A STUDY ON

FRESH WATER FIHES OF INDIAN MAJOR CARP MANAGEMENT

A PROJECT REPORT

Submitted in partial fulfillment of the requirements for the a award of

the Degree of **BACHELOR OF SCIENCE (B.SC)**

SUBMITTED BY

p.Manju

REG NO: 0317014518

Under the guidance of

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S.V.C.R GOVT DEGREE COLLEGE

(AFFILIATED TO SV UNIVERSITY, TIRUPATI)

PALAMANER, CHITTOOR DIST.

2018-2019

CERTIFICATE

This is to certify that the project work entitled "A STUDY ON FRESH WATER FISHES OF INDIAN MAJOR CARP MANAGEMENT" is a bonified work done and submitted by p.manju (reg no: 0317014518), in partial fulfillment of the requirement for the award of the degree of bachelor of science (B.Sc) by the SVCR Govt Degree College, Affiliated To S V University, Tirupati, Palamaner during the academic year 2018-2019.

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ANDHRAPRADESH

Academic collaboration/Linkage

Between

Department Of Zoology

SVCR GOVT.DEGREE COLLEGE

Palamaner, Chittoor District

Andhra Pradesh

And

Government fish Hatchery

Palamaner, Chittoor District

AP.

MEMEORANDUM OF UNDERSTANDING

Department of Zoology, svcr government degree college, Palamaner, and Government Fish hatchery, Palamaner, on this day enter on to a memorandum of understanding as per the terms referred below

1. With regard to know the Fish seed Production, feed ratio, types of culture, pond management and other techniques in pisiculture.

2. Collaboration with government fish hatchery for extension work

3. Fisheries inspector to deliver lecturer to our students.

4. To give the job opportunity in various sectors.

బి. వెంకటప్ప. B.

(B. VENKATAPPA)

(FISH FORMER)

BELUPALLI, BIREDDIPALLI(M)

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DECLARATION

I hereby declare that the project work entitled "A STUDY ON FRESH WATER FIHES OF INDIAN MAJOR CARP MANAGEMENT is a bonified work done in partial fulfillment of the requirement for the award of the degree of bachelor of science(B.Sc) is my original work under the guidance and supervision of Mrs. LAKSHMI PRASANNA LATHA, assistant professor ,SVCR GOVT DEGREE COLLEGE,PALAMANER.

I also declare that this project is result of my own and it has not been submitted to any other university of published any time before.

Place: Palamaner

Date:05.03.2019

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ACKNOWLEDGEMENT

I would like to thank all those persons who have contributed towards the successful completion of the project work , I am glad to say that working on this project has been illuminating and enjoyable for me.

I have deep sense of gratitude to project guide MISS.B.LAKSHMI PRASANNA LATHA and MR.D.RAVI, Asst .professor, department of zoology, SVCR Govt degree college, Palamaner for his encouragement, guidance and valuable suggestions throughout the project.

I extend my thanks to M. Jayanthi, Managing Director and Guruvasula Reddy, worker, Govt Fish Hatchery, Palamaner for his help and valuable suggestions during the course of project work.

I have extended sense of gratitude to our Palamaner fish farmers. they have given more information about fish farm management as well as production.

Finally yet importantly, I would like to convey my sincere thanks all my friends and parents and well wishes for their constant support ,inspiration and encouragement without which this project would not have been successful .

Signature

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INTRODUCTION

Aquaculture is the farming of aquatic organisms including fish, molluscks, crustaceans and aquatic plants. Farming implies some sort of intervention in the rearing process to enhance production, such as regular stocking, feeding, protection from predators, etc. "aquaculture is a significant socio economic activity, especially for rural communities, contributing to livelihoods, food security, income generation by the qua, employment etc,.

Fishes are aquatic, cold-blooded vertebrates and cultured in ponds and tanks, their growth and survival is influenced quality of the water in which they are cultured. Aquaculture remains a growing vibrant and important production sector for high protein food. It is wholesome ,tasty ,highly nutritive an excellent source of essential minerals ,vitamins and essential amino acids.

Types of fisheries: Fisheries are mainly divided into two types, namely

1. Inland Fisheries

2. Marine Fisheries

1.INLAND FISHERIES:

Inland fisheries deals with the fishery aspects of water other than marine water. Potentially vast and varied inland fishery resources of India are the one of the richest in the world. India has about 4% of world fresh water resources. There are twelve major river system, an extensive network of irrigation canals, reservoirs, lakes, tanks, ponds, etc. Man has only to reap without having to sow some important edible fresh water of India are fin fisheries and non fin fisheries. The need has emerged to explore possibilities of diversification to alternate species like fresh water prawn, magur fish, murrel, tilapia, fresh water pearl culture. Fresh water prawn popularly known as "scampi". In spite of disease , fresh water aquaculture offers promising scope for sustainable production.

6. ANDHRA PRADESH:

The state is featured in sixth position in the market capital of fish producing state in India with enormous opportunity and high potential in yielding super quality fisheries in the state fish market.

7. ODISHA:

Odisha is widely known for fish production state in India where again the fish production is an important culture among the people of odisha. The state is baring the highest fish consumers and demand for fish is over increasing.

8. WEST BENGAL:

It is widely known that west Bengal is one of the greatest and largest producer of varied fish e.g. Thus west Bengal is considered as the ultimate destination of fisheries.

9. PUDUCHERRY:

Ninth largest producing state is said to be the state of puducherry which gets immense profit and net income from the fish farming to an extent land. The state is largely depended on marine fishes as the state is surrounded by the sea coast. Thus, the state stands uniquely in ninth position in the production of high quality of fish.

10.GOA:

Tenth largest fish producing state is said to be the state of goa, **where** the entire population of the state is depended on the fish intake to a great extent. The fish production like sardines, tuna, prawn and mackerel are produced in huge amount.

FISH PRODUCTION IN INTERNATIONAL SCENARIO:

1. CHINA:

China is the largest producer of fish in the world. This county produces about 58.8 million metric tons of fish per year. It is estimated that this country accounts for 1/3 of worlds fish production.

2. INDIA:

India's is the second largest produces of fish in the world. This country produces about 9,45,892 metric tones of fish annually. Indian fish industry accounts for the 6% of the total fish produced in the world.

3. INDONESIA:

Indonesia produces about 6,101,725 metric tons of fish annually .this country has managed to adopt more efficient techniques and methods to increase the production.

4. PERU:

Peru produces 5,854,233 metric tons of fish annually and is the fourth largest producer in the world. This country is blessed with a 3000 km coastline12,000 lakes and lagoons and 50 species o fishes.

5. UNITES OF AMERICA: united states of America

USA is an all rounder in many industries like cotton, coffee, beans, and fish. It produces 5,360,597 metric tons of fish annually. It is one of the largest aquatic zone in the world.

6. CHILE:

Chile has one of the best and greatest producer marine ecosystem in the world. And it has 2,500 coastline .produces 5,028,539 metric tones of fish annually and income from this country is one of the major source of income for this country.

7. JAPAN:

This country is well known for its seafood dishes and the country produces 4,819,116 metric tones of fish annually. The majority of fish produced in the country is exported.

8.THAILAND:

Thailand produces 3,743,564 metric tones of fish annually. The annual production of fish by this country has been increasing for the past few years.

9. VIETNAM;

Vietnam produces 3,367,853 metric tons of fish annually. Majority of the fish produced in this country is through aquaculture. This country is well known for the vast number of fish species which number to 2,458 which is comparatively higher than any other countries.

10.RUSSIA:

Russia produces 3,305,749 metric tones of fish annually. Russia is one of the countries that have least used its natural resources for fish farming and production.

IN CHITTOOR DISTICT SURROUNDING OF PALAMANER TO THE FISH POND CULTURE:

Palamaner is one of the mandal in Chittoor district. It is also known as MILK CITY OF SOUTH INDIA. in Palamaner mandal many types of industries are available such as RATHNA BIOTICS, VETERNERY, MILK DAIRIES , GOVERNMENT FISH HATCHERY.

Palamaner govt fish hatchery is formed community. In this community 9 mandals , 7 societies and 47 ponds are present . these 7 societies are

1. fisheries cooperative
2. Rayalapeta Society
3. Appinapalli Society
4. Bireddypalli Society
5. Santhipuram Society
6. Kuppam Society
7. Chinna Bangarunatham society

in that 47 ponds well known ponds are 6 ponds. they are

i. Karidimadugu – Krishnamanaidu Pond – it is 7 km far from our college
ii. bommidhoddi – bommidhoddi pond – it is about 2 km far from our college
iii. Palamaner – Palamaner big pond – it is about 1 KM far from our college
iv. Nalagam palli – Nalagam palli pond – it is about 8 KM far from our college
v. Kolamasana palli – Kolamasana palli pond – it is about 10 KM far from our college
vi. Peddha Panjani – Peddha Panjani pond – it is about 15 KM far from our college

The above ponds are seasonal ponds . the seeds will only released on the month of July To August . Duration Period Is 4 To 6 Months.

They will collect the IMC seeds from different areas such as Kadium (West Godavari) , Ponnuru (Guntur District) , Kalyan Dam(Chittoor District) , Ananthapuram , Piler.

SELECTION OF QUALITY SEED FOR FISH CULTURE PONDS:

1. To observe the spots such as white , red
2. To observe the scales on the surface of the body.
3. Fin cuts (rot disease)
4. To observe the mucus on the surface of the body

In Palamaner govt fish hatchery is available near the Padmasri Cinema hall. 3 members are working. They maintain 7 nursery ponds for growing from breeding to fry and fingerling stage . they sale fishes to the surrounding fish farmers . before selling to farmer they will check the water temperature, P^H, and also quality of seed.

SEED PRODUCTION : Government has been provided fish seeds to the fish farmers.

- Active during packing 5 lakhs – Common Carp- target
- 8 lakhs-Indian Major Carps-target

1-3 months – growth – upto fingerling stage

- Kaikalure (East Godavari)
- No test are conducted

SITES SELECTION :

39 cents * 47 cents

7 nursery ponds

SUBSIDY BY CATEGORIES WISE :

BC-75%

SC-90%

ST-90%

And the main thing is 7 skills are required to entre in to this committee field they are

1 swimming
2 mesh operating
3 preparation and usage of craft and gear
4 dragnet
5 cast net
6 ADF
7 DDF

The person who has passed above skill test he/ She will select by cooperative society officers . after qualified GFH supplied to community members.

MONOCULTURE AND POLYCULTURE

Fish culture of two types (1) Monoculture and (2) poly culture. Monoculture is the culture of a single species of fish in a pond. If only one species is introduced into a pond ,due to the same dietary habits all the fish congregate at one place. Naturally when Monoculture is preferred, more number of fish one species are introduced. This result in high competition for food and space. Due to the flights, heavy mortality of fish will occur. Because insufficient amount of food, the fish will not grow to good size and the yield is affected. In

Monoculture systems other niches are vacant and in that area and the available food in these niches remains wasted.

Poly culture is undoubtedly more Superior over Monoculture. In polyculture ,the above problems will not be found. Six varieties of fishes utilize food, grow well without any competition and the yield is also very high. The mortality rate in polyculture is negligible. In Monoculture a yield of about 500 kg/ha/Yr is difficult, but in polyculture system the yield is about 20 times more then that of Monoculture with scientific management.

OBJECTIVES:-

1. To Survey Of Fish Pond Area such as Kolamasanapalli, Peddapanjani, Bommidoddi.

2. To Find The Physico-Chemical Factors Such As Temperature, P^H, Oxygen.

3. To Observe The Seasonal Diseases In Adult Stage Of Indian Major Carps

4.To write taxonomy and identification of Indian Major Carps.

5. To follow the scientific method such as collection of data and information.

6. To collect the information about the duration period and supplementary feed.

Taxonomy, Identification of Indian Major Carps:

1.CATLA CATLA:

Common name : Krishna botcha, catla

Characters : large head, more convex dorsal profile, thick non fringed lips no barbells, caudal Fin is deeply forked, greenish silvery body colour.

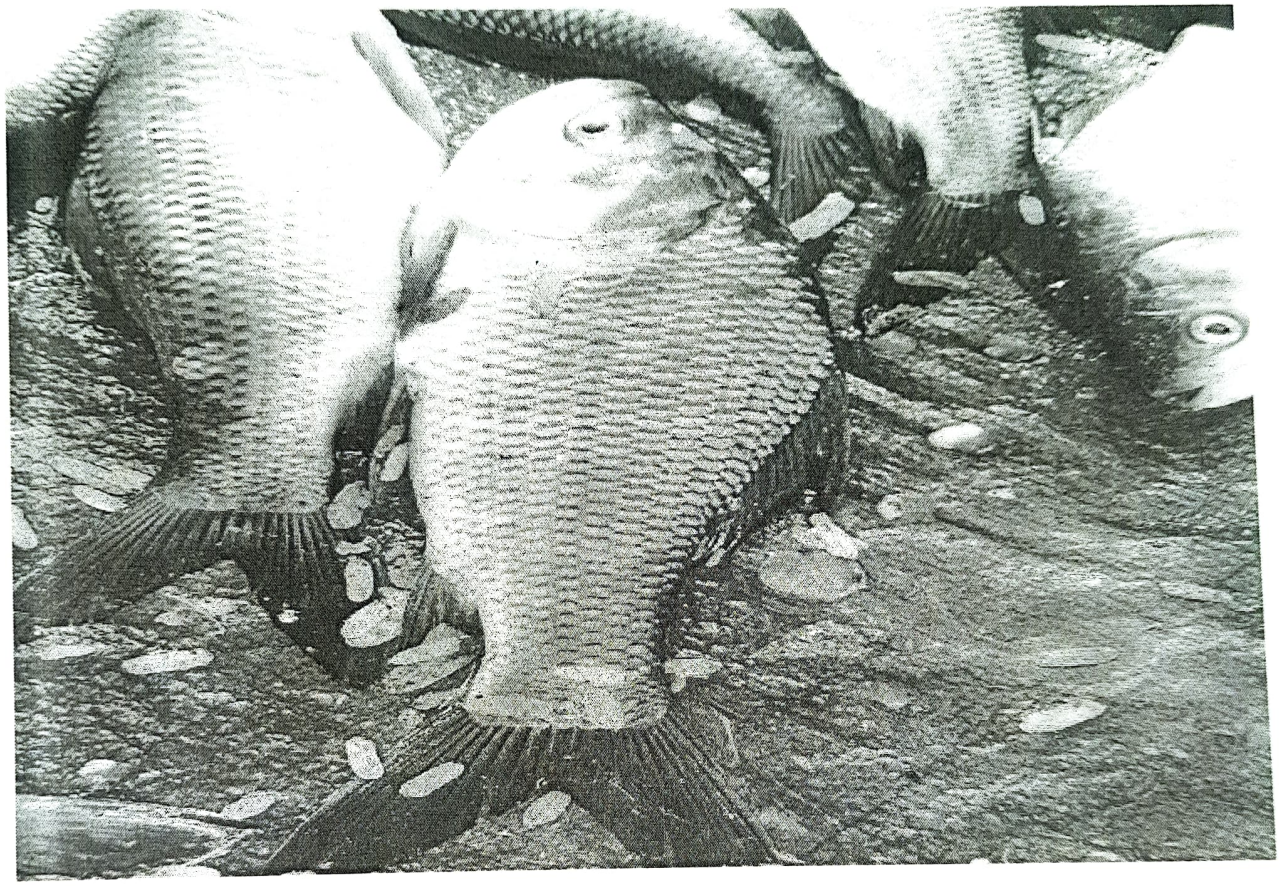
Habitat : fresh water rivers, lakes, canals and ponds. surface feeder.

Feed : zooplankton, algae plants and insects also accepts feeds like rice bran, ground nut oil cake, cotton cake and soya cake.

Reproduction : first maturity in the second year. Eggs are non adhesive, demersal and yolk is slightly red in colour, swollen eggs measures 5.5 -6.7 mm in dia. fecundity is 78,000-1,50,000 per kg body weight.

in diameter

Growth : 1.5-3.5 kg per year. high yielding variety.



Indian Major Carp Of Catla catla

2.LABEO ROHITA:

Common name : rohu, ragandi, gandumenu and seelavati.

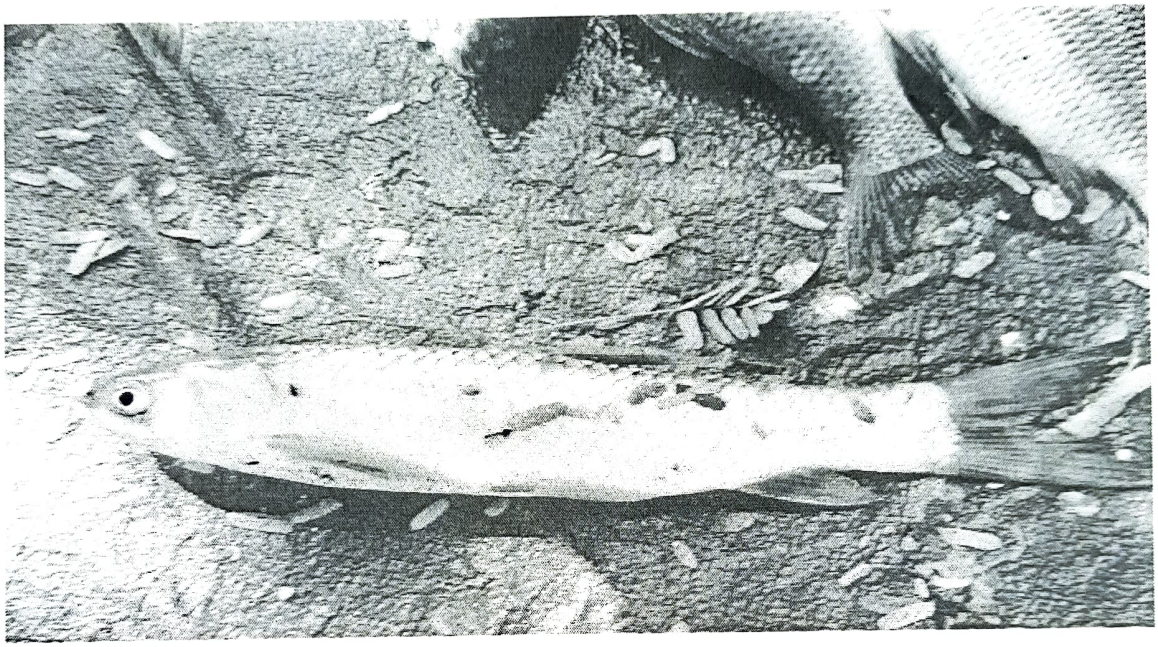
Characters : stout fish with deep body.sub terminal mouth with thick and fringed lips with distinct inner fold .one pair of small barbels, caudal fin is deeply frock. Brownish or bluish on the back and silvery on the sides. Fins are grayish and eyes are reddish.

Habitat : fresh water rivers, lakes, canals and ponds. Column feeder.

Feed : phytoplankton, minute algae and decaying matter. Also accepts feeds like rice bran, groundnut oil cake, cotton seed cake and soya cake .

Reproduction : first maturity at the end of second year. eggs are reddish spherical transparent and non adhesive, demersal. swollen eggs measured about 4.2 mm dia fecundity is 1,00,000-2,50,000 per kg body weight.

Growth : 1.0-3.0 kg per year. high yielding variety with high demand.



Indian major Carp of Labeo rohita

3.CIRRHINUS MRIGALA:

Common name : mrigal, jadduvai and mosu.

Characters : linear body, more convex dorsal profile than ventral portion. small head with terminal mouth with non fringed lips. one pair of small barbels present., caudal; fin is deeply forked ,silvery body with dark grey along the back .eyes are golden.

Habitat : fresh water rivers lakes. canals and ponds. bottom feeder

Feed : detritivore. Dead and decaved vegetable matter, organic debris and algae also accepts supplementary feeds like rice bran, ground nut oil cake , cotton seed cake , and soya cake

Reproduction : first maturity after first year. Non adhesive , round eggs . swollen eggs measures 3 to 4mm in dia . fecundity is 1,00,000 to 2,25,000 per kg body weight.

Growth : 1.0 to 2.0 kg per year.

Indian Major Carp of cirrihinus mrigala

MATERIAL AND METHODS :

We have visited different locations to collect the information of fish culture in surrounding of Palamaner such as bommidoddi. We have collected the data about pre stocking management, stocking, post stocking management. but they did not know about process of post stocking management. we have collected samples of different stages of Indian major carps i,e fry, fingerlings, juvenile, adult stage. and water samples to find out the temperature , P^H, oxygen and study of seasonal diseases. Nowadays they have been followed traditional method. They were explained about but not followed scientific method.

Result: - The best design for new ponds is trench type pond bed is ploughed to facilitate release of obnoxious gasses . Application of chemical has to be resorted to during the summer period . Old and un dried ponds having aquatic weeds and other unwanted sp require special attention . The level is at its minimum .depending on the ph of the soil lime has applied the following rate. Good quality water should be let into tank through the sieves up to level of 6 to 8 feet. The level maintain throughout the culture period to get good growth to maintain the water level as well as quality. this is also called culture pond management . These are meant for stocking the fish grown to marketable size. Each pond constructed at 300*80*6 size and occupies a space of 10 to 15 dunams (1000meter) . Stocking fish may even grow more by feeding on the available food . The three important phases of culture pond management . They are

1 pre-stocking management

2 stocking management

3 post Stocking management

PRE-STOCKING MANAGEMENT:

They have taken lease from others for culture of fishes .They have prepared old pond such as dewatering, drying, desiliting control of predators, aquatic weeds, ,watering, fertilization, ie inorganic as well as organic fertilizers. Inorganic fertilizers are lime , the quantity of lime is applied based on the P^H. The following table provides for use of lime.

P^H	Lime (1 ha)
4.0-4.5	1000
4.5-5.5	700
5.5-6.5	500
6.5-7.5	200

The growth of natural food organism in the water different manures are applied to water as follows.

Raw cattle dung -- 10-15 tonnes /ha

Urea -- 200 kgs/ha

Single super phosphate -- 200 – 250

STOCKING MANAGEMENT: They have maintain polyculture due to more profit.

This include selection of species its size, density and species ratio . Brownish green/blue color of pond water indicate the plankton density in pond . It is time for stocking seed . Stocking of pond should be done either in morning or late evening after proper acclimatization for better survival. 100 to 150 mm size fingerlings are ideal to stocking at

density 4000,10,000 per hectare of water spread area . The species ratio practiced in Andhra Pradesh is as follows

	Rohu	Catla	Mrigala
1	50%	45%	5%
2	60%	30%	10%

POST- STOCKING MANAGEMENT:- To check water quality , feeding, health monitoring and harvesting Water quality parameter are P^H 6.5 to 7.5 , oxygen 6 to 7 ppm,

Fish grown in semi-intensive and intensive culture pond and full artificial feeds , respectively, and also provide natural feed in the pond .

A wide variety of feed ingredient is used to prepared supplemental / artificial feeds . The fish feed are prepared at pond site using locally available raw material like rice, or corn bran, copra meal, and rice mill sweepings as sources of carbohydrates . The natural food will not sustain for long artificial feed in most in intensive fish culture .the major ingredients used are rice bran , ground nuts oil cake, cotton seed cake . Fine ground nut oil cake powder with de-oiled rice bran at the ratio 1:3. It is most extensively used formaulation in AP . The frequency feeding 2 time a day . Morning and evening rate 5 to 10% of biomass fish in a kgs . Growth monitoring at 15 days interval is used feeding rate and to estimate biomass . The feed should be placed on bamboo tray and lowered to the pond bottom or sprayed at corners. After sometime the fishes will get used to this type of feeding at same place at particular time .the recommended feeding ate is as under

Culture Period	Quantity Per Day In Kgs
i. I quarter	1.5 to 3
ii. II Quarter	3 To 6
iii. III Quarter	6 To 9
iv. IV quarter	9 to 12
v. Total (for the year)	1,655 to 2,700

FISH DISEASES

The diseases of fish are classified as two main types :-

1. Parasitic diseases
2. Non parasitic diseases

1. PARASITIC DISEASES :-

These are also called as pathogenic diseases ,'infectious diseases communicable disease they includes

1. Viral
2. Bacterial
3. Fungal
4. Protozoan
5. Helmenthetic
6. Annelid
7. Crustacean
8. Algal

1. NON PARASITIC DISEASES ;- These diseases also occur in fishes mainly to environment and nutritional problems. These are detailed elbow ;-

ENVIRONMENTAL FISH DISEASES ;-

The environment in which the fish live an grow place an important role for fish health. Any deterioration in the environment qualities after creates stress to fish and favour multiplication of pathogens thought the fish has defence mechanism against pathogens in

the formation of scales, epithelial cells, acid and alkali media of alimentary canal, which offers resistance to pathogens and finally the defence mechanisms regulated by immune system and phagocytosis cells, the pathogens predominate and diseases occur in fish, farming system

Monitoring the following factors lead to prevention of environmental diseases:-

1:- depletion of dissolved oxygen
2:- excess of carbon dioxide
3:- nitrogenous wastes and ammonia accumulated
4:- super saturation of oxygen and nitrogen
5:- excess of hydrographic sulphide gas
6:- oxygen pollution
7 :- Algal toxicity and
8:- high temperature of water

Prevention against environmental diseases by proper sanitation your removing mud from pond bottom regularly and exposing the bottom cell to the sun light application of lie is also a must.

NUTRITIONAL DISEASES :-

There an easy attributed to deficiency or excess or important Balenciaga of components present in the food available symptom appear gradually when one or more components in the diet below the critical level of the odyssey reserves

VIRAL DISEASES:

Virus are transmitted from one host to another through a structure called virion . viruses caused diseases by weakening the host tissue or by forming tumors in the host tissues . there is no treatment for viral diseases and can only be prevented . These includes

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lymphocystis ,viral hemorrhagic ,septicemia , infectious pancreatic necrosis ,infectious hemopoitic necrosis.

BACTERIAL DISEASES:

These are responsible for many fatal diseases in fishes . like furenculosis , columnaris fin and tail rot , vibriosis , dropsy , cottonmouth disease. bacterial gill disease and tuberculosis

COLOMNARIS ;-

it is caused by flexibactor columnaris . the skin lesions lead to ulcerations . grayish to brownish patches appear on the head and sides of the body . gill lamella are destroyed leading to death .

FIN OR TAIL ROT :-

it is caused by pseudomonas and aeromonas etc . the fins and tail are gradually eroded by the bacteria .

HEMORRHAGIC SEPTICEMIA;

it is suspected that pseudomonas and aeromonas are the causative agents . accumulation of fluid in the body cavity (dropsy) , hemorrhagic ulcers on the skin and fins are the symptoms .

FUNGAL DISEASES :

These includes saprolegniasis and branchiomycosis. The fungal diseases of fish often considered secondary invaders following injury, but once they start growing on a fish lesions usually continue to enlarge and may cause death unless medication is provided.

PROTOZOAN DISEASES :

these includes whirling diseases (myxosoma cerebralis) , costiasis (costianecatrix) , ichthyophthiriasis (white spot diseases) , coccidiosis . all these ecto parasites can cause mass mortality of younger stages of carp very quickly and the situation becomes worst in

water with low oxygen and high organic matter . Ichthyophthiriasis is caused by ichthyophirius multifilis , a ciliate . the characteristic symptoms of these disease is the presence of several pin head shaped white spots .

HELMINTHIC DISEASES (WORM PARASITES):

These includes dactylogyrosis(gill flukes), gyrodactylosis (skin flukes) . these parasites have well developed attachment called "HEPTOR" and feeding apparatus. These cause mass mortality in early developmental stages of carps. Colour of gills fade and there will be tremendous mucous secretion .

ANNELID DISEASES:

these diseases caused by leeches belonging to gnathobdella and rhynchobdella. leeches like piscicola,myzobdella and hemiclepis hold the skin of fish and suck fish blood. After the blood meal, they detach themselves leaving the wound open for secondary fungal infection. the popular control measure is dip treatment in 2.5% Nacl for 30 min.

CRUSTACEANS DISEASES:

These includes argulosis, lerlnaeasis, ergasilus and salmonicola diseases.argulosis is caused by fish lice(argulus).it inhibits the skin and fins. this causes retordation of growth and loss in weight and loss of appetite.

ALGAL DISEASES:

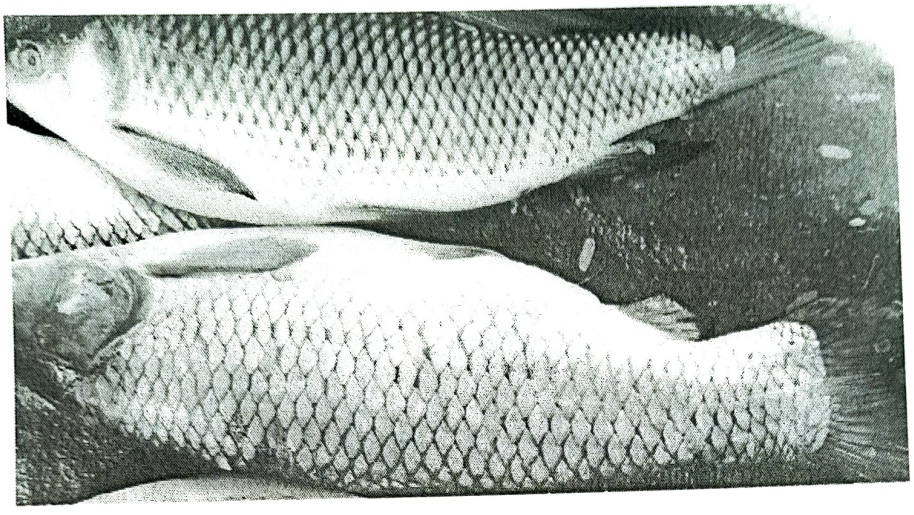
Algae like oscillatoria, chlorella and pharmidium also cause discomfort in fishes. oscillatoria is responsible for fish mortality and is found on gills and fish body in large numbers and produce toxic substances, which are responsible for fish killing.

EUS(Epizootic Ulcerative Syndrome):

This disease has caused wide spread damage to the fresh water fishes and wild brackish water fishes. Due to this sudden mortality occurs in the fishes.

Hitherto the causative factor could not be identified. Severe ulcerative skin lesions with hemorrhagic spots over the fish body which ultimately turns into big ulcers.

In winter season the diseases outbreak is rampant. Effected fish exhibit distinct abnormal swimming behavior with frequent surfacing and mortality.



Tail rot disease of Rohu

Bacterial infection of catla

Oxygen depletion of Catla

Oxygen depletion of Rohu and Catla

TREATMENT AND CONTROL:

1. Liming with potassium permanganate ($KMnO_4$), Nacl (salt), bleaching powder (30% Chlorine and antibiotic therapy.

2. CIFAX: it was developed by central institute of fresh water aquaculture. (CIFA),Bhuvaneshwar and it is a formulation of a chemical mixture by name CIFAX,

which has proud to be a very effective to combat EUS..Application of **lime** with **turmeric powder also proved to control EUS**

SUGGESTIONS TO FISH FARMERS

1 Should observe the quality of seed

2 should observe diseases of seed as well as learn about seasonal diseases in fishes.

3 should concentrate and maintain the temperature, oxygen and p^H

4 should learn about the structure of Indian major carps seeds.

5 should use the probiotics as a fish feed

CONCLUSION

We have visited fish farms in surrounding area of Palamaner. Every fisher man depends on the production of fish , but they have not followed scientific method and maintain traditional culture method .This method can loss of production as well as lack of profit and also not good quality fishes provided to consumers. now a days traditional may be converted into extensive culture method which is best. .stocking density should maintain, water quality management , and maintain health and hygiene . They should prepare the dykes and as construct the embankment surroundings of ponds.

REFERENCE:

1.Government Fish Hatchery And Farm Management Manual..

2.New Telugu Academy Aqua Culture Text Book .

3.Old Telugu Academy Aqua Culture Text Box.