MAHISHADAL RAJ COLLEGE
(Govt. Sponsored)
NAAC Accredited 'A' Grade College
DST (FIST) Govt. Of India approved College, NSDC Training Partner
Estd. : 1946
Mahishadal : Purba Medinipur Phone STD 03224 No. 240220

Ref. No..... Date:

ADD ON COURSE 2019-20

Organised by Department Zoology & Nutrition

Topic: Induced breeding and seed production of *Anabas* and *Heteropneustes.*

Add on course summary:

REPORT:

Name of the course- Induced breeding and seed production of *Anabas* and *Heteropneustes*.

Course coordinator: *Dr. Subhamoy Das*, (Associate Professor, HOD, Department of Zoology , Mahishadal Raj College)

Date of commencement: 20.11.2019

Date of completion: - 06.12.2019

Number of participant enrolled: 30

Total duration day: 15

Total duration hour: 30

Evaluation method:- Paper pen MCQ and practical work

RESULT DETAILS:-

Number of student participate in this program: 30

Number of student completes this program: 26

Number of student got certificate in this program: 26

Name of the course: Induced breeding and seed production of *Anabas* and *Heteropneustes*.

Course coordinator: *Dr. Subhamoy Das*, (Associate Professor, HOD, Department of Zoology , Mahishadal Raj College)

Induced breeding and seed production of *Anabas* and *Heteropneustes*

About the course:

Induced breeding and seed production are essential aspects of aquaculture that involve controlled reproduction of fish for commercial purposes. These practices help ensure a steady and reliable supply of fish for food and other purposes. Induced breeding is a technique that involves manipulating environmental conditions and employing hormonal treatments to stimulate fish to spawn under controlled conditions. These courses on these topics typically cover the theoretical aspects of fish reproductive biology, practical techniques for induced breeding, and the management of hatchery and nursery operations. They are valuable for individuals involved in aquaculture, fisheries management, and related fields. These courses of induced breeding and seed production in fish are indispensable components of modern aquaculture practices. Through the manipulation of environmental conditions and advanced reproductive techniques, fish farmers can ensure a consistent and reliable supply of fish for various purposes. Despite the challenges, ongoing research and innovations continue to enhance these courses, contributing to the sustainability and growth of the aquaculture industry

Learning outcomes:

This course of induced breeding and seed production in fish aquaculture not only contributes to meeting the global demand for fish but also opens a diverse array of career opportunities. From hands-on technical roles to managerial positions, entrepreneurial ventures, and research-focused careers, individuals with expertise in these specialized areas are well-positioned to make meaningful contributions to the sustainable development of the aquaculture industry. As the world looks towards innovative solutions for food security, the job opportunities in induced breeding and seed production are set to grow, offering a promising and fulfilling career path for those passionate about aquatic sciences and environmental sustainability. This course opens different job opportunities such as aquaculture technician, hatchery manager, research scientist, aquaculture consultant, Entrepreneurs in Aquaculture, Fisheries and Aquaculture Extension Officers, and Quality Control Specialists.

Target audience:

Any branch of life sciences students (UG and PG), research scholars, and faculties who have interest in fishery and industrial fishery. Fish farmers who have very much interest may join the programme.

Course content overview:

Induced breeding is a technique where by ripe fish breeders are stimulated by pituitary hormone or any other synthetic hormone introduction to breed in captive condition. Then the carps being excited lay eggs in the pond water and the process is called inducedbreeding.This process of breeding is also known as hypophysation. Major carps are most important species from the point of view of their high food and nutritive values. Hence they have kept attention of scientists and aqua farmers. They have peculiar habit of breeding in running waters of rivers and streams where they have large space for movement. The breeding technique in which the breeders use hormones to ripe the fish artificially is known as induced breeding. This leads to the release of eggs and sperms from the fish at a specific time interval. As induced breeding is an artificial technique it is also known as artificial breeding. The hormone used during induced breeding is gonadotrophin. Gonadotrophin comprises that follicle-stimulating hormone (FSH) which induces early gametogenesis in fish.

- **Schedule:** Total 30 hours

DAY	SCHEDULE
Day 1	Introduction to fish breeding (T) (2 hours)
Day 2	Natural and induced breeding of fish (T) (2 hours)
Day 3	Brood fish collection and rearing(T+P) (2 hours)
Day 4	Different types of pond or concrete tank preparation (T+P) (2 hours)
Day 5	Soil quality management in *Anabas* and *Heteropneustes*. (T+P) (2 hours)
Day 6	Water quality management in *Anabas* and *Heteropneustes*. (T+P) (2 hours)
Day 7	Induced breeding of *Anabas* (P) (2 hours)
Day 8	Induced breeding of *Heteropneustes*. (P) (2 hours)
Day 9	Rearing of hatchlings of *Anabas* and *Heteropneustes*(T+P) (2 hours)
Day 10	Planning and designing of fish farm.(T)) (2 hours)
Day 11	Entrepreneurship development through *Anabas* and *Heteropneustes* aquaculture and marketing.(T) (2 hours)
Day 12	Feeding and rearing of hatchlings (P) (2 hours)
Day 13	Plankton culture (2 hours)
Day 14	Common disease and its management. (2 hours)
Day 15	Discussions & Evaluation. (2 hours)

- **Detail Work Schedule**

Date	Day	Contents	Time	Duration	Experts	Designation
20.11.19	1	Introduction to fish breeding (T)	12 to 2pm	2	Dr. Subhamoy Das	HOD DEP. of ZOOLOGY
21.11.19	2	Natural and induced breeding of fish (T)	1 to 3 pm	2	Dr. Subhamoy Das	HOD DEP. of ZOOLOGY
22.11.19	3	Brood fish collection and rearing(T+P)	3 to 5pm	2	Dr. Rajkumar Guchhait	SACT Mahishadal Raj College
23.11.19	4	Different types of pond or concrete tank preparation (T+P)	03 to 05pm	2	Dr. Rajkumar Guchhait	SACT Mahishadal Raj College
25.11.19	5	Soil quality management in *Anabas* and *Heteropneustes*.	02 to 04pm	2	Dr. Rajkumar Guchhait	SACT Mahishadal Raj College
26.11.19	6	Water quality management in *Anabas* and *Heteropneustes*.	01 to 03pm	2	Dr Rajkumar Guchhait	SACT Mahishadal Raj College
27.11.19	7	Induced breeding of *Anabas* (P)	03 to 05pm	2	Dr Rajkumar Guchhait	SACT Mahishadal Raj College

28.11.19	8	Induced breeding of *Heteropneustes*. (P)	02 to 04pm	2	Dr Rajkumar Guchhait	SACT Mahishadal Raj College
29.11.19	9	Rearing of hatchlings of *Anabas* and *Heteropneustes*(T+P)	02 to 04pm	2	Dr Rajkumar Guchhait	SACT Mahishadal Raj College
30.11.19	10	Planning and designing of fish farm.(T)	01 to 03pm	2	Prof. Manik Das	SACT Mahishadal Raj College
02.12.19	11	Entrepreneurship development through *Anabas* & *Heteropneustes* aquaculture and marketing.	02 to 04pm	2	Prof. Moumita Jana	SACT Mahishadal Raj College
03.12.19	12	Feeding and rearing of hatchlings (P)	02 to 04pm	2	Dr Rajkumar Guchhait	SACT Mahishadal Raj College
04.12.19	13	Plankton culture	01 to 03pm	2	Prof. Sagnik Manadal	SACT Mahishadal Raj College
05.12.19	14	Common disease and its management.	01 to 03pm	2	Prof. Saheli Maiti	SACT Mahishadal Raj College
06.12.19	15	Discussions, Evaluation, valediction, feedback	12 to 2 pm	2	Dr. Subhamoy Day, Dr. Rajkumar Guchhait, Prof. Sagnik Manadal, Prof. Manik Das and Prof. Moumita Jana.	HOD & SACT., Zoology; Principal,
				30 hours		

- **Course structure and examination scheme:**

Course name	Theory classes (hr.)	Practical classes (hr.)	Continuous assessment		Total marks
			Theory	Practical	
Induced breeding and seed production in *Anabas* and *Heteropneustes*.	12	18	40	10	50

Participant's Details and attendance:

Enrolment Details of Students

Sl no.	Student ID	Roll No.	Name
1.	B.Sc/18/0097	2180097	ARITRA HAZRA
2.	B.Sc/18/0098	2180098	BISWAJIT MAITI
3.	B.Sc/18/0100	2180100	SUBHRAJYOTI PANDA
4.	B.Sc/18/0102	2180102	HIRAK MONDAL
5.	B.Sc/18/0103	2180103	SUVAJIT MONDAL
6.	B.Sc/18/0105	2180105	SANTANU GARU
7.	B.Sc/18/0107	2180107	ABDULLA MALLIK
8.	B.Sc/18/0111	2180111	DEBALINA OJHA
9.	B.Sc/18/0113	2180113	SUBHAJIT PALAI
10.	B.Sc/18/0115	2180115	PABITRA PARUA
11.	B.Sc/18/0117	2180117	SNEHASIS DAS
12.	B.Sc/18/0118	2180118	DIPAK SINGHA
13.	B.Sc/18/0119	2180119	GOBINDA GIRI
14.	B.Sc/18/0120	2180120	PRITAM DAS
15.	B.Sc/18/0123	2180123	MAITRAYEE MAITY
16.	B.Sc/18/0124	2180124	SUPRIYA RANI BHUNIA
17.	B.Sc/18/0125	2180125	TUHINA SULTANA
18.	B.Sc/18/0127	2180127	SAHANARA KHATUN
19.	B.Sc/18/0128	2180128	SAMAPTI BARIK
20.	B.Sc/18/0130	2180130	SOMNATH DAS
21.	B.Sc/18/0131	2180131	SUBHENDU JANA
22.	B.Sc/18/0132	2180132	SRIKRISHNA SAHOO
23.	B.Sc/18/0133	2180133	TANMOY DAS
24.	B.Sc/18/0135	2180135	ADITI BHUNIA
25.	B.Sc/18/0136	2180136	PIYALI JANA
26.	B.Sc/18/0137	2180137	SOUMYAJIT MAITY
27.	B.Sc/18/0139	2180139	ANGANA SANTRA
28.	B.Sc/18/0140	2180140	KALYAN SANKI
29.	B.Sc/18/0141	2180141	ANKITA MANDAL
30.	B.Sc/18/0142	2180142	INDRANI SEN

Sample Question of Examination

7. The book Classic of Fish Culture was written by—

a) H.B. Wilson

b) Fan Lei

c) T.V.R. Pillay

d) V.G. Zingram

c) Raceway culture
d) Pen culture

14. The average fish consumption in urban part of India is
a) 1 to 2 kg/person/year
b) 3 to 5 kg/person/year
c) 6 to 8 kg/person/year
d) 8 to 10 kg/person/year

15. Polyculture of fishes were first developed in—
a) India
b) China
c) Thailand
d) Taiwan

B. Answer the following questions: 2x10=20

1. What is induced breeding? What are the various stages of induced breeding technique?
2. Describe the role of quality of water in aquaculture.

- ***SAMPLE CERTIFICATE OF COURSE COMPLETION***