

CARP SEED PRODUCTION DURING DRAUGHT YEAR 1987 UNDER CONTROLLED HATCHERY SYSTEM

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ABSTRACT

Introduction of controlled hatchery system "Model CIFE D - 81" made the production of 60 lakhs Indian major carp seed in the draught area of eastern Uttar Pradesh. The hatchery system provided optimum temperature, dissolved oxygen and pH for breeding and hatching and also removed the metabolites generated, thus technology is simple and the success of the programme attracts pisciculturists.

INTRODUCTION

India was in the grip of draught during 1987, which was the worst in the century. About fourteen states including Uttar Pradesh were reeling under the impact. This draught made the economic disaster to the agricultural workers.

To meet the demand of 13 million tonnes of fish by 2000 AD, fish seed requirement is the basic need (Dwivedi, 1985). To overcome this problem during the draught year 1987 an extension oriented field programme on fish seed production was organised. In spite of the severe draught conditions 60 lakh spawn of Catla and Rohu were successfully produced under controlled condition for the first time in Uttar Pradesh.

MATERIAL AND METHODS

Ponds

A fresh water fish seed farm at village Neola Karsanda District Barabanki (UP), was identified to implement the project "Aquaculture and integrated fish farming in private owned farm". The area of the farm was approximately 1 ha. The four

nursery (34 X 9 m) and two stocking (51 x 24 m) ponds were dug out with the financial support of FFDA (Fig. 1). In June 1987, nursery ponds were kept ready to receive spawn. The farm had the water supply from the tube-well.

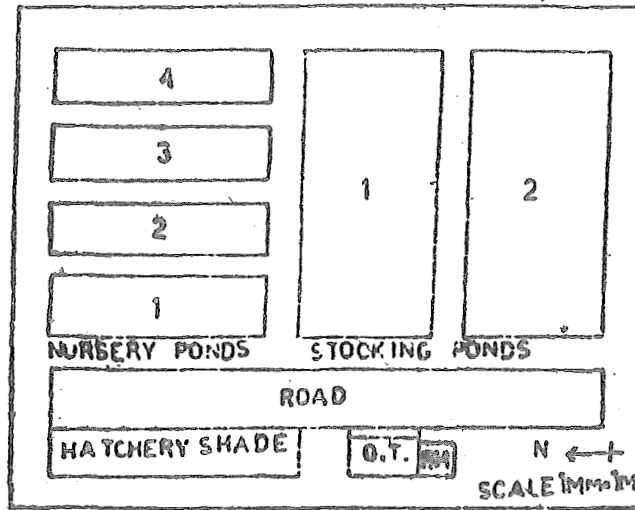


Fig.1. Layout of the Farm

Overhead Tank

A wooden overhead tank with a capacity of 4000 l. was fabricated. It was provided with a "Monitex" plastic lining (Fig. 2). As a result the cost of the overhead tank was minimised to a great extent.

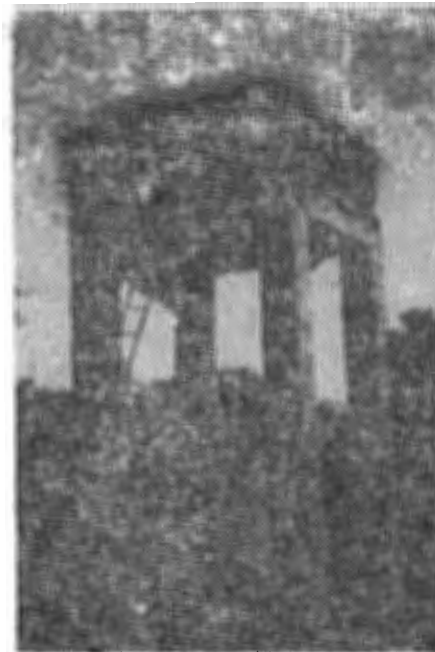


Fig 2. Wooden overhead tank with "Monitex" plastic lining

Hatchery

Modern Carp Hatchery CIFE D-81 with six buckets was installed at this farm (Fig. 3) In this system of breeding and hatching temperature, dissolved oxygen and pH are controlled. It also ensures removal of metabolites, as a result simulated natural environmental conditions are created and breeding and hatching take place even without rain. In this system an egg basket having a capacity of approximately 0.2 million was used. But for higher commercial production an egg basket of one million capacity (Model CIFE D-85), can be used (Dwivedi 1



Fig.3. Controlled Carp Hatchery Model CIFE D-81, at the farm site

Brooders

Two hundred kg of brooders were procured and maintained in a separate pond in the vicinity of the farm. The supplementary feed was given for their maintenance for three months prior to the experiments. The ingredients of the supplementary feed were rice bran and oil cake in the ratio of 1:1. This feed was mixed with ayurvedic drug 'Prajna' which helped to advance maturity.

Induced breeding experiments were conducted by hypophysation of one year old pituitary gland procured from Calcutta during 1986. Intramuscular injections of pituitary gland were administered in two or three doses (Chondar, 1980). The doses were determined observing the maturity of the gonads.

Each set consists of two male and one female fish. The first dose was given to female fishes only, at the rate of 2-3 mg/kg body weight. The second dose to the female was given at the rate of 5 to 10 mg/kg and to the male fish at the rate of 2-4 mg/kg of body weight. The rate of third dose was 8-12 mg/kg to the female and 2 mg/kg of body weight to male.

RESULTS AND DISCUSSION

The range of atmospheric temperature was from 34.0 to 46.0°C. Water temperature of nursery and stocking ponds varied from 29.0 to 30.0°C. The water temperature followed the trend of atmospheric temperature. Dissolved oxygen content fluctuated from 3.6 to 5.2 ppm. The total alkalinity was 196.0 ppm.

The hatchery was maintained at the controlled optimum conditions having a temperature range of 26.0 to 28.0°C, dissolved oxygen range of 6.5 to 8.0 ppm and pH of 7.1.

The induced breeding experiments on *Labeo rohita* and *Catla catla* were conducted during July and August, 1987. Total of 34 sets, weighing 83 kg of females were tried. It resulted in the production of 70.54 lakhs of eggs. The percentage of fertilization varied from 70.0 to 90.0 and 60.0 lakhs of spawn were produced. (Table I).

Table I : Breeding and hatching details of Indian major Carp in eastern U.P. during draught year 1987

Date	Species	No. of sets	Wt. of female (kg)	Total eggs (lakhs)	Fertilization (%)	Spawn (Lakhs)
21 July	<i>L. rohita</i>	1	2.0	4.50	90	4.16
22 July	<i>L. rohita</i>	1	3.0	6.44	85	5.30
25 July	<i>L. rohita</i>	2	4.5	13.00	85	10.00
26 July	<i>C. catla</i>	1	5.0	4.50	90	4.50
26 July	<i>L. rohita</i>	2	3.0	7.50	80	6.00
05 August	<i>L. rohita</i>	2	6.0	3.83	90	3.10
06 August	<i>L. rohita</i>	2	6.0	3.44	70	2.17
07 August	<i>C. catla</i>	1	5.0	2.10	50	1.00
07 August	<i>L. rohita</i>	5	12.5	--	--	--
08 August	<i>L. rohita</i>	4	10.0	3.00	50	1.50
09 August	<i>L. rohita</i>	3	6.5	3.20	80	2.30
10 August	<i>L. rohita</i>	2	4.0	6.30	90	5.13
11 August	<i>L. rohita</i>	2	5.0	4.50	90	3.65
12 August	<i>L. rohita</i>	4	10.5	9.03	80	6.50
16 August	<i>L. rohita</i>	2	6.0	7.20	80	5.50

The five sets of *L. rohita* were tried on 7th August 1987. In this experiment breeding was successful but all the eggs died. Perhaps mortality occurred due to the high turbidity and oxygen depletion in the new ponds.

The environmental condition especially the temperature, pH and dissolved oxygen are the limiting factors for the production of fish seed. The modern carp hatchery CIFE D-81 is designed to control all these environmental condition (Varshney, 1978-79, Dwivedi & Ravindranathan, 1982 and Mitra *et al.*, 1983).

The modern carp hatchery CIFE D-81 successfully controlled the environmental conditions during the draught year. As a result it could be possible to produce fish seed which was a challenge to pisciculturists. A total of 60.0 lakh fish seed of *L.rohita* and *C.catla* were produced.

This hatchery system yielded 90% hatching. Mitra *et al.*, (1983) observed 85% hatching rate in this hatchery system. An appreciable uniform growth of fry and fingerlings were observed in this new farm. Artificial feed was given to the spawn and fry. The ingredients of feed were oil cake and rice bran mixed in the ratio of 1 : 1. The 'Calcaria Phos' a biochemic drug was mixed with this mixture of artificial feed. Dwivedi (1986) also suggested the use of hormones in the feed for proper growth. Feeding baskets were used for supply of food and this gave very good uniform growth.

While setting up of this fish seed farm, the overhead tank was constructed out of wood received from the farm and was lined with the 'Monitex' plastic lining. This could minimize the cost to a great extent. Under this extension programme demonstration of technology was made to the fish farmers as well as to the trainees of this centre. The fish seed was distributed to the private pisciculturists.

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