### 4) Leach control

To control drains, the farmers toss strips of cucumber or leaves of harsh gourd made into glue structure. The farmers accept that these plant materials are severe and, consequently, help in destruction of drains.

#### 5) Control of Epizootic ulcerative disease syndrome (EUS)

Epizootic ulcerative sickness condition (EUS) is a typical issue in fishponds of this region, particularly, during cold weather months when the water level in lake is extensively decreased. To control EUS, most farmers apply glue of powder of turmeric into lake water. A few farmers additionally use debris of roughage or bamboo plants. The remains were discovered to be less viable than turmeric in controlling EUS. As per a few ranchers, applying parts of "Neem" plant into fishpond helps in controlling ulcers on the assemblage of fishes. One of the logical pre-imperative for control of EUS is to make the water basic. As the roughage commonly known as sai makes the water basic, it very well might be helpful in forestalling EUS. Consequently, the use of "Neem" leaf removes, turmeric, banana stem suspension, which have antimicrobial activity, has been accounted for to control this disorder to some extent .

#### BETTER GROWTH OF FISH

Equal quantities of Mustard Oil Cake (MOC) and Rice Bran (RB) mixture was the common fish feed used by the farmers. They traditionally added another component in feed composition, i.e. local rice beer which was made from fermented rice to achieve

better growth of fish. Farmers reported a mixture of MOC, RB and local rice beer @ 5:5:1 provided a good growth of fish as compared to conventional feed.

#### CONCLUSION

The ITKs on pond development and maintenance, fish seed transportation, fish health management were affirmed high on cost viability and simple to follow, moderate on logical worth/rationale, adequacy, accessibility of material, social suitability and natural sufficiency. Thusly, it is basic to examine these advancements with the goal that the logical standards/premise behind them could be appropriately perceived. Whenever this is done, it will be simpler for expansion of ITK, further refine and overhaul them by mixing them with the advanced logical information.

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