

Annual Report 2021-22



WEST BENGAL UNIVERSITY OF ANIMAL AND FISHERY SCIENCES

37 & 68, Kshudiram Bose Sarani Belgachia,
Kolkata - 700 037, West Bengal, India

**WEST BENGAL UNIVERSITY
OF
ANIMAL AND FISHERY
SCIENCES**

**Annual Report
2021-22**

ISSUE :16



37 & 68, Kshudiram Bose Sarani Belgachia,
Kolkata - 700 037, West Bengal, India
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FOREWORD



WEST BENGAL UNIVERSITY OF ANIMAL & FISHERY SCIENCES

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No. : VCS/WBUAFS/.....*A-10/136*.....

Date :*27-03-2024*.....

FOREWORD



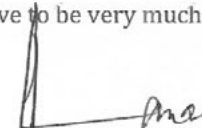
It gives me immense pleasure to present the Annual Report of the West Bengal University of Animal & Fishery Sciences which highlights the important activities of the varsity and salient achievements made during the period from April, 2021 to March, 2022.

In the present day scenario, the livestock and fishery sectors play an important role in sustainable agricultural development system for the small and marginal farmers and landless labourers of the country. The poultry and dairy sectors are paving the way for empowerment of the farming community and is playing an important role in poverty alleviation and rural upliftment. The West Bengal University of Animal & Fishery Sciences has established itself as one of the leading institutions in the eastern region of the country, shouldering the responsibilities to impart education and to undertake research and extension activities in veterinary, dairy and fishery sciences. The University made significant studies in the area of preservation of unique and indigenous breeds of small animals and backyard poultry. The faculty members of the University have also taken keen interest in research activities related to nutrition, disease prevention in the cattle and poultry and enhancement of production of indigenous milk and meat products. Research activities are going on for conservation of threatened species of indigenous freshwater fishes and marine fishes and integrated management of livestock and fish. The Faculty of Dairy Technology has made a significant development in the form of production of milk and milk based products under RAW Program and selling of products through the stalls set up at Mohanpur and Kolkata Campus.

The process of dissemination of knowledge and techniques has been significantly undertaken by the three Krishi Vigyan Kendras under the aegis of the University for which the contribution of the scientific and administrative staff members of the KVKs are really appreciable.

During the year, our University continued to receive active support and patronage of the Government of West Bengal, I.C.A.R. V.C.I. and other agencies.

I sincerely appreciate the efforts made by the editorial and publication board in bringing out the Annual Report (2021-2022) in precise and attractive form. I would like to thank all my colleagues in West Bengal University of Animal & Fishery Sciences for their incredible work and cooperation. I shall look forward for any suggestion and comment on the information contained in this publication, which would prove to be very much valuable for future endeavors.


 (Prof. Shyam Sundar Dana)



PROLOGUE



WEST BENGAL UNIVERSITY OF ANIMAL & FISHERY SCIENCES

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Prof. Partha Das,
Registrar(Actg.)

No. WBUAFS/Reggr/AR/1828

Date: 23.08.2023

FOREWORD

It gives me immense pleasure to present the Annual Report of the West Bengal University of Animal & Fishery Sciences which highlights the important activities of the varsity and salient achievements made during the period from April, 2021 to March, 2022.

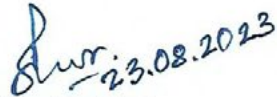
In the present day scenario, the livestock and fishery sectors plays an important role in sustainable agricultural development system for the small & marginal farmers and landless labourers of the country. The poultry and dairy sectors are paving the way for empowerment of the farming community and are playing important role in poverty alleviation and rural upliftment. The West Bengal University of Animal & Fishery Sciences has established itself as one of the leading institutions in the eastern region of the country, imparting education, and undertaking research and extension activities in veterinary, dairy and fishery sciences. The University has made significant studies in the area of preservation of unique and indigenous breed of small animals and backyard poultry. The faculty members of the University have also taken keen interest in research activities related to nutrition, disease prevention in the cattle and poultry and enhancement of production of indigenous milk and meat products. Research activities are going on for conservation of threatened species of indigenous freshwater fishes and marine fishes and integrated management of livestock and fish.

The process of dissemination of knowledge and application of techniques have significantly been undertaken by the three Krishi Vigyan Kendras under the aegis of the University. The Directorate of Research, Extension & Farms has conducted various training programmes in livestock, poultry and fishery aspects for the State Govt. officials and also for the farmers.

Quality teaching and research activities have received paramount importance during these years and I am happy to know that the University has achieved academic excellence and made valued contribution to human resource development.

During the year, our University continued to receive active support and patronage of the Government of West Bengal, I.C.A.R. V.C.I. and other agencies.

I sincerely appreciate the efforts made by the editorial and publication board in bringing out the Annual Report in precise and attractive form. I would like to thank all my colleagues in West Bengal University of Animal & Fishery Sciences for their incredible work and cooperation. I shall look forward for any suggestion and comments on the information contained in this publication, which would prove to be very much valuable for future activities.


(Prof. Partha Das)
Registrar(Actg.)



PREFACE

India, having population of about 140 crores, is the world's largest producer of milk, pulses and jute, and ranks as the second largest producer of rice, wheat, sugarcane, groundnut, vegetables, fruit and cotton. It is also one of the leading producers of spices, fish, poultry, livestock and plantation crops. Towards fulfillment of the target of doubling farmers' income, there has been an increment in investment in agricultural infrastructure such as irrigation facilities, warehousing and cold storage sectors of Agriculture. There has been a focus on specific requirements of transportation and an urge to create forward and backward linkages to assure better returns to farmers. There is also an urge to adopt organic and natural farming practices to overcome the disasters of environment pollution.

Agriculture dependency alone cannot overcome the economic barriers for enhancing farmers' income. Appropriate importance towards different allied sectors of Agricultural Science like animal husbandry, horticulture, fisheries, sericulture, agricultural engineering is the need of the hour to achieve the goals. In this post COVID period, self dependency is one of the way out. Promoting start-ups and agri-entrepreneurship can help to generate employment opportunities for unemployed youths. There must be a provision to extend information on latest innovated technologies in the agricultural and allied sectors to the farmers and entrepreneurs on demand.

It is often said that challenges stimulate human brain to find a way out to overcome them. Worldwide spread of COVID-19 challenged the mankind, but this challenge helped us to experience, learn and bring out the best out of it. Even during nationwide lockdown online education was initiated in the university, thus resuming teaching, research and extension work. It is my pride in stating that students, teachers, staff and the entire fraternity of West Bengal University of Animal and Fishery Sciences are all now back to the campus. The clinical facilities provided to the livestock farmers as well as pet owners have also resumed. Research work in the fields of veterinary, dairy and fishery faculties have also resumed and working in full-fledge.

During 2021-22, there are twenty two Research and Infrastructure Development projects operated in the University relating to new findings in orthopedic Surgery using bio-materials, Canine Eye Surgery techniques, Livestock related environmental pollutants, contaminants and toxicants, Disease Surveillance in Fish, Molecular characterisation of native sheep breed of Bengal, Activities of Bio-Tech Kisan Hub in aspirational districts sponsored by ICAR, DST, DBT and other National and state funding agencies. In this post pandemic situation, extension programmes are being taken up the University both in online mode as well as on-campus programmes for farmers and other stakeholders like technical personnel have been started by the Directorate of Research, Extension & Farms wing of the University.

Three KVKs under the aegis of the University actively participate in relevant Research and Extension jobs throughout the respective districts. Mandate of the University is to work for the benefit of rural people, livestock raisers, fish farmers, agro-industries etc. with a target to tone down agrarian crisis and farming distress in the scenario of post Covid 19 crisis. We are very much aware of the challenges in the livestock and fisheries sector at this hour and are always in the go to take a lead in solving such challenges. The programs to be taken up by the University in future will definitely reflect such actions to counter the challenges, improve productivity and production in livestock and fisheries. The contribution

of livestock sub-sector towards agriculture is always incremental and this trend is likely to be continued even in this post pandemic era.



The University Annual Report 2021-22, can be used as a ready reference of information and achievements of the University in different fields of its exercise and action in a concise form. Grateful acknowledgement is due, to the help received by the concerned Deans and HODs of the departments for publication of the Annual Report. The suggestions received from the different sections, viz. office of the Vice-Chancellor, Registrar, Controller of Examinations, Finance Officer, Deans etc. have inspired the Editorial Board greatly to publish the Annual Report. The powerful guidance, several advices and suggestions by Prof. T.K. Mandal, the Former Hon'ble Vice Chancellor and, Prof. S.S. Dana, the present Hon'ble Vice Chancellor, towards publication of the Annual Report was encouraging to the team to make this publication somewhat different in its presentation and content and the Editorial Board expresses its sincere gratitude for the same.

I convey my heartiest gratitude to all the others who were involved in the process to make this venture a success.

(Prof. Shyam Sundar Dana)

Director of Research, Extension & Farms& Editor



EXECUTIVE SUMMARY

Agriculture sector proved to be very effective in the hard times of pandemic and registered a positive growth in the covid times. However, several structural challenges were faced which required to be addressed to make it more profitable. Development of technologies to support production enhancement, profitability, competitiveness and sustainability of livestock and poultry sector for providing food and nutritional security to Indian masses etc. could be some of the measures to overcome the situation. Capacity-building programmes on farm sector development, agripreneurship, natural farming, climate change etc. may help in sustainable development in the agriculture as well as livestock and poultry sectors to denote productivity increase, reduce gap between potential and actual yield, and to prepare the country for the challenges of globalization.

The State of West Bengal has the possibility to enhance the livestock productivity with accelerated appliance of modern technologies. The state is estimated to produce 6.16 million MT of milk during 2020-21 besides estimates of producing 994 thousand tonnes of meat and 105008 lakhs of egg. During 2019-20, India has produced 141.64 lakh tonnes of fish. West Bengal stood second producing 17.82 lakh tonnes of fish. Beside this, out of the total fish seed production of 521706.1 lakh fries (approx.) in India, West Bengal recorded the production as 124550 lakh fries (approx.) during 2019-20, which is very encouraging.

Livelihood improvement of the farming population depends upon a combination of livestock and fish farming as most of the farmers in the state are small and marginal in nature. The efforts of the Animal Husbandry and Fisheries sector are well known for their contribution towards the general economy of West Bengal in terms of production. Growth in human population, increase in urbanization, rising domestic incomes and changing lifestyles have paved a way to increase in demand for animal protein viz. fish, meat and eggs.

The West Bengal University of Animal and Fishery Sciences aims at maximum utilization of land and water bodies to enhance livestock and fish production through its educational programmes, latest innovative research work & extension activities. University has a mandate to promote **Livestock Farmers and Fishermen** of the state, which indeed is an initiative towards enhancement of production and productivity and thus obtain a stable social structure.

The West Bengal University of Animal and Fishery Sciences (WBUAFS), the second University of its kind in the country started its journey with a legacy of Century old Bengal Veterinary College on 2nd January 1995 with an objective to serve the State as well as the nation as a whole through imparting quality education, accomplishing basic and need-based research and disseminating proven technologies to the rural masses through its extension wing. Another important aspect of attention is to attract and retain youth in agricultural sectors limiting the migration of youths to non-agricultural avocations. With these in perspective, the highlights of various activities of the University during the period 2021-2022 are narrated below :

Institutional :

During 2021-22, 74 Under-graduate, 62 Post-graduate and 10 Ph.D. students under the three Faculties of the University have been awarded provisional degree. The University has conducted several Seminars / Symposiums during the reporting period in virtual as well as offline mode. The Central Library with Information Network services in all the faculties are working continuously in the University to fulfill the objectives of the University.

Academic :

Considering the requirements of the future and as per changing needs and aspirations in the field of animal and fishery sciences, the University has tailored its academic system dynamically. The educational activities in the University are regularly put under evaluation and accordingly modification of course curricula and teaching methodologies are made as per the guidelines of the affiliating institutions.

The University offers undergraduate courses of study in Veterinary and Animal Sciences, Dairy Technology and Fishery Sciences in its three respective Faculties. All these faculties have a provision of studying Masters degree courses as well as performing doctoral studies.

At present, classes have resumed in the campuses in physical mode.

Research :

The University always comes forward in accepting research programmes for the interest of the farming community and to meet up the upcoming challenges in the agricultural, animal husbandry and fishery sectors of the nation. “Expansion of activities of Bio-Tech KISAN Hub in five aspirational districts of West Bengal” project funded by the Department of Bio-Technology, Govt. of India worth Rs. 2.4 crores approximately is functioning successfully in the selected aspirational districts of the state. The University has already developed several new technologies, which will help in augmenting income and help in establishment of livelihood security of the farming community of the state. Twenty two numbers of research projects are being carried out by the Faculty members, Scientists and Researchers of the University with a total fund allocation of Rs. 1500.53 lakhs. Two All India Network Programmes are running successfully under the proficient supervision of the respective Principal Investigators. AICRP on Black Bengal Goat and two Outreach Programmes on “Zoonotic diseases” and “Monitoring of Drug Residues and Environmental Pollutants” are the longest running projects of the University.

A few collaborative research projects are in the pipeline to take off very soon.

Extension :

Besides performance of academic and research activities, another essential service provided to farmers and rural communities is extending the knowledge developed by the University. This helps the farming community as a booster for implementation of their own farming units. University has been engaged in organizing various types of need based training programmes, mass contact camps in the form of animal and fish health camps, farm and home visits, workshops, seminars, kisan mela, farm produce exhibitions, consultancy and advisory services, on-farm trial, frontline demonstrations, celebrating field days and other related activities benefiting a good number of farmers of the state. The University also offers training for Master trainers’ of State level Extension Officers, Resource Persons of SHGs, Fisher folk of Sundarban and also organizes periodic National level training programmes for Extension Officers of different States. Agriculture Skill Council of India (ASCI) and the University as per their MOU, conduct short term skill based training programmes, train the trainer programmes and aims to create skill development centres for training and capacity building across various segments of Animal Husbandry, Fishery and Dairy Sciences. Here, ASCI functions under the aegis of National Skill Development Corporation (NSDC), Ministry of Skill Development & Entrepreneurship, Govt. of India, whereas SC and ST community skill development programmes are being conducted through MANAGE.

Leaflets, Booklets, Books published and documentary films produced by the University are resources for disseminating knowledge on the latest technologies evolved by the University in livestock and fishery sectors. During the period, nearly 163 research papers were published in different national and international journals. Apart from this, the University has published about 20 leaflets, booklets, books, manuals, compendiums, annual reports and activity highlights during the year.

Krishi Vigyan Kendras :

The Krishi Vigyan Kendras act as an entrance towards access to the University repository for the farming community. The University has three Krishi Vigyan Kendras (KVKs) in Jalpaiguri, North 24 Parganas and Murshidabad districts of West Bengal. All the KVKs follow the mandates formulated by the Indian Council of Agricultural Research (ICAR) and the University through mutual understanding. Besides the routine jobs like FLD, OFTs, On & Off Campus Farmer’s training etc, the KVKs are also associated with special collaborative programmes such as PPV & FR, FOCT, DAESI courses, NABARD sponsored training, Short term Research of ATMA, NFDB Training, RKVY, Kisan Sammelan, Pradhan Mantri Fasal Bima Yojana etc. and participating in Tribal Sub Plan Programs alongwith monitoring jobs of Research Projects of the University.



ABOUT UNIVERSITY



1

ABOUT UNIVERSITY

An organization is said to be developed in the true sense when it lays pavement for discovery of technology and opens up a new arena in the fields of scientific activities. As the limitation of land resources in comparison to the worldwide human population is being realized, it had lead to search for alternative means of living using livestock resources viz., animals and fishes. People handling such living resources, face various challenges to maintain the flock under their control. Problems attributed to become attentive towards proper rearing of these livestock resources. Study and development of appropriate techniques based on problems experienced while rearing the animals and fish varieties led to the study of Veterinary and Animal Sciences alongwith allied studies in the Dairy and Fishery sectors. During the British rule, after establishment of Lahore Veterinary College in 1882, on **10th of January, 1893** second such institution **Bengal Veterinary College** was built up. Later this college was transformed into 'The West Bengal University of Animal and Fishery Sciences (WBUAFS)' in 1995, thus fulfilling the dreams of the nation builders to promote education, research and extension activities in one of the most important bread-earning sector of the rural people i.e., the Livestock Sector.

The University came into existence on 2nd January, 1995 vide West Bengal Legislature Act of 1995 with the three Faculties – namely Veterinary and Animal Sciences, Fishery Sciences and Dairy Technology. Since then, process for extending the facilities of education in the existing faculties is continuous. A Diploma course on **Veterinary Pharmacy(DVP)** has been introduced by the University with the financial assistance of Animal Resources Development Department, Govt. of West Bengal. In another approach to meet up the demand of the livestock, poultry and fishery industries as well as to fulfill the recommendations of the ICAR & Executive Council of the University, the Govt. of West Bengal has approved the introduction of different Departments alongwith teaching and non-teaching manpower requirements from time-to-time. Recently added some departments are **Department of Animal Biotechnology & Department of Avian Science** under the Faculty of Veterinary & Animal Sciences, **Department of Fish Nutrition** under the faculty of Fishery Sciences and the **Department of Dairy Business Management** under the Faculty of Dairy Technology.

1.1 MANDATES OF THE UNIVERSITY

The mandates of West Bengal University of Animal and Fishery Sciences are as follows :

- A. To impart education in the branches of Veterinary and Animal Sciences, Fishery Sciences, Dairy Technology and allied sciences.
- B. To conduct basic and applied research in the field of Veterinary and Animal Sciences, Fishery Sciences, Dairy Technology for advancement of knowledge and enhancement of productivity to alleviate poverty and economic upliftment of the society.
- C. To undertake the development of such sciences or technologies and the extension thereof to the rural people in co-operation with the concerned Departments of Government of West Bengal.

1.2 CAMPUSES OF THE UNIVERSITY

Headquarter of West Bengal University of Animal & Fishery Sciences is situated at Belgachia, Kolkata which is one of the oldest campuses in the country for imparting education in the fields of Veterinary and Animal Sciences.

The undergraduate courses of the Faculty of Veterinary and Animal Sciences and courses of the Faculty of Dairy Technology are taught in the Mohanpur Campus of the University situated in the adjoining Nadia district. Post-graduation studies for the Faculty of Veterinary and Animal Sciences take place in the University Headquarters. The courses under the Faculty of Fishery Sciences are undertaken in the Chakgaria Campus, in the outskirts of Kolkata.

WBUAFS has three Krishi Vigyan Kendras under its jurisdiction. They are situated in the districts of Jalpaiguri, North 24 Parganas and Murshidabad and are functioning under the supervision of the Directorate of Research, Extension & Farms. These act as extension centres of the University.



SET UP OF WBUAFS



2

SET UP OF WBUAFS

West Bengal University of Animal & Fishery Sciences (WBUAFS) has several decision making bodies to chalk out the plans to be undertaken in the fields of Education, Research and Extension. This governing body set-up is as followed in the general State Agricultural Universities (SAUs) throughout the country. These are as follows :

- ❖ Executive Council (EC)
- ❖ Faculty Council (FC)
- ❖ Academic Council
- ❖ Research and Extension Education Council (REEC)
- ❖ Finance Committee
- ❖ Board of Examinations
- ❖ Board of Studies

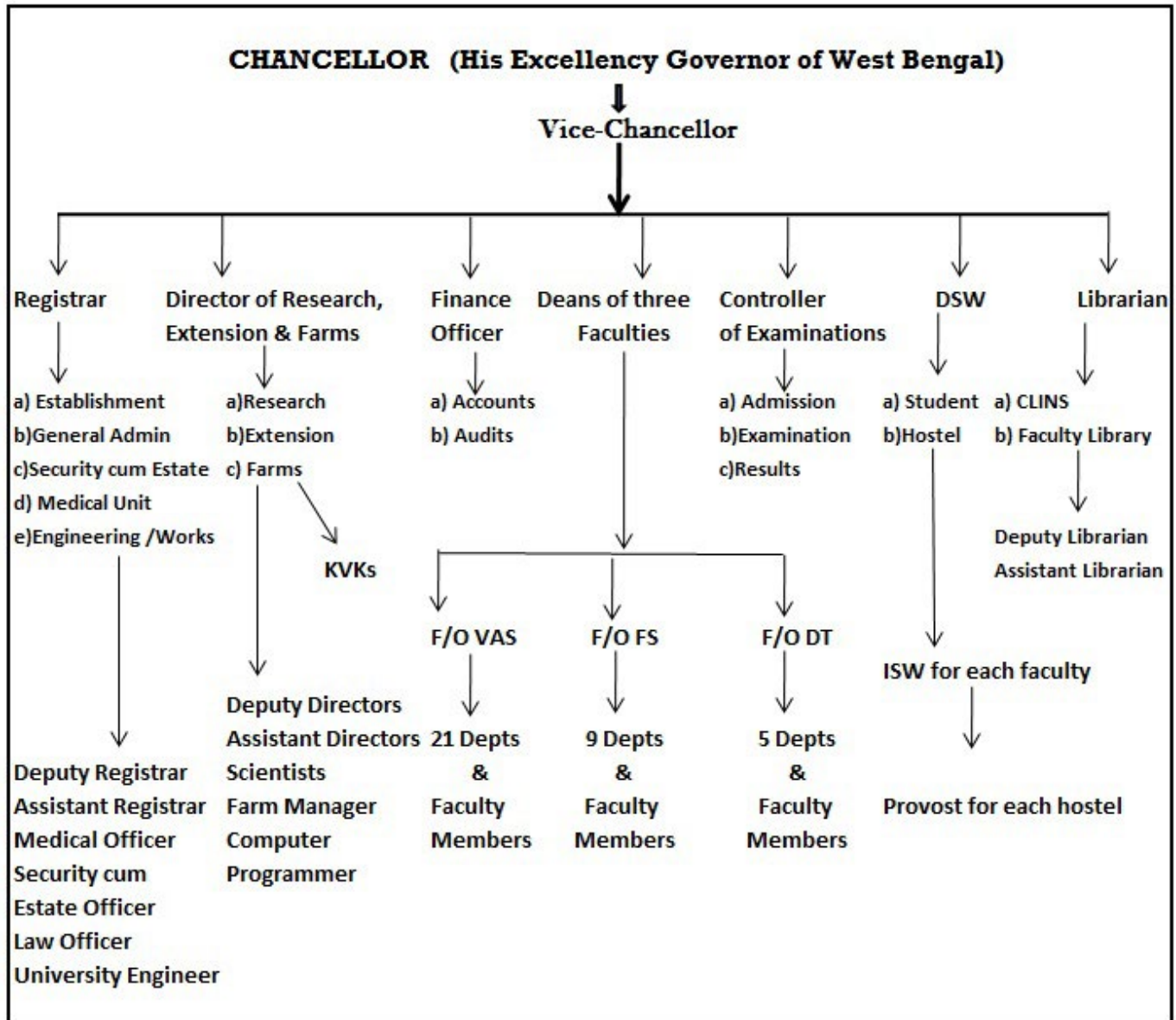
These bodies are reconstituted from time-to-time depending upon their tenure.

- The Executive Council (EC) is the highest policy making body in the University. All sorts of administrative decisions are approved in its meetings and implemented thereafter.
- The Faculty Council (FC) looks upon the academic affairs of the University and is the authority for control and maintenance of the standards of education, and examination along-with the conferment of the degrees and diploma towards the courses enrolled by the students of the three faculties.
- The Academic Council controls general regulations on teaching and examination system standards set-up in the University.
- The Finance Committee governs the policy for financial and accounting information of the University.
- The Research and Extension Education Council (REEC) makes and controls the policies of the University in the arena of Research and Extension Education in the Faculties as well as in other units of the University performing research work.

The overall activities of the University taken up for Education, Research and Extension oriented development is monitored by the Vice Chancellor with the assistance of the statutory officers, viz., Registrar, Director of Research, Extension & Farms, Finance Officer, Controller of Examinations, Deans of the Faculties, Librarian and other various authorities, Committees and Sub-Committees constituted by the University from time to time.



2.1 ADMINISTRATIVE ORGANOGRAM OF WBUAFS



2.2 STATUTORY BODIES :

2.2.1 EXECUTIVE COUNCIL

Sl.No.	Name & Designation	Position in EC
1	Prof. C. Guha Vice Chancellor	Chairman
2	The Director of Animal Husbandry and Veterinary Services, Dept. of Animal Resources Development, Govt. of West Bengal	Member
3	The Director of Fisheries, Govt. of West Bengal	Member
4	The Milk Commissioner, Govt. of West Bengal	Member
5	Prof. T.K. Mandal, The Director, Directorate of Research, Extension & Farms, WBUAFS	Member
6	Prof. N. Ghosh Dean, F/O Veterinary and Animal Sciences, WBUAFS	Member
7	Prof. B. K. Das Dean, F/O Fishery Sciences, WBUAFS	Member
8	Prof. T. K. Maity Dean, F/O Dairy Technology, WBUAFS	Member
9	Prof. S. Batabyal Professor, Department of Veterinary Biochemistry Teacher's Representative, F/O Veterinary and Animal Sciences, WBUAFS	Elected member
10	Prof. P.K. Roy Professor, Department of Dairy Engineering Teacher's Representative, F/O Dairy Technology, WBUAFS	Elected member
11	Dr. S. Chowdhury Associate Professor, Dept of Fish Processing Technology, Teacher's Representative, F/O Fishery Sciences, WBUAFS	Elected member
12	Sri A. Sardar Non-Teaching Staff Representative, WBUAFS	Elected member
13	Students' Representative, WBUAFS	Vacant
14	Dr. P. Pravin ADG (Marine Fisheries), ICAR	Nominated Member
15	Dr. G. Datta VCI nominee	Nominated Member
16	Sri Atin Ghosh (MLA representative, nominated by West Bengal Legislative Assembly)	Nominated Member
17	Sri Madan Mohan Maity Progressive Farmers or Producers Representative nominated by State Govt. of West Bengal	Nominated Member
18	Sri Narayan Majumdar Progressive Farmers or Producers Representative nominated by State Govt. of West Bengal	Nominated Member
19	Sri Banibrata Hait Progressive Farmers or Producers Representative nominated by State Govt. of West Bengal	Nominated Member
20	Prof. P. Das, Registrar (Actg.)	Registrar & ex-officio Non-member Secretary



2.2.2 FACULTY COUNCILS

Sl.No.	Post	Position
1	Vice Chancellor	Chairman
2	Registrar	Member
3	Director of Research, Extension & Farms	Member
4	Librarian	Member
5	Controller of Examinations	Invitee Member
6	Dean of the respective Faculty	Member
7	All Heads of the Dept. of respective Faculty	Member
8	Professor from the respective Faculty	Elected Member
9	Reader from the respective Faculty	Elected Member
10	Lecturer from the respective Faculty	Elected Member
11	UG student from the respective Faculty	Elected Member
12	PG student from the respective Faculty	Elected Member
13	Secretary, Faculty Council	Ex-officio Secretary

2.2.3 BOARD OF STUDIES IN THE TEACHING DEPARTMENTS

Sl.No.	Composition of Board	Position
1	Head of the Department	Chairman & Convener
2	All the whole time teachers of the Department	Members

2.2.4 BOARD OF EXAMINATIONS

Sl.No.	Composition of Board	Position
1	One of the Deans from the three Faculties	Chairman (By rotation)
2	Registrar	Member
3	Deans of Faculties	Member
4	Controller of Examinations	Member Secretary

2.2.5 ACADEMIC COUNCIL

Sl.No.	Composition of Council	Position
1	Vice Chancellor	Chairman
2	Director of Research, Extension & Farms	Member
3	Deans of Faculties	Member
4	Registrar	Non Member Secretary
5	Controller of Examinations	Member
6	Librarian	Member
7	All Heads of the Departments from all the Faculties	Member
8	One Lecturer, one Reader and one Professor from each Faculty	Member
9	One UG student from each Faculty and one PG student from the University elected by the regular students in a manner as shall be prescribed	Member
10	Two eminent academicians from the field of Veterinary/Dairy/Fishery Sciences nominated by the Vice Chancellor	Member

2.2.6 RESEARCH AND EXTENSION EDUCATION COUNCIL

Sl.No.	Composition of Council	Position
1	Vice Chancellor	Chairman
2	Director of Research, Extension & Farms	Member Secretary
3	Director of Vety. Services & A. H., Govt. of West Bengal	Member
4	Director of Fisheries, Govt. of West Bengal	Member
5	Dean, F/O Vety. & Animal Sciences	Member
6	Dean, F/O Dairy Technology	Member
7	Dean, F/O Fishery Sciences	Member
8	Officer-In-Charge, ICAR-Central Institute of Fisheries Education (CIFE)	Member
9	Station-In-Charge, ICAR-Indian Veterinary Research Institute (IVRI), Eastern Regional Station , Kolkata	Member
10	Head, ICAR – National Dairy Research Institute (NDRI)	Member
11	Director, ICAR- Agricultural Technology Application Research Institute (ATARI)	Member
12	Dr. Subhasish Bandopadhyay, Principal Scientist, ICAR-IVRI	Nominated Member
13	Prof. Anilava Kaviraj, Retd. Professor, Dept. of Zoology, University of Kalyani	Nominated Member
14	Prof. M.K. Sanyal, Former Dean, F/O Dairy Technology, WBUAFS	Nominated Member
15	Sri Shankar Jana, Livestock Farmer	Nominated Member
16	Sri Bivas Paul, Dairy Farmer, Asokenagar	Nominated Member
17	Sri Sushanta Das, Bonhoogly Fishermen's Cooperative Society Ltd.	Nominated Member

2.2.7 FINANCE COMMITTEE

Sl.No.	Composition of Committee	Position
1	Vice Chancellor	Ex-officio Chairman
2	MLA Representative	Nominated Member of EC
3	Secretary, Finance Dept., Govt. of West Bengal or his/her representative	Member
4	Secretary, Animal Resources Development Dept., Govt. of West Bengal or his/her representative	Member
5	Secretary, Fisheries Dept., Govt. of West Bengal or his/her representative	Member
6	Director of Research, Extension & Farms	Member
7	Finance Officer	Member Secretary

2.3 ORGANIZATION OF MEETINGS OF DIFFERENT STATUTORY BODIES

Faculty Councils

Veterinary and Animal Sciences

Sl.No.	Meeting No.	Date
1.	83	27/01/2022

Fishery Sciences

Sl.No.	Meeting No.	Date
1.	63	27/01/2022

Dairy Technology

Sl.No.	Meeting No.	Date
1.	58	27/01/2022

Executive Council

Sl.No.	Meeting No.	Date
1.	104	23/07/2021
2.	105	26/08/2021
3.	106	17/11/2021
4.	107	22/03/2022



2.4 TEACHING DEPARTMENTS OF THREE FACULTIES OF WBUAFS

F/O Vety. & Animal. Sciences

Sl No	Name of Department
1	Animal Biotechnology
2	Animal Genetics and Breeding
3	Animal Nutrition
4	Avian Science
5	Livestock Farm Complex
6	Livestock Production Management
7	Livestock Products Technology
8	Veterinary Anatomy & Histology
9	Veterinary Biochemistry
10	Veterinary Clinical Complex
11	Veterinary Epidemiology & Preventive Medicine
12	Veterinary Gynaecology & Obstetrics
13	Veterinary Medicine, Ethics & Jurisprudence
14	Veterinary Microbiology
15	Veterinary Parasitology
16	Veterinary Pathology
17	Veterinary Pharmacology & Toxicology
18	Veterinary Physiology
19	Veterinary Public Health

Sl No	Name of Department
20	Veterinary Surgery & Radiology
21	Veterinary & Animal Husbandry Extension Education

F/O Fishery Sciences

Sl No	Name of Department
1	Aquaculture
2	Aquatic Animal Health
3	Aquatic Environment Management
4	Fishery Economics & Statistics
5	Fishery Engineering
6	Fishery Extension
7	Fish Nutrition
8	Fish Processing Technology
9	Fishery Resources Management

F/O Dairy Technology

Sl No	Name of Department
1	Dairy Business Management
2	Dairy Chemistry
3	Dairy Engineering
4	Dairy Microbiology
5	Dairy Technology

2.5. STATUTORY OFFICERS IN THE UNIVERSITY

Sl. No.	Designation	Name
1	Vice-Chancellor	Prof. C. Guha
2	Director of Research, Extension & Farms	Prof. T.K. Mandal
3	Registrar	Prof. P. Das
4	Finance Officer	Sri Prosanta Dutta
5	Controller of Examinations	Prof. S.K. Bag
6	Dean, F/O Veterinary & Animal Sciences	Prof. N. Ghosh
7	Dean, F/O Fishery Sciences	Prof. B. K. Das
8	Dean, F/O Dairy Technology	Prof. T. K. Maity
9	Librarian	Vacant

2.6 OTHER OFFICERS IN THE UNIVERSITY

Sl. No.	Designation	Sanctioned Strength	Existing	Vacant
1	DSW	1	0	1
2	Secretary, Faculty Council	1	0	1
3	Deputy Registrar	2	2	0
4	Deputy Librarian	1	1	0
5	Deputy Director (Research)	2	2	0
6	Assistant Director (Research)	1	1	0
7	Assistant Director (Extension)	1	1	0
8	Assistant Director (Farms)	1	1	0
9	Scientist	2	2	0
10	Farm Manager	1	0	1
11	Computer Programmer	1	1	0
12	Medical Officer	1	1	0
13	Assistant Registrar	1	0	1
14	Assistant Finance Officer	1	1	0
15	Assistant Librarian	1	1	0
16	Security cum Estate Officer	1	0	1
17	Sports Officer	1	0	1
18	Law Officer	1	0	1

2.7 TEACHERS OF THE UNIVERSITY

Faculty of Veterinary & Animal Sciences

Department	Name of Teacher	Designation	Qualification
Animal Biotechnology	Dr. Aditya Pratap Acharya	Assistant Professor	M.F.Sc., Ph.D.
	Dr. Ayan Mukherjee	Assistant Professor	M.V.Sc., Ph.D.
Animal Genetics and Breeding	Prof. A.K. Sahoo	Professor	M.V.Sc., Ph.D.
	Dr. S. Taraphder	Associate Professor	M.Sc. Dairying, Ph.D. (AGB)
	Dr. M. Roy	Associate Professor	M.V.Sc., Ph.D. (AGB)
	Dr. U. Sarkar	Assistant Professor	M.Sc. Dairying, Ph.D.
	Dr. A. K. Das	Assistant Professor	M.Sc. Dairying, Ph.D. (AGB)
	Dr. S. Datta	Assistant Professor	M.Sc. Dairying
Animal Nutrition	Prof. B. Roy	Professor	M.V.Sc., Ph.D.
	Dr. G. P. Mandal	Associate Professor	M.Sc.(Ani. Nutrition), Ph.D.
	Dr. A. K. Patra	Assistant Professor	M.V.Sc., Ph.D.
	Dr. S. Soren	Assistant Professor	M.V.Sc.
Avian Science	Dr. Manik Chandra Pakhira	Associate Professor	Ph.D.(Animal Nutrition)
	Dr. Hemanta Kumar Maity	Assistant Professor	Ph.D.(Animal Biotechnology)
	Dr. Indrajit Kar	Assistant Professor	Ph.D.(Veterinary Pathology)
	Dr. Probhakar Biswas	Assistant Professor	Ph.D.(Livestock Production Management)
	Dr. Suman Biswas	Assistant Professor	Ph.D.(Veterinary Medicine)
Livestock Farm Complex	Dr. Binoy Kr. Sil	Professor	Ph.D.
	Dr.(Mrs.) A. Pal	Assistant Professor (Animal Genetics and Breeding)	M.V.Sc., Ph.D.
	Sri D.C.Roy	Assistant Professor (Agronomy) & Head	M.Sc. (Agronomy)
	Dr.C.P.Ghosh	Assistant Professor (Livestock Production Management)	M.V.Sc., Ph.D
	Dr. Amitava Roy	Assistant Professor	Ph.D.
Livestock Management Production	Prof. R. Samanta	Professor & Head	M.V.Sc., Ph.D.
	Prof. N. Ghosh	Professor	M.V.Sc., Ph.D.
	Dr. S. Bera	Assistant Professor (Stage 2)	M.V.Sc., Ph.D.
Livestock Products Technology	Prof. S. Biswas	Professor & Head	M.V.Sc, Ph.D.
	Dr. D. Bhattacharyya	Assistant Professor	M.V.Sc, Ph.D.
	Dr. G. Patra	Assistant Professor	M.V.Sc, Ph.D.
Veterinary Anatomy & Histology	Prof. S. Ray	Professor	M.V.Sc, Ph.D.
	Prof. P. Das	Professor	M.V.Sc, Ph.D., PDF (Japan)
	Dr. A.K. Mandal	Associate Professor	M.V.Sc, Ph.D.
	Dr. N.K. Tudu	Assistant Professor	M.V.Sc, Ph.D., D.Sc.

Department	Name of Teacher	Designation	Qualification
Veterinary Biochemistry	Dr. S. Batabyal	Professor	M.V.Sc., Ph.D.
	Dr. A. Maity	Associate Professor	M.V.Sc., Ph.D.
	Dr. Shamik Polley	Assistant Professor	M.V.Sc, Ph.D.
	Dr. Swaraj Biswas	Assistant Professor	M.V.Sc.



Department	Name of Teacher	Designation	Qualification
Veterinary Clinical Complex	Prof. S.K. Guha	Professor	M.V.Sc, Ph.D.
	Dr. M. Mondal	Associate Professor	M.V.Sc, Ph.D.
	Dr. S. S. Kesh	Assistant Professor	M.V.Sc, Ph.D.
	Dr. S. Chaudhuri	Assistant Professor	M.V.Sc, Ph.D.
	Dr. P. Mukherjee	Assistant Professor	M.V.Sc, Ph.D.
	Dr. Subhasis Roy	Assistant Professor	M.V.Sc, Ph.D.
	Dr. Chottan Kumar Ghosh	Assistant Professor	M.V.Sc, Ph.D.
	Dr. Falguni Mridha	Assistant Professor	M.V.Sc.
	Dr. Tanmoy Rana	Assistant Professor	M.V.Sc, Ph.D.
Veterinary Epidemiology & Preventive Medicine	Prof. C. Guha	Professor	M.V.Sc., Ph.D.
	Prof. U. Biswas	Professor	M.V.Sc., Ph.D.
	Dr. P. S. Jana	Assistant Professor	M.V.Sc., Ph.D.
Veterinary Gynaecology & Obstetrics	Prof. S. Basu	Professor	M.V.Sc., Ph.D.
	Prof. (Mrs.) K. Ray	Professor	M.V.Sc., Ph.D.
	Dr. P. R. Nandi	Assistant Professor	M.V.Sc.
	Dr. P. Sarkar	Assistant Professor	M.V.Sc.
	Dr. D. Mandal	Assistant Professor	M.V.Sc.
Veterinary Medicine, Ethics & Jurisprudence	Dr. A. K. Saren	Assistant Professor	M.V.Sc.
	Prof. S. Sarkar	Professor	M.V.Sc., Ph.D.
	Prof. C. Lodh	Professor	M.V.Sc., Ph.D.
Veterinary Microbiology	Dr. A.R. Gupta	Associate Professor	M.V.Sc., Ph.D.
	Prof. S. N. Joardar	Professor	M.V.Sc., Ph.D.
	Dr. D.P. Isore	Associate Professor	M.V.Sc., Ph.D.
	Dr. Kunal Batabyal	Assistant Professor	M.V.Sc., Ph.D.
	Dr. S. Dey	Assistant Professor & Head	M.V.Sc., Ph.D.
Veterinary Parasitology	Dr. I. Samanta	Assistant Professor (Stage 3)	M.V.Sc., Ph.D.
	Prof. S.C. Mandal	Professor	M.V.Sc., Ph.D.
	Dr. S. Baidya	Associate Professor	M.V.Sc., Ph.D.
	Dr. (Mrs.) R. Jas	Assistant Professor & Head	M.V.Sc., Ph.D.
	Dr. S. Pandit	Assistant Professor	M.V.Sc., Ph.D.
Veterinary Pathology	Dr. A. Nandi	Assistant Professor	M.V.Sc.
	Prof. S. K. Mukhopadhyay	Professor	M.V.Sc., Ph.D.
	Dr. S. Pradhan	Assistant Professor	M.V.Sc., Ph.D.
	Dr. N. C. Patra	Assistant Professor	M.V.Sc., Ph.D.
	Dr. R. N. Hansda	Assistant Professor	M.V.Sc., Ph.D.
Veterinary Pharmacology & Toxicology	Dr. S. Mondal	Assistant Professor	M.V.Sc., Ph.D.
	Prof. T. K. Mandal	Professor	M.V.Sc., Ph.D.
	Dr. T. K. Sar	Associate Professor & Head	M.V.Sc., Ph.D.
	Dr. Raja L.	Assistant Professor	M.V.Sc., Ph.D.

Department	Name of Teacher	Designation	Qualification
Veterinary Physiology	Prof. P.K. Das	Professor	M.V.Sc., Ph.D.
	Dr. P. R. Ghosh	Associate Professor	M.V.Sc., Ph.D.
	Dr. K. Das	Assistant Professor	M.V.Sc., Ph.D.
	Dr. D. Banerjee	Assistant Professor & Head	M.V.Sc., Ph.D.
	Dr. J. Mukherjee	Assistant professor	M.V.Sc., Ph.D.
Veterinary Public Health	Dr. Chanchal Debnath	Associate Professor & Head	M.V.Sc., Ph.D.
	Dr. Rahul Barua	Assistant Professor	M.V.Sc., Ph.D.
	Dr. Ripan Biswas	Assistant Professor	M.V.Sc.
Veterinary Surgery & Radiology	Prof. D. Ghosh	Professor & Head	M.V.Sc., Ph.D.
	Prof. S.K. Nandi	Professor	M.V.Sc., Ph.D.
	Prof. S. Hazra	Professor	M.V.Sc., Ph.D.
	Prof.S. Halder	Professor	M.V.Sc., Ph.D.
Veterinary & Animal Husbandry Extension Education	Prof. A. Goswami	Professor	M.V.Sc., Ph. D., D. Litt.
	Dr. Debasish Ganguly	Associate Professor	M.V.Sc., Ph.D.
	Dr. Sukanta Biswas	Associate Professor & Head	M.V.Sc., Ph.D.
	Dr. Debasish Saha	Assistant professor	M.V.Sc., Ph.D.

Faculty of Fishery Sciences

Department	Name of Teacher	Designation	Qualification
Aquaculture	Prof. S. K. Das	Professor & Head	M. Sc, Ph. D
	Prof. T.K.Ghosh	Professor	M. Sc, Ph. D
	Dr. S. K. Sau	Assistant Professor	M.F.Sc., Ph.D.
Aquatic Animal Health	Prof. G. Dash	Professor	M.F.Sc., Ph.D.
	Prof. T. J. Abraham	Professor & Head	M.F.Sc., Ph.D.
	Sri Prasenjit Mali	Assistant Professor	M.F.Sc.
Aquatic Environment Management	Prof. S. K. Rout	Professor & Head	M.F.Sc., Ph.D.
	Prof. B.K.Das	Professor	M.Sc., Ph.D.
	Prof. R.K.Trivedi	Professor (on lien)	M.F.Sc., Ph.D.
	Sri Sutanu Karmakar	Assistant Professor	M.F.Sc., PGDAEM
Fishery Economics & Statistics	Prof. S. Sahu	Professor & Head	M.Sc, Ph.D., M.B.A.
	Sri Soumyadip Purkait	Assistant Professor	M.F.Sc., PGDAEM
Fishery Engineering	Prof. N.A.Talwar	Professor	M.F.Sc., Ph.D.
	Ms. Olipriya Biswas	Assistant Professor	M.F.Sc.
Fishery Extension	Prof. S. S. Dana	Professor	Ph.D.
	Dr.B. Saha	Associate Professor	Ph.D.
	Mrs. M. Ray Sarkar	Assistant Professor	M.F.Sc.
Fish Nutrition	Dr. P.N. Chatterjee	Assistant Professor	M.V.Sc., Ph.D.
	Dr. Srinibas Das	Assistant Professor	M.V.Sc., Ph.D.
Fish Processing Technology	Prof. K.C Dora	Professor	M.F. Sc, Ph.D.
	Dr. S. Chowdhury	Associate Professor	M.F. Sc, Ph.D.
	Sri Prasanta Murmu	Assistant Professor	M.F.Sc.
	Dr. Swarnadyuti Nath	Assistant Professor	M.F.Sc., Ph.D.
Fishery Resources Management	Prof. S. K. Das	Professor	M.F.Sc., Ph.D., DDE
	Prof. S. Behera	Professor	M.F.Sc., Ph.D.
	Prof.T.S.Nagesh	Professor	M.F.Sc., Ph.D.
	Dr. Gulam Ziauddin	Assistant Professor	M.F.Sc., Ph.D.

Faculty of Dairy Technology

Department	Name of Teacher	Designation	Qualification
Dairy Business Management	Prof. M.K.Mandal	Professor & Head	Ph.D.
	Sri Avijit Sarkar	Associate Professor	M.Sc.(Dairy Microbiology)
	Dr.Reshma Sinha Roy	Assistant Professor	Ph.D.
Dairy Chemistry	Prof. Pinaki Ranjan Ray	Professor & Head	Ph. D. (Dairy Chemistry)
	Dr. Chaitali Chakraborty	Associate Professor	Ph. D. (Dairy Chemistry)
Dairy Engineering	Prof. S.K.Bag	Professor and Head	M.Tech,Ph D
	Prof. P. Maiti	Professor	M.Sc,Ph D
	Prof. P. K. Roy	Professor	M.Tech,Ph D
	Sri K. Halder	Assistant Professor	M. Tech
Dairy Microbiology	Prof. T.K.Maity	Professor	Ph.D (DM)
	Prof. Surajit Mandal	Professor	Ph.D (DM)
	Dr. Lopamudra Halder	Associate Professor	Ph.D (DM)
	Sri Amit Kumar Barman	Assistant Professor	M.Tech (DM)
Dairy Technology	Dr. Anindita Debnath	Assistant Professor	Ph.D. (Dairy Technology)
	Sri Partha Pratim Debnath	Assistant Professor	M. Tech (Dairy Technology)
	Sri Kuntal Roy	Assistant Professor	M. Tech (Dairy Technology)
	Sri Goutam Kumar Das	Teacher (fulltime contractual)	M.Sc. (Dairy Technology)

2.8 STATE PUBLIC INFORMATION OFFICER

The mandate of Right to Information Act 2005 is timely response to citizen requests for government information. It is an initiative taken by Department of Personnel and Training, Ministry of Personnel, Public Grievances and Pensions to provide a- RTI Portal Gateway to the citizens for quick search of information on the details of first Appellate Authorities, PIOs etc.

Information can be sought by any citizen of India as per the Act. The University has appointed Dr. S Das, Scientist, DREF, WBUAFS as the State Public Information Officer of the University. Sri A.K.Chakraborty, Secretary, Faculty Council is acting as the Appellate Authority under this system of providing information. The unit is functional since 2005.

2.9 INTERNAL COMPLAINTS COMMITTEE TO PREVENT SEXUAL HARASSMENT AT WORKPLACE

Sexual harassment at workplace violates the rights and opportunities of women to seek, obtain and hold employment without discrimination. West Bengal University of Animal & Fishery Sciences authority is always alert to provide a safe working environment to their women employees and includes both preventive and remedial measures to make the work environment safe and cordial for women employees.

A committee for this purpose had been structured in the University in 2004 for the first time. The committee is reconstituted from time-to-time. The latest committee was reconstituted vide Notification No. WBUAFS/Admn/NC-2/768 dt. 27/03/2019 with 11 members including Presiding Officer Smt. Aparajita Biswas, Computer Programmer, DREF, WBUAFS and a third party NGO member.

Sl. No.	Members
1	Smt. Aparajita Biswas, Computer Programmer, DREF, WBUAFS
2	Programme Officer, Sanhita (NGO)
3	Dr.Satabdi Das, Scientist, DREF,WBUAFS

Sl. No.	Members
4	Prof. Kalyani Roy, Professor, Dept. of Gynaecology & Obstetrics, F/VAS, WBUAFS
5	Mrs. Papri Pal, Lab Attndt.(Gr-III), Dept. of Aquaculture, F/Fsc., WBUAFS
6	Mrs. Koumari Chowdhuri, Tech. Asstt., F/DT, WBUAFS
7	Mr. Anuj Chakraborty, Secretary Faculty Council, WBUAFS
8	Prof. S. Batabyal, Dean of Students Welfare, WBUAFS
9	I.S.W., F/VAS, WBUAFS
10	I.S.W., F/DT, WBUAFS
11	I.S.W., F/Fsc., WBUAFS

2.10 GRIEVANCE CELL

Sl. No.	Members
1	Prof. S.K. Bag, Controller of Examination
2	Prof. Nilotpal Ghosh, Dean, Faculty of Veterinary & Animal Sciences
3	Prof. A. K. Sahoo, Faculty of Veterinary & Animal Sciences
4	Prof. T. J. Abraham, Dean, Faculty of Fishery Sciences
5	Prof. T. K. Maity, Dean, Faculty of Dairy Technology
6	Prof. S. Batabyal, Dean of Students' Welfare
7	Prof. S. K. Bag, Faculty of Dairy Technology
8	Dr. P. K. Biswas, Deputy Registrar

2.11 SUPER ANNUATION DURING 2021-22

Sl. No.	Name of the Employee	Post	Date of Retirement
1.	Sri Prasanta Kumar Roy	Assistant Registrar	31.05.2021
2.	Smt. Archana Bala	Laboratory Attendant	30.06.2021
3.	Sri Anuj Kumar Chakraborty	VC's Secretariat	31.01.2022
4.	Sri Monotosh Kumar Guin	Chief Cashier	28.02.2022



FINANCIAL SUMMARY



3

FINANCIAL SUMMARY

Report of Finance & Accounts Section, WBUAFS for financial year 2021-22 :

West Bengal University of Animal & Fishery Sciences deals with Financial transactions mainly based on receipts from State Govt. Funds (on account of receipts under plan, non-plan and capital heads) and Development Grants from ICAR. Apart from this, funds are received from ICAR for the University as well as KVKs under WBUAFS. Funds are also received from external agencies including Govt. of India and State Govt. for research work. The Finance Section takes care of receipt and disbursement of these funds. The financial status of WBUAFS during 2021-22 are summarized as below :

Sl. No.	Heads	Receipt (Rs. in Lakhs)
1.	State Govt. Grant	606247810
2.	ICAR and Central Govt. Grant	35634644
3.	KVK	84631264
4.	Internal Resources	24999580
	Total	751513298

Sl. No.	Heads of Expenditure (Rs. in Lakhs)	
1.	Administration	7491.72
2.	Research	460.19
3.	Extension (including KVK)	730.49
4.	Education	222.73
5.	Infrastructural Developments	47.63



ACADEMIC

4

ACADEMIC

4.1 ACADEMIC PROGRAMMES (FACULTY WISE)

The West Bengal University of Animal and Fishery Sciences (WBUAFS) has three faculties functional under its jurisdiction. It follows the syllabus framed by Veterinary Council of India (VCI) for the Faculty of Veterinary and Animal Sciences. The courses of Faculty of Fishery Sciences follow the syllabus adopted from Indian Council of Agricultural Research (ICAR). The courses taught under Faculty of Dairy Technology are following AICTE, New Delhi guidelines.

Courses offered by the University in the three faculties are as follows:

Faculty of Veterinary and Animal Sciences :

Sl. No	Name of Course	Duration	Student Intake Capacity 2021-22
1	DVP	2 years Diploma in Vety Pharmacy	30
2	B.V.Sc. & A.H.	5½ years Bachelor's degree	86
3	M.V.Sc.	2 years Master's degree	110
4	Ph. D.	3 years Doctoral degree	48

Faculty of Fishery Sciences :

Sl. No	Name of Course	Duration	Student Intake Capacity 2021-22
1	B.F.Sc.	4 years Bachelor's degree	30
2	M.F.Sc.	2 years Master's degree	36
3	Ph.D.	3 years Doctoral degree	14

Faculty of Dairy Technology :

Sl. No	Name of Course	Duration	Student Intake Capacity 2021-22
1	B.Tech. (DT)	4 years Bachelor's degree	44
2	M. Tech.	2 years Master's degree	18
3	Ph. D.	3 years Doctoral degree	09

The course curricula undergo modification from time to time following the recommendations of ICAR, VCI and AICTE.

4.2 ADMISSION

4.2.1. ADMISSION SCHEDULE

Admission to Undergraduate courses starts generally immediately before or soon after the publication of results of Higher Secondary Examination results conducted by the West Bengal Council of Higher Secondary Education.

In case of postgraduate and Ph.D. courses, admission takes place after qualifying in the Entrance Examinations. 15% seats are filled up by the ICAR nominees.

Academic Session	Begins During
Diploma Course (DVP)	July
UG Courses	July
PG Courses	August – September
Ph.D Courses	November – December



4.2.2 ADMISSION REQUIREMENTS/PROCEDURE FOR TWO YEAR DIPLOMA COURSE IN VETERINARY PHARMACY

Candidates seeking admission to the Diploma in Veterinary Pharmacy (DVP) course must secure minimum of 55% marks in Physics, Chemistry, Biology/Mathematics in the 10+2 examination. The admission of the students is on the basis of merit and the intake capacity for the course is 30 containing General and Reserved Category as per the Government rules. The course is running at Mohanpur campus under Faculty of Veterinary and Animal Sciences.

4.2.3 ADMISSION REQUIREMENTS / PROCEDURE FOR UNDERGRADUATE STUDIES

Candidates seeking admission to the B.V.Sc. & A.H. course must qualify in the West Bengal Joint Entrance Examination conducted for entrance to B.V.Sc.&A.H. course. The candidates qualified in the West Bengal Joint Entrance examination conducted for entrance into the Engineering/Technology courses are considered for entry to the B. Tech. (D.T.) course. For B.F. Sc. course application forms are generally available from few branches of UCO Banks as notified in the local daily newspapers. After 15 days of last date of receipt of application forms merit list is generally published on the basis of the marks obtained in the 10+2 Examinations.

The Undergraduate candidates must secure minimum 50% marks altogether in Physics, Chemistry, Biology, English and Vernacular in Higher Secondary or equivalent (10+2) examinations. The candidatures of other Board/Council (10+2) level passed from Institutions in West Bengal are considered provided that the candidate is a domicile of West Bengal. The Scheduled caste / scheduled tribe candidates must secure 40% marks instead of 50% marks altogether in Physics, Chemistry, Biology, English and Vernacular in Higher Secondary or equivalent (10+2) examinations.

22% of seats are reserved for SC and 6% for ST students out of the total number of seats. There is also a reservation of (10% + 7%) for the OBC candidates as per the State Govt. Norms. 15% seats are reserved for VCI nominees for the BVSc & AH course and 4 seats are reserved for BFSc and B.Tech (DT) courses each for ICAR nominees. 3% of seats are reserved for physically challenged candidates for each course.

4.2.4 ADMISSION REQUIREMENTS FOR MASTER'S DEGREE STUDIES

The candidates for Master's degree courses must have passed B.V.Sc. & A.H. / B.Sc. (D.T.) / B. Tech. (D.T.) / B. F. Sc. from a recognized University with 55% marks in aggregate (50% marks for SC/ST candidates) in traditional system or with a minimum 6.2 OGPA (6.0 for SC/ST candidates) in 10 point scale. Selection of candidates are carried out by University constituted Selection Committees for the purpose and admitted on the basis of merit and performance in the interview. The merit is decided on the basis of percentage of marks obtained in aggregate or OGPA in Bachelor's Degree Examinations as well as OGPA in subject concerned in which admission is sought. The relative weight-age on overall performance in Bachelor's Degree and in the subject concerned for Master's degree studies is given in the ratio of 2:1. Reservation is followed as per State Govt. rules. One seat is reserved for ICAR nominees.

4.2.5 ADMISSION REQUIREMENTS FOR DOCTORAL (PhD) STUDIES

The candidates for Doctorate of Philosophy (Ph.D.) must have passed two years Master's Degree in Veterinary and Animal Sciences, Dairy Science/Dairy Technology, Fishery Science securing 55% marks in aggregate or 2.75 OGPA in 4.0 scale or 6.75 in 10 point scale following a first or high second class in B. V. Sc. & A. H./ B. Tech. (D.T.) / B. F. Sc. from any recognized University or National Institute. Candidates seeking admission to PhD course in a subject shall have passed Master's Degree in the same subject and also have done sufficient courses in the proposed major field of specialization within the subject.

In Ph.D. program of a department total no. of seats in an academic year is set on a ratio of 1:1 (Teacher eligible to guide a student : Number of students) and to a maximum of 3 seats in a department. Again, the reservation of seats is as per State Govt. rules.

4.2.6 INTAKE OF STUDENTS

Student Status (Academic Year 2021-2022)

Course		Unreserved (UR)	SC	ST	OBC-A	OBC-B	VCI/ICAR	Total	Male	Female
B.V.Sc. & A.H.	Intake	39	16	4	7	5	15	86	-	-
	Enrolled	26	16	4	16*	9*	15	86	61	25
B.F.Sc.	Intake	20	8	2	4	3	7	44	-	-
	Enrolled	20	11*	1	4	3	3	42	34	8
B.Tech. (D.T.)	Intake	17	10	3	4	3	7	44	-	-
	Enrolled	17	10	3	4	3	7	44	34	10
M.V.Sc.	Intake	47	18	5	10	6	24	110	-	-
	Enrolled	18	11	1	23*	5	11	69	57	12
M.F.Sc.	Intake	15	6	2	3	2	8	36	-	-
	Enrolled	14	5	2	1	2	7	31	19	12
M.Tech.	Intake	8	2	1	2	1	4	18	-	-
	Enrolled	2	-	-	-	2*	2	6	3	3
Ph.D. (V.Sc.)	Intake	20	7	2	5	2	12	48	-	-
	Enrolled	9	1	-	2	-	7	19	13	6
Ph.D. (F.Sc.)	Intake	6	3	1	2	1	1	14	-	-
	Enrolled	5	1	-	-	-	1	7	2	5
Ph.D. (D.T.)	Intake	3	2	1	1	1	1	9	-	-
	Enrolled	-	-	-	-	-	-	-	-	-

4.3 Award Of Provisional Degree-At A Glance

Programme	Course Name	2021	
		No. of Student Appeared	No. of Student Passed
U.G.	B.V.Sc. & A.H.	08*	08*
	B.F.Sc.	38	37
	B.Tech. (D.T.)	29	29
P.G.	M.V.Sc.	29	29
	M.F.Sc.	28	28
	M.Tech.	5	5
Ph.D.	Veterinary Sciences	3	3
	Fishery Sciences	7	7
	Dairy Technology	Nil	Nil
Total		147	146

[* Year back students.]

4.4 ACADEMIC AWARDS FOR THE STUDENTS

Following recognitions are being awarded to the passed-out students of the three faculties as Gold Medals by the University :

Faculty of Veterinary & Animal Sciences

❖ University's Gold Medal

(For securing Highest marks in B.V.Sc. & A.H.)



- ❖ Smt. Mira Mallik Gold Medal
(For securing Highest marks in B.V.Sc. & A.H.)
- ❖ Prof. D.B. Mukherjee Gold Medal
(For securing Highest marks in Vety. Surgery & radiology in B.V.Sc. & A.H.)
- ❖ First Batch (1953) B.V.Sc. Student Gold Medal
(For securing Highest marks in 5th & 6th Semester in B.V.Sc. & A.H.)
- ❖ Dr. S.N. Roy Gold Medal
(For securing Highest marks in Livestock Farm Management in B.V.Sc. & A.H.)
- ❖ Dr. B.N. Dey Memorial Endowment Gold Medal
(For securing Highest marks in Vety. Gynaecology & Obstetrics in B.V.Sc. & A.H.)
- ❖ Dr. Subir Kr. Sinha Memorial Gold Medal
(For securing Highest marks in Vety. Medicine, Ethics & Jurisprudence in B.V.Sc. & A.H.)
- ❖ Dr. D.K. Biswas Gold Medal
(For securing Highest marks in Poultry Production Management in B.V.Sc. & A.H.)
- ❖ Dr. G.L. Sharma Endowment Gold Medal
(For securing Highest marks in Vety. Public Health in B.V.Sc. & A.H.)
- ❖ Dr. B.N. Mukherjee Gold Medal
(For securing Highest marks in Vety. Epidemiology & Preventive Medicine in B.V.Sc. & A.H.)
- ❖ Charu Chandra Koley Gold Medal
(For securing Highest marks in Animal Genetics & Breeding in B.V.Sc. & A.H.)
- ❖ Dinesh Chandra De and Sova De Memorial Gold Medal
(For securing Highest marks in 5th Composite Annual Examination in B.V.Sc. & A.H.)
- ❖ Dr. (Mrs.) Gita Biswas Gold Medal
(For securing Highest marks in Vety. Parasitology in B.V.Sc. & A.H.)
- ❖ Dr. Animesh Kumar Chakraborty Gold Medal
(For securing Highest marks in Vety. Pharmacology & Toxicology in B.V.Sc. & A.H.)
- ❖ Prof. G.C. Banerjee Gold Medal
(For securing Highest marks in Animal Nutrition in B.V.Sc. & A.H.)
- ❖ Dr. P. Bhattacharya Gold Medal
(For securing Highest OGPA in Animal Production & Management in M.V.Sc.)



- ❖ Prof. Rathindra Nath Ghosh Gold Medal
(For securing Highest marks in Vety. Pharmacology & Toxicology in M.V.Sc.)
- ❖ 1972 Batch B.V.Sc. & A.H. Students Gold Medal
(For securing Highest Marks in B.V.Sc & A.H]
- ❖ Prof. K. L. Bhowmick & Prof A.K. Majumdar Memorial Gold Medal
(For securing Highest Marks in Veterinary A.H. Extension Education in B. V. Sc. & A. H.)

Faculty of Dairy Technology

- ❖ University's Gold Medal
(For securing Highest marks in B.Tech. (D.T.)
- ❖ Prof. Sukumar De Gold Medal
(For securing Highest marks in B.Tech. (D.T.)
- ❖ Smt. Tirthamayee Ganguli Gold Medal
(For securing First Position in M.Tech. (D.T.)
- ❖ Prof. N. C. Ganguli Memorial Gold Medal
(For securing First Position in M.Tech. (D.C.)

Faculty of Fishery Sciences

- ❖ University's Gold Medal
(For securing Highest marks in B.F.Sc.)
- ❖ Smt. Lakshmi Das & Sri Kasi Nath Das Gold Medal
(For securing Highest marks in B.F.Sc.)
- ❖ Smt. Manju Biswas & Dr. K.P. Biswas Gold Medal
(For securing Highest marks in Fishery Engineering in B.F.Sc.)

4.5 SCHOLARSHIPS/FELLOWSHIPS

Merit Scholarships are being granted every year to the meritorious students of the University for the Undergraduate courses as per approval and guidelines issued by the State Government. Besides, scholarships and Fellowships are being granted for Masters and Ph. D. courses too.

1	Merit Scholarship
2	Swami Vivekananda Merit Cum Means Scholarship
3	Ph.D. (Non Net) Swami Vivekananda Merit Cum Means Scholarship
4	Aikyashree Scholarship
5	ICAR-National Talent Scholarship
6	ICAR-JRF/SRF (PGS) Ph.D. Scholarship
7	UGC- Rajib Gandhi National Fellowship
8	UGC- Maulana Azad National Fellowship



4.6 EMPLOYMENT OF THE STUDENTS

University Officials as well as the Faculty members always keep in touch with the passed out students for their counseling towards employment and placement in a job. The alumni also take care of the situation for those going in for employment. Students of this University are being absorbed in different developmental sectors in the State, Country and abroad as well.

The main industrial sectors /sectors absorbing the faculty-wise out-turns of the University are as follows :-

4.6.1 Faculty of Veterinary & Animal Sciences :

- i) State Govt. Department of Animal Resource Development,
- ii) Livestock and poultry sector, medicine producing Private companies,
- iii) Broiler poultry producing Private Companies,
- iv) Animal feed producing Private Companies,
- v) State Govt. Administrative services,
- vi) KVKs
- vii) Bank and P.O. etc.

4.6.2 Faculty of Dairy Technology :

The students passed out from the Faculty get employment in National and Multi-national milk & dairy product producers under Govt., Semi Govt. and Private Companies like,

- i) Bathinda District Co-operative Milk Producers' Union Ltd (VERKA),
- ii) Adya Dairy Ltd.
- iii) GCMMF Ltd.
- iv) Indian Dairy Products Ltd.
- v) Nestle India Ltd.
- vi) Keventer Agro Pvt.Ltd.(Metro Dairy)
- vii) Manns' Frozen Foods Producers'Pvt, Ltd.(HavmorIcecream)
- viii) Cold Roll Ltd.

4.6.3 Faculty of Fishery Sciences

The passed out students of the faculty were placed at different Government, Non-Government organizations, Semi-Government organizations, Private Institutes, viz.,

- i) State Govt. Department of Fishery and other Administrative services,
- ii) Bank & PO,
- iii) Central Govt. Research Services,
- iv) Teaching in different SAUs,
- v) Animal and fish feed producing Private Companies,
- vi) KVKs etc.

4.7 Placement Cell

The University has established a Placement Cell since February, 2006. This cell works towards the placement of the passed out students of the three Faculties of the University. Majority of the passed out students get employment through different Competitive examinations in the Government, Semi-Government and Private sector organizations.

4.8 Anti Ragging Monitoring Cell

There exists an anti-ragging committee in the University to prevent ragging in the University. It comprises of the following members :

Dr.S. Chandra, Registrar (Actg.)

Prof.S. Batabyal, Dean of Students Welfare

Prof.S.K. Bag, Controller of Examinations

Prof.N. Ghosh, Dean, Faculty of Veterinary & Animal Sciences

Prof.T.J. Abraham, Dean, Faculty of Fishery Sciences

Prof.T.K. Maity, Dean, Faculty of Dairy Technology

4.9 DETAILS OF PG / PhD THESIS SUBMITTED DURING 2021-2022 :

4.9.1 FACULTY OF VETERINARY & ANIMAL SCIENCES

4.9.1.1 Department of Animal Genetics & Breeding

Sl. No.	Name of the student	PG/ PhD	Title of the Research work	Outcome of the work
1	Dr. Sidharth Prasad Mishra	PhD	Studies on Free Fatty Acid Receptor (Ffar) Gene in Energy Metabolism of Genetically Modified Mice.	Ffar2 and Ffar3 flox/flox mice were successfully developed by embryonic stem cell mediated gene transfer technique. The Ffar2 and Ffar3 flox/flox mice were further mated with RosaERT2Cre and VilCre mice model to develop the whole body knock-out mice and intestinal tissue specific mice. Intestinal cellular homeostasis of Ffar2 and Ffar3 KO were severely affected with reduced entero-endocrine, mucin, tight junction and gut motility marker expression whereas the inflammatory marker expression and gut permeability were significantly up regulated as compared to counter control littermate mice. Ffar2 and Ffar3 KO become obese and develop T2D phenotype by increasing the glucose intolerance and insulin resistant. In the long run these mice also develop the cognitive and behavioral dysfunction as a causal genetic signaling for occurrence of Alzheimer's disease. The research findings unfold that the neuronal marker associated with cognitive and behavioral functions were affected in both Ffar2 and Ffar3 intestinal tissue specific knock-out mice model. Also, the blood-brain-barrier permeability of the knockout mice were increased leads to increased transmission of more cytokines and chemokines from the intestine to the brain via gut brain axis. So, Ffar2 and Ffar3 gene signaling from intestine is also important for maintaining cognitive and behavioural function along with regulating the whole-body energy homeostasis.

4.9.1.2. Department of Animal Nutrition

Sl. No.	Name of the student	PG/ PhD	Title of the Research work	Outcome of the work
1.	Hirani Jamatia	P.G.	'Study on synthesis of different varieties of nano dimensional iron particles and its efficacy for dietary fortification'	Synthesized iron nano particles are potent food fortificants in dairy products with minimal to no change in overall characteristics.
2.	Puja Hazra	P.G.	'Study on effects of Zinc Oxide Nanoparticles on performance of Broiler Chickens'	Supplementation of zinc oxide nanoparticles (ZnONPs) reduced the pathogenic bacteria in the intestine and enhanced Zn concentration in liver, though the same did not influence the growth performance and immunity of broiler chickens.
3.	Debalina Kar	P.G.	'Studies on the Effect of Graded Levels of Rice Distillers Dried Grains with Solubles on Growth Performance, Serum Biochemistry, Carcass Characteristics and Nutrient Metabolizability of Low Input Technology Meat Purpose Coloured Chickens'	rDDGS can be used upto 18% in LIT meat purpose coloured chicken diet without any adverse effect on growth performance.

4.9.1.3 Department of Livestock Production Management

Sl. No.	Name of the student	PG/ PhD	Title of the Research work	Outcome of the work
1	Amit Roy	PG	Comparative Studies on Physiological and Behavioral Parameters and Influence of Locally available Cooked feed on Growing Piglets in Sundarban area of West Bengal	
2	Soumya Ranjan Sahoo	PG	Assessment of Body Condition Scoring (BCS) in relation to Productive and Reproductive Performances of Ganjam Goats	

4.9.1.4 Department of Veterinary Anatomy & Histology

Sl. No.	Name of the student	PG/ PhD	Title of the Research work	Outcome of the work
1	J.Debbarma	PG/ MVSc	"Gross anatomical, histomorphological and radiographic study of long leg bones in broiler and indigenous (deshi) chickens"	Gross parameters of long leg bones, histology of growth cartilage and compact bone varied between broiler and deshi chickens at or near market age. Deshi chickens showed unique differences from broiler counterpart.
2	S. Deb	PG/ MVSc	"Gross anatomy and histological studies on digestive system of <i>Melopsittacus undulatus</i> "	Gross anatomical and histological features of digestive organs of <i>Melopsittacus undulatus</i> , love bird were studied in details, and it revealed characteristic differences from normal poultry birds.
3	Md. M. Islam	PhD	"Effect of dysbiotic microbiome in intestinal histomorphology, expression of gut microbial receptor and immunity in poultry"	Feed supplements modify the gut histomorphology, enhance beneficial gut microbiota and increases immunity of poultry birds.

4.9.1.5 Department of Veterinary Biochemistry

Sl. No.	Name of the student	PG/ PhD	Title of the Research work	Outcome of the work
1	Nilabja Roy Chowdhury	PG	Investigation on Integration of Reticuloendotheliosis Virus Sequence within the Genome of some Commercial Vaccine Strains and Field Isolates of Fowl Pox Virus in India	

4.9.1.6 Department of Veterinary Clinical Complex

Sl. No.	Name of the student	PG/PhD	Title of the Research work	Outcome of the work
1.	Vinayaka M N (Surgery and Radiology) Under the guidance of Dr P Mukherjee	PG	Evaluation of egg shell membrane incorporated with ion dopped bioactive glass mats in wound healing in rabbit model	In progress of clinical application
2.	Arkapravo Roy(surgery and Radiology) Under the guidance of Dr P Mukherjee	PG	Assessment of doped bioactive glass coated egg shell membrane in diabetic wound healing of experimental rabbit model	In progress of clinical application

4.9.1.7 Department of Veterinary Epidemiology & Preventive Medicine

Sl. No.	Name of the student	PG/PhD	Title of the Research work	Outcome of the work
1.	Dr. Debajit Roy	PG	Molecular diagnosis of tick borne haemoparasitic diseases of goats in West Bengal	The study revealed that tick infestation is hugely prevalent in goats of most of the study regions of the state of West Bengal. Molecular diagnosis has been proved to be the accurate technique in diagnosis of TBHD specifically in sub-clinically infected goats. The species responsible for caprine theileriosis and anaplasmosis were also identified.
2.	Dr. Bikash Saha	PG	Studies on sero-surveillance of Pigeon Paramyxovirus-1 infection and pathogenicity study on antibody free pigeon with field isolate	The live attenuated lentogenic strain PPMV-1 vaccine (local isolate) was potent and efficacious, gave adequate protective antibody response and withstood challenge with velogenic strain of PPMV-1.
3.	Dr. Sangeeta Mandal	PG	Evaluation of Polymerase Chain Reactions (PCRs) for detection of tubercle bacilli in raw milk of cattle	Confirmation of the presence of <i>Mycobacterium</i> spp in milk samples and their differentiation into two groups of MTBC and NTM can be performed by both conventional and real time PCRs. The newly developed duplex PCR is found to be a promising tool for simultaneous confirmation of MTBC and differentiation between MTBC and NTMs.

4.9.1.8 Department of Veterinary Gynaecology & Obstetrics

Sl. No.	Name of the student	PG/PhD	Title of the Research work	Outcome of the work
1	Ajeet Kumar Jha PhD in Life Science	PhD	Characterization of Mesenchymal Stem Cells from Canine Ovary and Endometrium and Screening of Suitable Cryopreservation Medium for Storage	In this study, canine endometrial and ovarian tissues were characterized for its stem cell properties such as adherence to tissue culture plate (plasticity), population doubling time, serial clonal passaging, long-term culturing properties, stem cell marker expression, multilineage differentiation potential and screening of suitable media for cryopreservation. We also demonstrated comparative study of ovary and endometrium MSCs for the first time and suitable media for their short term and long term storage.
2	Tirthankar Roy	MVSc	Study of Canine Pyometra on Breed and Age Prevalence and Assessment of Efficacy of Different Treatment Protocols	The prevalence of canine pyometra and associated cystic endometrial hyperplasia was found higher in older age group above 6 years of age. Labrador breed was found to be the highest susceptible one; spitz, pug and mongrel were also prone to occurrence of canine pyometra. Varying degrees of clinical signs were expressed in different patients depending upon the severity of pathogenesis and resistance capability of individual.

Sl. No.	Name of the student	PG/PhD	Title of the Research work	Outcome of the work
3	Sutanu Kaity	MVSc	Isolation, Identification and Characterization of Canine Wharton's Jelly – Derived Mesenchymal Stem Cells and Study on the effect of Reduced Carbon Dioxide Tension on its Phenotypes	Wharton's Jelly serves as an amusing source of stem cell isolation required for regenerative therapy and tissue engineering. Successful opportunities of isolation, identification and characterization of WJMSCs turns the perinatal waste tissues into an exquisite resurrective fount for stem cell therapy.

4.9.1.9 Department of Veterinary Microbiology

Sl. No.	Name of the student	PG/PhD	Title of the Research work	Outcome of the work
1.	Dr. S. Abhiram [Supervisor: Dr. S.Dey]	M.V.Sc	Detection and molecular characterization of canine parvovirus from dogs	Most diarrhoeic samples of pups were positive in PCR of VP2 gene of CPV-2, prevalence of CPV type 2c was observed in PCR positive samples along with CPV types 2a and 2b.
2.	Ms. Sneha Bhowmick [Supervisor: Dr. Indranil Samanta; Co-Supervisor: Dr. Jai Sunder, ICAR-CIARI]	Ph.D. (Life Science)	Comparison between Nicobari fowl and commercial poultry in carriage of antibiotic resistance bacteria in Andaman and Nicobar Islands	A collaborative work between WBUAFS and ICAR-CIARI, Port Blair (following MOU between two Institutes) which revealed the presence of antimicrobial resistant bacteria in local breeds of birds reared in naïve environment with less anthropogenic activity and less exposure to antibiotics

4.9.1.10 Department of Veterinary Pharmacology & Toxicology

Sl. No.	Name of the student	PG/PhD	Title of the Research work	Outcome of the work
1.	Dr. Shabnam Akhtar	PhD	Effect of Resveratrol and seed powder of Jamun (<i>Syzygium cumini</i> L.) in induced mastitic fibrosis in black Bengal goats	Resveratrol and Jamun seeds powder could be used to prevent fibrosis in mammary gland.
2.	Rinku Buragohein	PhD	Effect of <i>Bauhinia purpurea</i> Linn. bark extract in induced lung tumor progression in mice	Lung cancer was induced in mice by benzo(a)pyrene, an environmental pollutant. The characteristic patho-physiological changes of benzo(a) pyrene sub chronic toxicity in mice were decreased neutrophil percentage, increased lymphocyte count, reduced antioxidants activity of superoxide dismutase and reduced glutathione level along with increased lipid peroxidation as well as increased lung lactate dehydrogenase activity. Histomorphological interpretation exhibited increased proliferation of lung alveolar cells, high nucleous and cytoplasm ratio and angiogenesis of lung parenchyma were characteristic changes caused by benzo(a)pyrene sub chronic toxicity and initiation of lung tumor in mice. Aqueous and ethanolic extracts of <i>Bauhinia purpurea</i> Linn. Were observed to be safe and practically non-toxic. Oral dosing of ethanolic and aqueous extracts of <i>Bauhinia purpurea</i> Linn. Bark at 624 mg kg ⁻¹ and 857 mg kg ⁻¹ , respectively dissolving in 0.2mL of distilled water once daily orally increased antioxidant activity status and reduced lipid peroxidation activity along with lower lactate dehydrogenase activity of lung and preserved architecture of lung parenchyma that suggested chemoprotective effect against lung tumor. However, the aqueous extract of <i>Bahumia purpurea</i> Linn. showed better curative effect against benzo(a) pyrene induced lung tumor progression in mice in terms of higher lung superoxide dismutase activity, reduced glutathione level and better preservation of lung parenchyma compared to ethanolic extract.

4.9.1.11 Department of Veterinary Surgery & Radiology

Sl. No.	Name of the student	PG/PhD	Title of the Research work	Outcome of the work
1.	Miss Piyali Das in Biomedical Engineering, Jadavpur University	Ph.D.	Development of decellularized caprine cartilage in cartilage tissue engineering.	
2.	Dr. Pallabi Koyal	MVSc.	Evaluation of fish collagen with ion doped bioactive glass electrospun mats in burn wound healing in rabbit.	
3.	Dr. Rijaul Karim SK	MVSc.	Investigating the pathophysiology of ivermectin induced retinal toxicity and its reversal in a rabbit	
4.	Dr Arka Prava Roy	MVSc.	Assessment of doped bioactive glass coated eggshell membrane in diabetic wound healing of experimental rabbit model.	
5.	Dr. Vinayak M.N	MVSc.	Evaluation eggshell membrane incorporated with ion-doped bioactive glass mats in wound healing in rabbit model.	

4.9.2 FACULTY OF FISHERY SCIENCES

4.9.2.1 Department of Aquaculture

Sl. No.	Name of the student	PG/PhD	Title of the Research work	Outcome of the work
1.	Bithilekha Mondal	Ph.D.	Evaluation of Castor (<i>Ricinus communis</i>) bean cake as protein and manure input in carp culture	Castor (<i>Ricinus communis</i> L.) bean cake (CBC) as an alternative protein input to mustard (<i>Brassica</i> sp.) oil cake (MOC) in fish feed and its manurial value in terms of heterotrophic potential has been investigated as the nutrient content of CBC was high with comparatively less cost. The study has been designed with the objectives to (I) evaluate the potential of castor cake as protein input in replacing commonly used mustard oil cake in fish feed, (II) evaluate the anti-nutritional manifestation in the test fish if any, upon application of castor seed supplemented feed, and, (III) to evaluate the potential of castor cake as <i>in situ</i> heterotrophic inducer in the production pathway of fish culture. Experimentations were conducted in the outdoor experimental facilities of the Department of Aquaculture, Faculty of Fishery Sciences, West Bengal University of Animal and Fishery Sciences, Kolkata. Rohu (<i>Labeo rohita</i>) and common carp (<i>Cyprinus carpio</i>) served as the test fish. The results established that replacement of MOC in feed with raw CBC (RCBC) up to 40% was judicious beyond which excessive mortality resulted in. However, toxicity of CBC reduced considerably following compressed steam detoxification (DCBC) as survival rate of the test fish significantly improved. FCR of rohu increased exponentially ($R^2 = 0.99$) with RCBC, whereas, it was polynomial ($R^2 = 0.759$) with DCBC that performed even better up to 60% replacement of MOC. Such relationship under common carp were polynomial with high R^2 values (≥ 0.93). It was evident that CBC either as raw or detoxified form acted as efficient protein source and quite competitive with MOC. Replacement up to 20-30% MOC with RCBC and up to 40-50% with DCBC improved growth performance of the test fish. For preparation of fish feed (CP: 30%), up to 40% protein input through CBC was beneficial in improving the nutritional quality of fish in terms of crude protein, fat and mineral content at harvest. Moreover, aerobically decomposed CBC increased the heterotrophic potential of the culture systems as all the tested nutrient mineralizers in CBC treatments were significantly higher and such increase was highly correlated with available nutrients in water ($R^2=0.73$).



Sl. No.	Name of the student	PG/PhD	Title of the Research work	Outcome of the work
2.	Priyanka Meshram	W PG	Aquaculture and reservoir fisheries management of Nagpur district, Maharashtra	<p>The present study on Aquaculture and reservoir fisheries management of Nagpur district, Maharashtra was conducted to investigate the status and practices of fisheries and aquaculture activities in the primarily small reservoirs of Nagpur district of Vidarbha Region of Maharashtra. The objectives of the present study were to (a) investigate the operation and management aspects of the reservoir fisheries in Nagpur District, Maharashtra, (b) investigate the aquaculture activities in the reservoirs of Nagpur District, Maharashtra, (c) study the socio-economic aspects of the fishermen and contractors operating in the reservoirs of Nagpur District, Maharashtra, and, (d) investigate the problems of the fishermen operating in the reservoirs of Nagpur District, Maharashtra. Four blocks viz. Nagpur, Hingna, Umred and Bhiwapur were selected by simple random sampling. 10 reservoirs from the four blocks were selected by simple random sampling technique and from each reservoir, one contractor and 10 fish farmers were randomly selected as respondent thereby comprising 10 contractors (N = 10) and 100 fishermen (N = 100) selected as respondents to collect primary data with a pre-tested structured interview schedule. Secondary data were also collected from the respective Govt. Departments viz. Fisheries and, Irrigation to corroborate the primary data.</p> <p>The study revealed that the reservoirs in Nagpur district are small, irregular in shape and perennial, infested with macrophytes that hinders netting and affects productivity. All the reservoirs are managed by the contractors of the fisheries cooperative societies engaged by the Fisheries Department of Nagpur District on lease basis for a period of 5 years. Majority of the fish farmers in the present study are middle aged, belongs to medium sized nuclear family with strong gender bias. The level of education of the farmers in the present study though is moderate and 72% of the farmers have 11-30 years of experience in fishing and aquaculture, however, 84% never attended any training programme, therefore, with limited technical skills. 88 % of the farmers depend on fishing and aquaculture as primary sources of livelihood besides acting as labourer and practicing animal husbandry as their secondary source of livelihood. 52% of the fishermen belonged to medium income category with annual income ranged from ₹ 80,000-150000. All the contractors are educated, having more than 10 years of experience in fishing and 70% are trained. 50 % of the contractors depend on agriculture as primary source of livelihood besides, aquaculture as secondary sources of livelihood. Fry, fingerlings and yearlings of both Indian major carps and exotic carps as well are stocked in the reservoirs with highly variable stocking density (1046 to 4857 numbers/ha). None of the reservoirs are managed with respect to nutritional inputs, liming, eradication of weeds and predatory fishes etc. Harvesting of fish from the reservoirs under lease was usually done for 6-11 months with traditional crafts like small fishing wooden boats, tin boats and inflated rubber tube and gears like gill net. Average daily catch of fish from reservoirs by most of the farmers (64 %) in Nagpur District is a mere 2-5 kg. As the overall abundance of fish species revealed dominance of <i>L. rohita</i> followed by <i>Catlacatla</i> with marginal presence of <i>C. mrigala</i>, it is concluded that <i>L. rohita</i> and <i>Catlacatla</i> are more suited and preferred species among the IMCs in the The present study concluded that, there is enough scope of improvement in the management processes particularly with regards to proper selection of species with weightage of bottom grazing fish, maintaining proper stocking size (fingerling to advanced fingerlings) with proper stocking density</p>

Sl. No.	Name of the student	PG/ PhD	Title of the Research work	Outcome of the work
				density (no less than 500 nos./ha/yr.) to enhance productivity and yield of the studied reservoirs of Nagpur District. Moreover, modern approaches like installation of cages towards farming of fish under controlled condition with supplemental feeding support should be taken into consideration. The lease right to the operators should be increased to 10 years from the present 5 years so that the contractors can have scope of long term planning and management. During lean period, the farmers engaged in fishing should be supported with contingency measures from the welfare scheme. Besides, the farmers should be protected with minimum income guarantee from the contractors.
3	Shankari Prasad Maji	PG	Socio-economic status and impact of COVID-19 on small-scale aqua farmers in Bankura District, West Bengal	Small-scale aquaculture generally serves as an entry to commercial aquaculture. Being small and less risky, it can be adopted easily by resource-poor farmers. During the continuing COVID-19 pandemic, fishers as well as the farming industry were severely hampered like other regions. The present study had been conducted purposively in Bankura district during the months of April to September 2021 and all the data collected through personal interview. Thirty fish farmers were chosen from each of the five blocks using a simple random sample without replacement approach. Aquaculture has been treated as an important source of revenue and rural employment as well as a catalyst for the creation of a variety of auxiliary businesses. In the context of India, the COVID-19 epidemic represents an unprecedented shock to the economy and health system. Due to the lengthy lockdown and restricted vehicle movements, it had an impact on stocking, pre-harvesting, and post-harvesting activities. It was found that 57.34 percent of the farmers belonged to a small family, had 10 years or more of aquaculture experience and had a moderate level (9-12 class) of formal education. 24.67% farmers practised fish farming within 1 bigha area. The majority of farmers (56.67%) were trained but the remaining 43.34% did not, they learned farming from their forefathers or fellow farmers. All farmers in the Onda and few in Taldangra block practised induced breeding and other farmers stocked seeds from local or others. The interference of anti-social elements showed the most constraint faced by the farmers (Garrett's Score – 59.50). The Undue harassment by neighbours with a mean of 50.68 is the second highest constraint followed by poaching of fishes (56.00) and poisoning of fishes (43.74). The lack of technical know-how under technical constraints gets the rank 1 (58.74). Non-availability of assured market (55.95) under marketing constraint and complicated procedure (58.97) for obtaining loan under economic constraint placed with Rank I. In order to mitigate the situation, farmers were started selling their products from door-to-door visits and a partial and irregular harvesting approach has been adopted by them.
4.	Rituparna Gole	PG	A Study on Productivity Status of Rural and Peri-urban Fish Farming Ponds of Purba Medinipur District'	The present work was conducted during January to August, 2021 in the purposively selected Tamluk (peri-urban) block, and Nandakumar (rural) block, of Purba Medinipur district of West Bengal with the objective to study the productivity assessment of rural and peri-urban fish ponds and to study the socio economics status of fish farmers by collecting primary data through interview and survey and secondary data from block development office with the help of the Fishery Extension Officer. From each of the two selected blocks, 3 villages were selected and from each village ten fish ponds and ten fish farmers were randomly selected for interviewing who were totally engaged with fish-farming. The study revealed that ponds of the study area are either rain fed or both rain and canal fed perennial ponds. Majority of fish farmer in rural areas are middle aged belongs to medium sized joint family and in peri-urban areas are also belongs to middle aged but small size nuclear family. Except 3.33% rural and 6.66% peri-urban fish farmers all taken formal education. 60% rural and 76.66% peri-urban

Sl. No.	Name of the student	PG/ PhD	Title of the Research work	Outcome of the work
				fish farmer taken aquaculture as primary source of livelihood. Limited media exposure of fishing related programmes but regular interaction with extension organizations for scientific information transfer, the majority of the farmers in rural areas produced approximately 8 tonne/ha and peri-urban areas produced 6.5 tonne/ha each year. Fish farming is more productive with a greater number of species [($y = -0.631x^2 + 7.9619x + 17.421$, $R^2 = 0.767$) in rural pond, ($y = -0.2298x^2 + 3.2845x - 5.4071$, $R^2 = 0.7757$) in peri-urban pond]. Among different types of supplementary feed, a mixture of master and ground nut oil cake with rice bran resulted higher production in rural areas and mixture of ground nut oil cake, rice bran, fish meal and molasses resulted higher production in peri-urban areas. Fish production up to 6 ft depth is good in rural ponds ($y = -2.1147x^2 + 26.872x - 76.925$; $R^2 = 0.9065$) and up to 6.5 ft depth in peri-urban ponds ($y = -1.5771x^2 + 20.245x - 57.919$; $R^2 = 0.8143$). The rate at which lime was applied varied substantially a fitted equation ($y = -0.0003x^2 + 0.1921x - 21.146$; $R^2 = 0.8023$) established that 250-300 kg/ha of lime application resulted in optimal production in the rural area of the present study and a fitted equation ($y = -3E-05x^2 + 0.0011x + 7.7765$; $R^2 = 0.715$) established that 200-250 kg/ha of lime application resulted in optimal production in the peri-urban area of the same study
5	Sumanta Das	PG	Studies on comparative growth performance of <i>Carassius auratus</i> (Linnaeus, 1758) fed with rice distilled dried grain with soluble (rDDGS) based formulated feed premix vis-à-vis commercial feed	The present work “Studies on comparative growth performance of <i>Carassius auratus</i> (Linnaeus 1758) fed with rice Distilled Dried Grain with soluble (rDDGS) based formulated feed premix vis-a-vis commercial feed” was to evaluate the effect of rice Dried Distillers Grain with soluble (rDDGS) on physico-chemical parameters of water (Temperature, pH, DO, Free CO ₂ , TDS, Ammonia, NO ₂ , NO ₃ , Total Alkalinity, Hardness, Electrical Conductivity, NO ₂ –N and NO ₃ –N) as well as the growth parameters (Length, Weight, SGR, FCR, FCE, PER and Mortality) of the goldfish in respect to the standardized pellet feed. Six aquariums (2.0ft x 1.5ft x 1.5 ft) were divided in two groups T1 and T2 having three tanks in each experimental groups as replicates (T1R1, T1R2, T1R3 and T2R1, T2R2, T2R3). Seven pieces of goldfish (1.33±0.5g and 1.75±0.2cm) was kept in each tanks. Treatment T1 along with its replicates was fed with Optimum Pelleted Fish Feed while Treatment T2 was fed with rDDGS @ 4% body weight and the study continued for a period of 60 days. Municipal supply water was used and same management protocol was followed in both treatments. Water quality parameters were checked on every 10 th day before water change and growth parameters were recorded on every 15 th day before siphoning and water change. The water quality parameters in T2 (rDDGS) exhibited comparatively better result than the standardized pelleted feed (T1). Growth parameters of gold fish were also better in T2 than T1. Commercially rDDGS was cheaper (Rs 275/kg) than commercial fish feed (Rs 320/kg). The result suggested that the physico-chemical as well as growth parameters in T2 treatments (rDDGS) performed better than standardized pelleted feed (T1) even in economics too. The rDDGS based formulated feed exhibited better digestion, high activeness and better feed acceptance than the commercial feed.

4.9.2.1 Department of Aquatic Animal Health

Sl. No.	Name of the student	PG/ PhD	Title of the Research work	Outcome of the work
1	Sudeshna Sarker	PhD AAH	Flavobacteriosis in cultured carps of West Bengal	found to be avirulent through intramuscular injection or skin wounding challenge trials. The causative agents of flavobacteriosis disease were able to elicit systemic pathogenesis both on the external body parts as well as internal organs of diseased fish, either naturally or experimentally challenged, as observed by histopathology. The elevated levels of serum

Sl. No.	Name of the student	PG/ PhD	Title of the Research work	Outcome of the work
				<p>cortisol, creatinine, glucose, alanine aminotransferase (ALT) aspartate aminotransferase (AST), and C-reactive protein of flavobacteriosis diseased carps indicated that the fish were highly stressed with the malfunctioning of liver and kidney. Based on growth indices (SGR, FCR, and PER), assessment of serum biomarkers (glucose and creatinine) and respiratory oxidative burst (ROB) activity as the non-specific immune response of <i>L.rohita</i>, the crude chloroform extract of <i>Centella asiatica</i> (CCE) at 10 mg/kg feed was found ideal as a feed supplement for immunomodulation of <i>L. rohita</i>. After 30 days of feeding with CCE at 10 mg/kg feed, <i>L. rohita</i> were intramuscularly injected with <i>F. columnare</i>SGM4 at 2.07×10^7 CFU/fish and compared with the control group. The serum glucose, creatinine, C-reactive protein, ALT, and AST levels were elevated initially in all experimental groups. The quantum of increase in serum biomarkers was lower in CCE diet-fed and <i>F. columnare</i>injected fish compared to challenged control. Also, the CCE diet-fed <i>L. rohita</i> resisted the <i>F. columnare</i> challenge and offered better immune protection in terms of immune parameters, viz., ROB activity, myeloperoxidase activity, phagocytic activity, in-vitro nitric oxide production, and lymphocyte proliferation compared to control diet-fed fish. All these immune parameters were found to be higher in CCE diet-fed groups. According to the qualitative ratings of wound progression and healing in <i>F. columnare</i>SGM4 infected fish, the CCE diet-fed at 10 mg/kg feed <i>L. rohita</i> experienced comparatively minimal wound and fast wound healing than the control group. These results suggested that the crude chloroform extract of <i>Centella asiatica</i> can improve the liver and kidney functions of <i>L. rohita</i> when challenged, able to heal wounds or injuries faster, and prime the immune cells to offer an immunomodulating effect. The use of CCE diet-fed at 10 mg/kg feed would help to combat the flavobacteriosis disease or related columnaris disease in carps.</p>
2	Ratnapriya Das	MFSc AAH	Effect of dietary supplementation of emamectin benzoate on the haematology and serum biochemistry of <i>Oreochromis niloticus</i> (Linnaeus, 1758)	<p>Appendix 2:Effect of dietary supplementation of emamectin benzoate on the haematology and serum biochemistry of <i>Oreochromis niloticus</i>(Linnaeus, 1758).</p> <p>The present study was executed to evaluate the effect of emamectin benzoate (EB)-dosing on healthy Nile tilapia <i>Oreochromis niloticus</i> juveniles at 0, 1 and 3 times the recommended dose (50 µg/kg biomass/day) for 7 and 14 consecutive days separately. A significant dose- and time-dependent reduction in feed intake and mortality was recorded. The 1X group had significant reductions in total erythrocyte counts, haemoglobin levels, haematocrit values, mean cell haemoglobin concentration (MCHC), and monocyte counts in 7 and 14 days of EB-dosing. Total leukocyte counts, thrombocyte, lymphocyte, and neutrophil counts increased significantly in both experiments. The increase in mean cell haemoglobin (MCH) value was, however, insignificant. The mean corpuscular volume (MCV) value hiked significantly within 7 days of the EB-dosing trial. Total erythrocyte counts, hemoglobin levels, MCV, lymphocyte, and monocyte counts normalized on day 35 post-EB-dosing. The haematocrit and MCHC values recovered on day 14 post-EB-dosing, whereas neutrophil counts recuperated on day 28 post-EB-dosing in 7 days dosing trial. Total leukocyte counts, neutrophil and monocyte counts, and MCV values became insignificant to the control on day 0 after 4 weeks post-EB-dosing in 14 days dosing trial. The erythrocyte cellular (crenated, teardrop-shaped, burst, vacuolated, elongated) and nuclear (micronucleus, elongated, notched, eccentric, lobed, binucleated) abnormalities increased in a dose- and time-dependent manner.</p>

Sl. No.	Name of the student	PG/ PhD	Title of the Research work	Outcome of the work
				The measurements of the cellular and nuclear larger axis, minor axis, volume, and surface area reduced upon dosing, which normalized after the cessation of dosing except for nuclear volume. During the EB-dosing, the 1X group experienced a substantial increase in serum glucose, alkaline phosphatase, alanine transaminase, aspartate transaminase, and creatinine levels, and a decrease in calcium, chloride ion, and acetylcholinesterase levels. The alkaline phosphatase and creatinine levels were recovered on day 28 post-EB-dosing and acetylcholinesterase levels normalized on day 35 post-EB-dosing on 7 days EB-dosing trial, whereas aspartate transaminase and creatinine levels recovered after 28 days of cessation of EB-dosing in 14 days EB-dosing trial. The results suggested that the use of dietary EB might be plausibly risky in tropical aquaculture.
3	SnigdhaKarmakar	MFScAAH	Surveillance of Tilapia Lake Virus (TiLV) in different aquaculture systems of the Sundarban region of India	The present study was executed on the surveillance of the Tilapia Lake Virus (TiLV) in different aquaculture systems of the Indian Sundarban area. A total of 30 tilapia farms from South 24 Parganas (n=28) and one each from North 24 Parganas and Hooghly districts were surveyed. Thirty-seven samples comprising <i>Oreochromis niloticus</i> (n=29) and <i>O. mossambicus</i> (n=8) were collected from the surveyed farms that included 5 disease cases. During the survey, randomly picked tilapias (n=5) were euthanized on the spot, collected the liver and brain tissues, were and preserved for PCR assays. The liver samples (n=2) were also collected from diseased fish and preserved in 10% Neutral buffered formalin for histopathological examination. The gross and clinical signs exhibited by the diseased <i>O. niloticus</i> were lethargy, erratic movement, cork swimming, scale erosion, pale gills, cuticle hemorrhages, exophthalmia, fin and tail erosion, and muscle hemorrhages. All 37 samples were subjected to molecular characterization by semi-nested PCR and qPCR. In the semi-nested PCR assay, 2 samples (6.90%) were TiLV positive in the 1st step and 17 samples (58.62%) were TiLV positive in the 2nd step. In qPCR assay, 13 samples (44.83%) were TiLV positive. The TiLV infection was found only in <i>O. niloticus</i> . The molecular results showed that 17 samples from the Indian Sundarban region tested TiLV positive, including 2 symptomatic cases (50%) and 15 asymptomatic cases (46.88%), thus confirming the prevalence of TiLV infection in the Indian Sundarban. The two TiLV positive samples of the 1st step semi-nested PCR were used for gene sequencing. The DNA sequences of the new TiLV strains, viz., TiLV, KRC-Hooghly, and TiLV, KRC-Namkhana were compared with similar published sequences of TiLV using the BLAST and phylogenetic tree constructed. The new TiLV strains had similarities and were closely related to TiLV CIFRI1 and CIFRI2 strains. Histopathological examinations of the diseased tilapia depicted typical TiLV alterations like multinucleated giant cell(s) or syncytial hepatitis. Implementations of good management practices, quarantine, eco-friendly approaches, development of an efficient vaccine, and introduction of SPF/SPR stocks are necessary to combat the outbreak and spread of the TiLV disease.
4	Ratul Chakraborty	MFSc AAH	Study on Ectoparasites of exotic carps in North and South 24 Parganas districts of West Bengal	Disease in exotic carps caused by various parasites is economically a significant problem in the North 24 Parganas and South 24 Parganas districts of West Bengal. The present study was carried out to find the prevalence and severity of different types of ectoparasites possibly found to infect the culture of exotic carps from the North and South 24 Parganas districts of West Bengal from May 2019 to April 2020. During the study period, eight different types of ectoparasites were observed and collected such as

Sl. No.	Name of the student	PG/ PhD	Title of the Research work	Outcome of the work
				<p><i>Thelohanellus</i> sp., <i>Trichodina</i> sp., <i>Argulus</i> sp., <i>Myxobolus</i> sp., <i>Acanthocephalan</i> sp., <i>Dactylogyrus</i> sp., <i>Gyrodactylus</i> sp. and <i>Epistylis</i> sp. Most of the fishes were infested with the ectoparasites in the gill, external body surface, and fins throughout the study period. <i>Argulus</i> sp. and <i>Trichodina</i> sp. showed maximum prevalence during May (2019) (PFI: 93.33% and 83.33% respectively). <i>Argulus</i> sp. was found to infest <i>Cyprinus carpio</i> with whitish gill and haemorrhages on the body. <i>Dactylogyrus</i> sp. and <i>Gyrodactylus</i> sp. showed peak prevalence during June – July (2019) months (PFI: 85.00% and 66.67% respectively). <i>Myxobolus</i> sp. showed high prevalence during November (PFI: 60.00%). Prevalence of <i>Thelohanellus</i> sp. (PFI: 88.00%) during September (2019) and (PFI: 80.00%) during August (2019). The cysts of <i>Thelohanellus</i> sp. and <i>Myxobolus</i> sp. were observed with other degenerative characteristics like gill discolouration and necrosis, tail and fin rot, and white spots on the gills, excessive sliming and petechial haemorrhages on the body surface. Statistically, the P-value less than 0.05 also proved that the ectoparasites had a great influence on the cultured exotic carps. Randomly selected parasites like <i>Argulus</i> sp. and <i>Thelohanellus</i> sp. were chosen for morphometric analysis and molecular identification through 18S rDNA analysis. In 1% agarose gel electrophoresis, approximately 1.9 kbp bands were obtained with 18S rDNA universal primers for parasitic isolates through PCR and approximately 1.6 kbp bands were obtained by PCR amplification for myxosporean isolates with specific primers for the family Myxobolidae. The study revealed that ectoparasitic infestations had great economic implications, especially in the winter months, and are one of the most prevalent problems in freshwater aquaculture systems.</p>

4.9.2.2 Department of Fishery Extension

Sl. No.	Name of the student	PG/ PhD	Title of the Research work	Outcome of the work
1.	Soumili Das	PhD	Fish Seed Production To Marketing: A Multidimensional Study In Bankura District of West Bengal	Average fry and fingerling production from the nursery were 1829.3 kg/year and 5892 kg/year respectively. The Benefit cost ratios of fry and fingerling productions were 1.25 and 1.24 respectively which indicated that the fish seed production is a profitable business in Bankura, West Bengal.
2.	Shilpa Sau	PG	Status of Commercial Aqua Drugs and Chemicals used in Aquaculture by Farmers of Purba Medinipur District in West Bengal	Majority of the farmers started using aqua chemicals/drugs between 4-9 years. Application dose of different aqua chemicals and drugs were found varied from farmer to farmer because inadequate awareness about chemicals and lack of extension effort of respective authority.
3.	Shuvam Roy	PG	Study on Socio-Economic conditions of Fisherfolk of selected blocks of Paschim Medinipur District, West Bengal	Constraints of fisherfolk of Paschim Medinipur was recorded and suggestions were given for socio-economic development of fisherflok community.
4.	Pramita Bera	PG	A Study of factors affecting knowledge of fish farmers about scientific fish farming practices in Purba Medinipur District, West Bengal	The majority of the fish farmers were having medium level of knowledge about scientific fish farming and variables like education, mass media exposure, extension agency contact and risk orientation were significantly correlated with knowledge level of fish farmers.
5.	Manoj Majhi	PG	Assessment of Knowledge, Attitude and Practice of Fishers toward Sustainable Fisheries Management in Bargi Reservoir, Jabalpur	Majority of fishers (51.0%) realized that the amount of fish in the lake was limited. Around 34.3% of fishers were confused about the fishing laws by the Government of India to regulate fishing activities.



4.9.3 FACULTY OF DAIRY TECHNOLOGY

4.9.3.1 Department of Dairy Chemistry

Sl. No.	Name of the student	PG/ PhD	Title of the Research work	Outcome of the work
1.	Mahasweta Bhattacharyya	PG	Process Optimization and Evaluation of Quality Characteristics of Nano-Zinc Fortified Tray-Dried Milk Powder	Development of Nano-Zinc fortified trayb dried milk powder
2.	Sarnamai Hansda	PG	Application and Characterization of Beet root, Turmeric and Pomgranate juice as bio colorants in Milk Beverage	Development of Milk beverage with biocolour
3.	Ritesh Kant	PG	Comparative studies on Low Fat Paneer enriched with different types of Fat replacers(Inulin and Whey Protein concentrate)	Development of Low Fat Paneer with Fat replacers

4.9.3.2 Department of Dairy Technology

Sl. No.	Name of the student	PG/ PhD	Title of the Research work	Outcome of the work
1.	Vinit Vitthal Jadhav	PG	Development of Chhana Kofta mix	Ready for commercialization

4.9.3.3 Department of Dairy Microbiology

Sl. No.	Name of the student	PG/ PhD	Title of the Research work	Outcome of the work
1	Ms. Shreya Saha	PG	Microbiological Profile and Characterization of Spoilage causing bacteria of Vacuum-packed market Paneer during Refrigerated Storage	Characterize major proteolytic and lipolytic spore forming bacteria

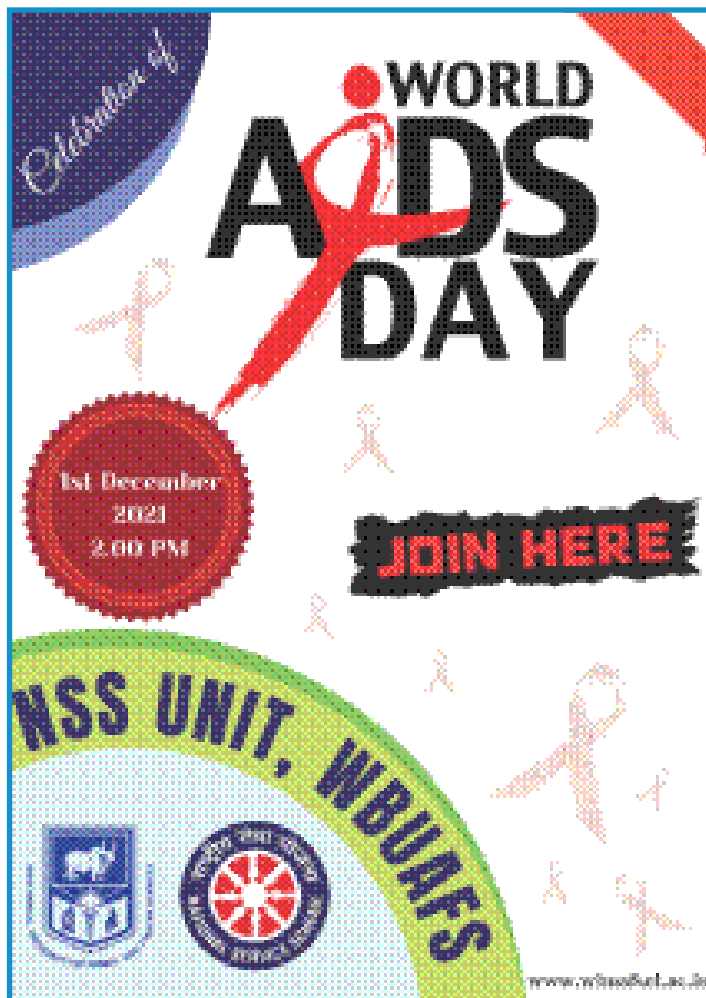
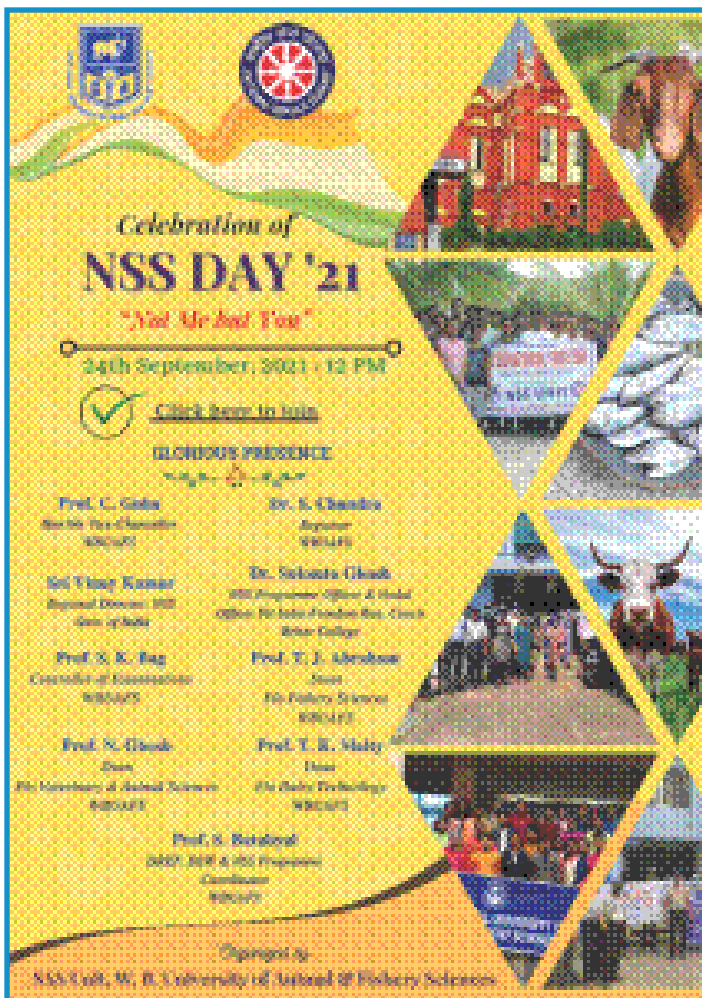
4.10 Achievements/ recognitions of the students :

Dean Students' Welfare and NSS unit of West Bengal University of Animal and Fishery Sciences organized different social, cultural and educational seminar, workshop, competition and awareness programmes throughout the year in virtual and offline mode to enrich the student fraternity of the university.

- “Green Cover & Plantation Program” was celebrated virtually on 5th June, 2021 in occasion of “**World Environment Day**”.
- “**International Day of Yoga**” was observed on 21st June, 2021 by NSS Unit, WBUAFS by organizing an online webinar along with various online competitions such as poster preparation, practise of different forms of Yoga (videography) and essay on Importance of Yoga to spread positive vibe about Yoga on our health. Prof. C. Guha, Hon'ble Vice-Chancellor inaugurated the programme. Sri Vinay Kumar, Regional Director, NSS, Govt. of India, Dr. B.P. Mohanty, Assistant director General, Inland Fishery, ICAR and Prof. Sukhen Biswas, NSS Programme Coordinator, University of Kalyani addressed the gathering in presence of all the NSS officials of our University and NSS volunteers.
- On 24th September, 2021 NSS unit, WBUAFS along with NSS Kolkata organized online seminar on the eve of **NSS Day**. The programme was inaugurated by the Hon'ble Vice-Chancellor in presence of Sri Vinay Kumar, Regional Director, NSS and Dr. Sukanta Ghosh, NSS Programme Officer & Nodal Officer 'Fit India Freedom Run' Cooch Behar College.
- On 3rd December, 2021 University organized a webinar in celebration of “**Agricultural Education Day**” to expose students including schools to various facets of agriculture and its relevance to country's development, inspire them and attract them towards agriculture.
- On 12th January, 2022 NSS unit, WBUAFS organized “**National Youth Day**” in virtual mode for the students to motivate

and guide them on the process to evolve in the online regime and to be good citizens of the country, which will make a better India in future.

- **Red Ribbon Club** was inaugurated in March, 2021 for conducting Red Ribbon Club activities through NSS in ten units in WBUAFS. WBSAP&CS, a branch of Department of Health and Family Welfare, Government of West Bengal, is the nodal organization in the state to coordinate all kinds of responses related to HIV and AIDS prevention and control, under the purview of WBSAP&CS, there are several divisions which look after all the three modes of prevention of HIV and AIDS.



- World AIDS Day was celebrated by NSS Unit, WBUAFS on 1st December, 2021. A seminar was organised where Dr. Pritam Roy, Public Health Expert, WHO neglected tropical diseases coordinator, West Bengal and Dr. S.N. Joardar, Professor, WBUAFS presented were invited as eminent speakers.
- Sailesh Mahapatra and Susmita Barman participated as Volunteers for **National Integration Camp** held at Jagannath Kishore College, Purulia, from 16th -22nd December, 2021
- The University NSS Unit celebrated “**Students’ Week**” from 1st January to 7th January 2022 by arranging various competitions among students like Poster making, Drawing, Patriotic Song, Non film song, Essay competition, Dance competition etc. More than 150 students participated in the competitions. Awards had been distributed to 1st, 2nd and 3rd position holders.

- 8th March, 2022 NSS unit, WBUAFS organized a poster competition in celebration of “**International Women’s Day**” to commemorate the cultural, political, and socioeconomic achievements of women on the theme “**Gender equality today for a sustainable tomorrow**”. Prof. C. Guha, Hon’ble Vice-Chancellor inaugurated the programme. Smt. Sanjukta Chakraborty, Special Secretary to the Govt. Of West Bengal, ARD Department and Dr. Sohini Dey, Principal Scientist IVRI, Dr. Debalina Mitra, Asst. Commissioner (AH, DAHD) Govt. Of India and Sri Vinay Kumar, Regional Director, NSS, Govt. of India addressed the gathering in presence of all the NSS officials of our University and NSS volunteers.

Celebration of
INTERNATIONAL
Day of Yoga

21st June, 2021, From 11.00 A.M.

[Click here to join](#)

Glorious Presence

 Prof. C. Guha Vice-Chancellor WBUAFS	 Dr. S. Chandra Registrar, WBUAFS
 Dr. B. P. Mohanty Assistant Director General Inland Fishery ICAR	 Prof. B. K. Das Dean F/o Fishery Sciences & DREF, WBUAFS
 Sri Vinay Kumar Regional Director, NSS Govt. of India	 Prof. T. K. Maity Dean F/o Dairy Technology, WBUAFS
 Prof. Sukhen Biswas NSS Programme Co-Ordinator University of Kalyani	 Prof. N. Ghosh Dean F/o Veterinary & Animal Sciences WBUAFS
 Prof. S. Batabayal DSW & NSS Programme Coordinator, WBUAFS	 Prof. S. K. Rout Head Dept. of Aquatic Environment Management FFSc, WBUAFS

Organized by :
NSS Unit, W. B. University of Animal & Fishery Sciences

Celebration of
INTERNATIONAL
Women's Day

8 March, 2022 .4.00 PM

Glorious Presence

 Prof. C. Guha Vice-Chancellor WBUAFS	 Prof. P. Das Registrar, WBUAFS
 Smt Sanjukta Chakraborty Special Secretary to the Govt of West Bengal, Animal Resources Development Department	 Sri Vinay Kumar Regional Director, NSS Govt. of India
 Dr. Sohini Dey Principal Scientist, Animal Biotechnology, ICAR-IVRI	 Dr. Debalina Mitra Assistant Commissioner (AH) , DAHD, Ministry of Fisheries, Animal Husbandry & Dairying , Govt. of India
 Prof. B. K. Das Dean Faculty of Fishery Sciences, WBUAFS	 Prof. N. Ghosh Dean Faculty of Veterinary & Animal Sciences, WBUAFS
 Prof. T. K. Maity Dean F/o Dairy Technology WBUAFS	 Prof. S. Batabayal DSW & NSS Programme Coordinator, WBUAFS

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Organized by
National Service Scheme Unit
West Bengal University of Animal & Fishery Sciences

- On 22 March, 2022, “**World Water Day**” was celebrated virtually in WBUAFS by NSS unit of the University to raise awareness of the global water crisis. “Groundwater: Making The Invisible Visible” was the theme of World Water Day 2022, proposed by IGRAC.

Some other achievements of the students during the year :

1.	Monanki Podder, Dept. of Livestock Production Management , University Gold Medalist, secured UPS Rank 3 in All India PhD entrance exam
2.	Amit Roy , Dept. of Livestock Production Management , University Gold Medalist, secured UPS Rank 2 in All India PhD entrance exam
3.	Dr. Dharmendra Singh, Dept. of Veterinary Anatomy appointed as Assistant Professor, Dept of Veterinary Anatomy in International Institute of Veterinary Education and Research, Rohtak, Haryana
4.	Dr. Md Habib, Dept. of Veterinary Biochemistry was selected as DST Inspire Fellow
5.	Dr. Nilabja Roy Chowdhury, Dept. of Veterinary Biochemistry qualified ICAR-AICE JRF/SRF Examination for pursuing PhD studies in the Division of Veterinary Biochemistry, IVRI. At present he is pursuing PhD in the Viral Oncology Laboratory at Azrieli Faculty of Medicine, Bar-Ilan University, Israel
6.	Dr. Nilabja Roy Chowdhury, Dept. of Veterinary Biochemistry
7.	Ms. Amla, Dept. of Veterinary Microbiology received ICAR fellowship for pursuing PhD
8.	Dr. Soumen Samanta, Dept. of Veterinary Microbiology placed as Technical Services Manager, Hester Bioscience, Kolkata HQ (NGO)
9.	Dr. S.M. Nanda, Ph.D. Scholar, Dept. of Veterinary & Animal Husbandry Extension Education qualified for UGC-NET in 2021.
10.	B Naveen Rajeswar, Dept. of Aquatic Animal Health qualified in AICE- JRF/SRF (PhD)- examination. He also won the Best Poster Presentation Award during the 1st Indian Fisheries Outlook, 2022 organized by CIFRI and PFGF at ICAR-CIFRI, Barrackpore based on the M.F.Sc thesis work entitled “Analysis of chromosome partition protein(<i>mukF</i>) of <i>Edwardiella</i> spp. - An <i>in silico</i> approach”.
11.	TokoYemin, Dept. of Fishery Extension was awarded National Fellowship and Scholarship for Higher Education of ST Students
12.	Sindhu Kavi S., Dept. of Fishery Extension was awarded ICAR NTS Scholarship
13.	Laboni Mondal, Dept. of Fishery Resources Management received best Poster Award in Fisheries Resource Management Technical Session in 1 st Indian Fisheries Outlook 2022 on “Priming Indian Fisheries in Attaining Sustainable Development Goals” held at ICAR-CIFRI, Barrackpore, during 22-24, March 2022
14.	Placement of students from Fishery Faculty : Dr. Rupam Samanta selected as Assistant Professor in the Department of Fisheries Resource Management, College of Fisheries, BASU, Kishanganj, Bihar. Ms. Sayani Hore, Dr. Shivam Saha, Dr. Anish Das, Ms. Laboni Mondol, Mr. Sandip Biswas, Mr. Chhotu Kisku, Mr. Rolen Roel Lepcha, Ms. Supriti Bain, Ms. Snigdha Bakshi, Mrs. Alifa Khatun, Mr. Arijit Das selected as Fishery Extension Officer in the Department of Fisheries, Government of West Bengal. Mr. Rajesh Debnath selected as Fishery Development Officer in the Department of Fisheries, Government of Assam. Ms. Subhashri Subhasmita Patra, selected as Assistant Fisheries Officer in the Department of Fisheries, Government of Orrisa Ms. Priyanka Kumari, selected as Fishery Extension Officer in the Department of Fisheries, Government of Bihar. Mr. Sandip Biswas qualified ICAR NET- 2021.



RESEARCH



5

RESEARCH

Research is an integral part of global development. The benefits of scientific research not only act as source of new ideas, techniques, innovation, and methods, across a wide range of disciplinary areas but also contributions to a trained workforce. It helps in providing a particular texture to the academic environment of the University. West Bengal University of Animal & Fishery Sciences carries out various research activities in the fields of Veterinary & Animal Husbandry, Dairy Technology and Fishery Sectors. WBUAFS activities are now being expanded to span newer and limiting areas of research to build the partnership between the farmers and dedicated academics and scientific research as the basics for sustainable livestock, dairy and fishery development in the country in general and in the region in particular. Directorate of Research, Extension & Farms unit of WBUAFS plays a key responsibility in providing focused attention in guiding and coordinating research activities of various departments and centers of the universities.

At present the University is conducting 22 various research projects/schemes with a fund allocation of about Rs. 1230.65 lakhs sponsored by different funding agencies like ICAR, State Govt. departments, DBT, DST and other institutes of national repute.

5.1 FACULTY-WISE DISTRIBUTION OF RESEARCH PROJECTS

Sl.No.	Faculty	No. of projects	Fund allocation
1	Veterinary and Animal Sciences	14	Rs 471.88 lakhs
2	Fishery Sciences	4	Rs 39.57 lakhs
3	Dairy Technology	1	Rs 469.82 lakhs
4	DREF	3	Rs 249.38 lakhs
Total		22	Rs 1230.65 lakhs

5.2 FACULTY-WISE COMPLETED RESEARCH PROJECTS

Sl.No.	Faculty	No. of projects	Fund allocation
1	Veterinary and Animal Sciences	4	122.09 lakhs

5.3 TYPE OF ON-GOING PROJECTS AND FUNDING AGENCIES

Sl.No.	Type of Project	Funding Agency	Numbers
1	All India Coordinated Research Project (AICRP)	ICAR	1
2	All India Network Project (AINP)	ICAR	2
3	Department of Biotechnology (DBT)	Govt. of India	5
4	Dept. of Higher Education, Science & Technology and Biotechnology (DHESTBT)	Govt. of WB	1
5	Department of Science and Technology (DST)	Govt. of India	4
6	Department of Science & Technology and Biotechnology (DSTBT)	Govt. of WB	1
7	ICAR project	ICAR	1
8	Medical Research Council, UK	UK	1
9	NAHEP	ICAR-World Bank	1
10	Industry	Unique Biotech Ltd.	1
11	PMMSY	GoI	1
12	ICSSR	ICSSR, New Delhi	1
13	NISAGENET	ICAR	1
14	State Govt.	WBCADC under P& RD Deptt., Govt. of WB	1

5.4 BRIEF LISTING OF ON-GOING PROJECTS

5.4.1 FACULTY OF VETERINARY AND ANIMAL SCIENCES

Sl. No	Title of the Project	Funding Agency	Principal Investigator and Department	Fund Sanctioned	Year of initiation
1	AICRP on Goat Improvement, Black Bengal Field Unit-Kolkata.	ICAR, GoI and Govt. of West Bengal (75:25 Ratio)	Dr. Manoranjan Roy (From Nov'2016)	Rs. 26.00 Lakhs for 2021-2022	2000
2	A transcriptional approach to identify biomarkers of susceptibility and/or resistance to tuberculosis in native and crossbreed cattle	DBT, GoI.	Dr. Uttam Sarkar	Rs 76.15 Lakhs for 3 yrs	2020
3	Studies on Supplementation of Selenium Yeast on Growth Performance, Immunity and Meat Quality in Broiler Chickens.	Unique Biotech Ltd.	Prof. B. Roy, Animal Nutrition	Rs 5.96 lakhs	2019
4	Improved Health Management Strategies in Duck Rearing: A Boon to Farmers' Income	Department of Science & Technology and Biotechnology	Dr. S. N. Joardar	Rs 12.50 Lakhs	2019
5	Potentiality of phytobiotics to counter prevalent bacteria vis-a-vis to replace use of antibiotics in poultry diet in West Bengal	WB-DST / DHESTB	Dr. Indranil Samanta	Rs 18,79,800	2017
6	A multi-stakeholder approach towards Operationalizing Antibiotic Stewardship in India's pluralistic rural health system (OASIS is the acronym of the project)	Medical Research Council (UK)	Dr. Indranil Samanta	Rs 60,00000	2019
7	DBT Network Programme On Bovine Tuberculosis Control: Mycobacterial Diseases in Animals Network (MyDAN) Program	DBT, Govt. of India	Dr. Partha Sarathi Jana	Rs 109.262 lakhs	2018
8	Development of virus like particle-based vaccine against Indian isolate of Porcine circovirus	Department of Biotechnology, Ministry of Science and Technology, Government of India New Delhi, India	Dr H K Maity	Rs 7737970.00	2021
9	Profiling and identifying early pregnancy-related circulating microRNA signature in goat (<i>Capra hircus</i>)	Department of Science and Technology	Ayan Mukherjee	Rs 15 Lakh	2021
10	Monitoring of drug residue and environmental pollutants	ICAR	Dr. T.K. Mandal	Rs 6.75 lakh	2010
11	Development of doped bioactive glass coated eggshell membrane for diabetic burn wound healing	SERB, DST, Govt. of India	Prof. Samit Kumar Nandi	52.64787 lakhs	2022
12	"Development of Polypyrrole Coated Mg alloys for Degradable Fracture Fixation Devices" File Number: CRG/2020/002818 dated 30.12.2020	SERB, DST, Govt. of India	As Co-PI Prof. Samit Kumar Nandi	Rs. 3.3 lakhs	2020
13	Engineering nature inspired peptide-based nanomedicine for blood clotting and wound healing" [BT/PR27059/NNT/28/1543/2017]	DBT, Govt. of India	As Co-PI Prof. Samit Kumar Nandi & Dr. P. Mukherjee	Rs 6.37112 lakhs	2019

Sl. No	Title of the Project	Funding Agency	Principal Investigator and Department	Fund Sanctioned	Year of initiation
14	“Injectable nanofibrous carriers as next generation in situ biometric 3D matrix for cartilage repair”	SERB	Prof Sarbani Hazra	Rs 214500/-	2021

5.4.2 FACULTY OF FISHERY SCIENCES

Sl. No	Title of the Project	Funding Agency	Principal Investigator and Department	Fund Sanctioned	Year of initiation
1	National Surveillance Programme for Aquatic Animal Health (NSPAAD)	PMMSY- GoI	Prof. Gadadhar Dash, Aquatic Animal Health	Rs 10,56,750/-	1 st July 2021
2	All India Network Project on Fish Health	ICAR	Dr. T. J. Abraham, Aquatic Animal Health	Rs 14.50 Lakhs	2015-16
3	All India Network Project on Mariculture	ICAR	Prof. B.K. Das, Deptt. Of Aquatic Environment Management	Rs 7.00 Lakhs	2015
4.	Addressing Skill Gap in the FPO Ecosystem in Eastern and North Eastern Parts of India	ICSSR, New Delhi	Dr. BiswarupSaha	Rs 7.5 lakhs	2022

5.4.3 FACULTY OF DAIRY TECHNOLOGY

Sl. No	Title of the Project	Funding Agency	Principal Investigator and Department	Fund Sanctioned (In lakhs)	Year of initiation
1	Strengthening Post-Graduate Education and Outreach Programmes at Faculty of Dairy Technology, West Bengal University of Animal and Fishery Sciences, Kolkata, West Bengal	ICAR - WORLD BANK	Dr. Lopamudra Halder, Dairy Microbiology	469.82	2019

5.4.4 DIRECTORATE OF RESEARCH, EXTENSION & FARMS

Sl. No	Title of the Project	Funding Agency	Principal Investigator and Department	Fund Sanctioned (In lakhs)	Year of initiation
1	National Information System on Agriculture Education network in India (NISAGENET)	ICAR	Dr. (Mrs.) S. Das, Scientist, DREF	3.08	2005
2	Expansion of Activities of Biotech-KISAN Hub in Five Aspirational Districts (Nadia, Murshidabad, Birbhum, Maldah and South Dinajpur	DBT, Govt of India	Dr. K.C. Dhara, Asstt. Director (Farms), DREF	239.2	2019
3	New product development & quality improvement of meat & value added meat products by using different antioxidants, extenders & other functional additives	WBCADC under P& RD Deptt., Govt. of WB	Dr. Sudip Kumar Das, Assistant Director of Research	Rs. 7,09,940/-	2021

5.5 BRIEF LISTING OF COMPLETED PROJECTS (2021-22)

Sl. No	Title of the Project	Funding Agency	Principal Investigator and Department	Fund Sanctioned (In lakhs)	Duration
1	Comparison of two phytase form in broilers	Danisco Animal Nutrition, UK	Dr. G.P. Mandal, Department of Animal Nutrition	USD 8888.00	From 04.07.2018 to 31.03.2022

Sl. No	Title of the Project	Funding Agency	Principal Investigator and Department	Fund Sanctioned (In lakhs)	Duration
2	Development of fish collagen-doped bioactive glass electrospun mats/fibers for diabetic wound healing” [BT/HRD/35/1/01/2019 dated 27.3.2019]	DBT, Govt. of India	Prof. Samit Kumar Nandi	Rs 27.0 lakhs	From 1.4.2019 to 31.3.2022
3	Developing nanoformulation of crystalline protein for rendering neuroprotection and cytoprotection to cornea and retina. DST Nanomission,	DST Nanomission Govt of India.	Prof Sarbani Hazra	53 lakhs	From 2018 to 2021
4	Developing new strategies for prevention of corneal blindness in dogs.	DBT, Govt of India	Prof Sarbani Hazra	35 lakhs	From 2018 to 2021

5.6 SALIENT ACHIEVEMENTS OF ON-GOING PROJECTS

5.6.1 HIGHLIGHTS OF THE PROJECTS CONDUCTED IN THE FACULTY OF VETERINARY AND ANIMAL SCIENCES

AICRP on Goat Improvement, Black Bengal Field Unit-Kolkata.

The project “AICRP on Goat Improvement, Black Bengal Field Unit-Kolkata” is under operation at ten villages of five different districts under five Agro-Climatic Zones of West Bengal. During last five years the population of Black Bengal Goat and stakeholders in goat keeping under the project areas is increased 52.93% and 10.25% respectively. Consistent improvement of body weight at birth (6.35%), 6 month (8.44%), 9 month (5.31%) and 12 month (2.47%) as well as daily body weight gain (ADG) is achieved by using superior bucks. Number of multiple birth is increased and the average litter size is reached to 1.87 (Twinning-64.18%, singlet-25.02%, triplet-9.93%, quadruplet-0.68% and quintuplet-0.19%). The mortality rate was reduced to only 3.55 % which consecutively increased the flock size of Black Bengal goat to 8.97. Farmers earned more from goat rearing (Rs 25850.33±.926.06 annually). The estimated Feed Conversion Ratio (FCR) from birth to 6 month, birth to 9 month, and birth to 12 month of age was 6.98±0.05, 10.39±0.08 and 10.39±0.08 respectively. FAMACHA anaemic recording system has also introduced for goats. Some inputs like feeding pot, mosquito net, torch light, and chappal is also distributed to tribal and SC farmers. Technologies related to goat keeping were transferred to the adopted farmers through different capacity building programmes. Goat exhibition and competition was conducted in all adopted cluster with suitable prize to winners for maintaining superior germplasm. Research paper and Leaflets has been published. Linkages with Government bodies, KVK and NGO’s are maintaining for overall development of Bengal Goat farmers in the State.



Successful farmers under the project



Training under the project

Success Story : Duli Hansda of Jhargram Cluster (Adopted under “AICRP on Goat Improvement, Black Bengal Field Unit-Kolkata”)

Duli Hansda, D/o Dubraj Hansda of Manapara village, P.O.- Aguibuni, Block - Jhargram, Dist.- Jhargram is a registered tribal farmer under “AICRP on Goat Improvement, Black Bengal Field Unit-Kolkata” since 2015. She is actively associated with goat rearing apart from her household and agricultural activities. She is illiterate and only 15 Katha of land. She adopted various improved knowledge for goat rearing like proper feeding (i.e. grazing with supplementary feeding of tree leaves, fodders, concentrate, bottle feeding of kids), selective breeding, health care (i.e. regular deworming, preventive vaccination and mineral supplementation), management (i.e. use of bamboo made platform, mosquito net etc.) and marketing of her goats which leads to very little mortality in her flock. She is well aware about the body weight of her flock and goats are now sold on live weight basis directly to the buyers or in some cases through local market which in turn generates more prices to her. Initially she had only 3 goats (Doe - 1 & Kid - 2) and earned Rs 2,000/- annually from goat rearing. With the intervention of AICRP activities, the flock strength is now reached to 10 nos. (Doe-4 and Followers-6) in 2022 with reasonable growth of her animals and annual income of Rs 33,500/-. The income generated from goat rearing enabling her to solve miscellaneous family needs, construction of house and treatment of family members.



2. A transcriptional approach to identify biomarkers of susceptibility and/or resistance to tuberculosis in native and crossbred cattle

A number of PCR methodology were developed to identify as well as differentiate mycobacterial (MTBC, NTM, MTB, BTB) DNA from animal derived samples by a multiplex PCR reactions. The inhouse developed PCR methodology was used for the assessment of animal samples. Comparative evaluation of IFN- response of PBMC from native (Sahiwal) and crossbred (Sahiwal x HF) to M.tb. (Ra), M. Bovis BCG infection as well as stimulation with Bovine Tuberculin (bPPD), Avian Tuberculin (aPPD), WCL (Mtb whole cell lysate) CW (cell wall extract) and LAM (Mtb Lipoarabinomannan) revealed significant difference in IFN- response only in the cases of MTB, BTB and bPPD stimulation. Further experiments are undergoing to evaluate immune responsiveness to specific mycobacterial antigen proteins.

3. Comparison of two phytase form in broilers

Supplementation of phytase (750 FTU/kg) to metabolizable energy (ME), digestible amino acids, Ca and P- deficient diet significantly improved broiler growth performance and bone mineralization.

4. Improved Health Management Strategies in Duck Rearing: A Boon to Farmers' Income (West Bengal State DST & BT sponsore scheme)

The present study was carried out to investigate the antimicrobial resistance pattern of ESBL and biofilm producing gram negative bacteria such as Escherichia coli, Salmonella spp. and Klebsiella pneumoniae from cloacal and environmental sample of ducks and prevalence of Salmonella spp. in duck eggs collected randomly from different districts/agro-climatic zones of West Bengal. The salient achievements are as follows-

Isolation and identification of *Escherichia coli* and *Salmonella* spp. from Duck cloacal swab, Tracheal swab and Environment (Feed, Soil & Water) sample

A total of 129, 136, 79 and 15 *Escherichia coli*, *Salmonella* spp., *Klebsiella* spp. and *Klebsiella pneumoniae* isolates were presumptively identified based on their morphology and colony characteristics on specific media. All the *Escherichia coli* isolates showed pink color colonies in MacConkey agar and distinctive green metallic sheen in Eosin Methylene Blue (EMB) agar. Whereas all the *Salmonella* spp. isolates appeared reddish color in Selenite F broth and showed red colonies with black centre in Xylose-Lysine Deoxycholate (XLD) agar, and the *Klebsiella* spp. isolates showed magenta color colonies in Klebsiella selective agar.

Confirmation of *Escherichia coli* and *Salmonella* spp. by detection of *16s rRNA* gene by PCR

- Out of 129 isolates, 118 (91.47%) *Escherichia coli* isolates were confirmed to possess the *16s rRNA* gene (585 bp) specific for *Escherichia coli*.
- Out of 136 isolates, 98 (72.06%) *Salmonella* spp. isolates were confirmed to possess the *16s rRNA* gene (1428 bp) specific for this genus.

Confirmation of *Klebsiella* spp. and *Klebsiella pneumoniae* by detection of *gyrA* and *16s rRNA* gene by PCR

- All 79 isolates were confirmed to possess the *gyrA* gene (441 bp), and out of these, 15 (18.98%) isolates were confirmed to possess the *Klebsiella pneumoniae* specific *16s rRNA* gene (130 bp).

Detection of Biofilm producing *Escherichia coli* and *Salmonella* spp. isolates

- A total of 107 (90.68%) *Escherichia coli* and 85 (86.73%) *Salmonella* spp. isolates was found positive for the *csgA* gene with a PCR amplified product of 178 bp.
- A total of 97 (82.20%) *Escherichia coli* and 79 (80.61%) *Salmonella* spp. isolates was found positive for the *sdiA* gene with a PCR amplified product of 239 bp.
- A total of 92 (77.97%) *Escherichia coli* and 72 (73.47%) *Salmonella* spp. isolates was found positive for the *rpoS* gene with a PCR amplified product of 120 bp.
- A total of 99 (83.90%) *Escherichia coli* and 78 (79.60%) *Salmonella* spp. isolates was found positive for the *rcsA* gene with a PCR amplified product of 306 bp.

Detection of Biofilm producing *Klebsiella* spp. isolates

- A total of 53 (67.08%) *Klebsiella* spp. isolates was found positive for the *csgA* gene with a PCR amplified product of 178 bp.
- A total of 59 (74.68%) *Klebsiella* spp. isolates was found positive for the *sdiA* gene with a PCR amplified product of 239 bp.
- A total of 53 (67.08%) *Klebsiella* spp. isolates was found positive for the *rpoS* gene with a PCR amplified product of 120 bp.
- A total of 53 (67.08%) *Klebsiella* spp. isolates was found positive for the *rcsA* gene with a PCR amplified product of 306 bp.

Table: Distribution of the Biofilm genes in different samples

Type of Biofilm genes	Bacteria	Types of sample(Swab)			Total
		Cloacal	Tracheal	Environmental	
csgA	<i>E. coli</i>	44	51	12	107
	<i>Salmonella</i> spp.	44	34	7	85
	<i>Klebsiellaspp.</i>	46	00	7	53
	Total	134	85	26	245
sdiA	<i>E. coli</i>	43	43	11	97
	<i>Salmonella</i> spp.	44	31	4	79
	<i>Klebsiellaspp.</i>	50	00	9	59
	Total	137	74	24	235
rpoS	<i>E. coli</i>	41	42	9	92
	<i>Salmonella</i> spp.	38	31	3	72
	<i>Klebsiellaspp.</i>	46	00	7	53
	Total	125	73	19	217
rcsA	<i>E. coli</i>	45	45	9	99
	<i>Salmonella</i> spp.	41	32	5	78
	<i>Klebsiellaspp.</i>	45	00	8	53
	Total	131	77	22	230

Table: Zone wise distribution of the Biofilm genes in different bacteria

Bacteria	Genes	Coastal Saline Zone		Gangetic Alluvial Zone	
		No. of isolated bacteria	No. of positive Biofilm gene isolate	No. of isolated bacteria	No. of positive Biofilm gene isolate
<i>E. coli</i>	csgA	77	70	41	37
	sdiA		67		30
	rpoS		62		30
	rcsA		67		32
<i>Salmonella</i> spp.	csgA	64	53	34	32
	sdiA		53		26
	rpoS		44		28
	rcsA		50		28
<i>Klebsiella</i> spp.*	csgA	Not done	00	79	53
	sdiA		00		53
	rpoS		00		53
	rcsA		00		53

* All these isolates are from Gangetic Alluvial Zone

Detection of Extended Spectrum β -Lactamase (ESBL) and AmpC β -Lactamase (ACBL) producing *Escherichia coli* and *Salmonella* spp. isolates

- ❖ A total of 51 (43.22%) *Escherichia coli* and 20 (20.41%) *Salmonella* spp. isolates was found to possess the *bla_{SHV}* gene with a PCR amplified product of 795 bp.
- ❖ A total of 85 (72.03%) *Escherichia coli* and 68 (69.39%) *Salmonella* spp. isolates was found to possess the *bla_{TEM}* gene with a PCR amplified product of 1080 bp.

- ❖ A total of 38 (32.20%) *Escherichia coli* and 28 (28.57%) *Salmonella* spp. isolates was found to possess the *bla*_{CTX-M} gene with a PCR amplified product of 540bp.
- ❖ A total of 97 (82.20%) *Escherichia coli* and 43 (43.88%) *Salmonella* spp. isolates was found to possess the *bla*_{AmpC} gene with a PCR amplified product of 634 bp.

Detection of Extended Spectrum β -Lactamase (ESBL) and AmpC β -Lactamase (ACBL) producing *Klebsiella* spp. isolates

- ❖ A total of 26 (32.91%) *Klebsiella* spp. isolates was found to possess the *bla*_{SHV} gene with a PCR amplified product of 795bp.
- ❖ A total of 46 (58.23%) *Klebsiella* spp. isolates was found to possess the *bla*_{TEM} gene with a PCR amplified product of 1080bp.
- ❖ A total of 35 (44.30%) *Klebsiella* spp. isolates was found to possess the *bla*_{CTX-M} gene with a PCR amplified product of 540bp.
- ❖ A total of 64 (81.01%) *Klebsiella* spp. isolates was found to possess the *bla*_{AmpC} gene with a PCR amplified product of 634 bp.

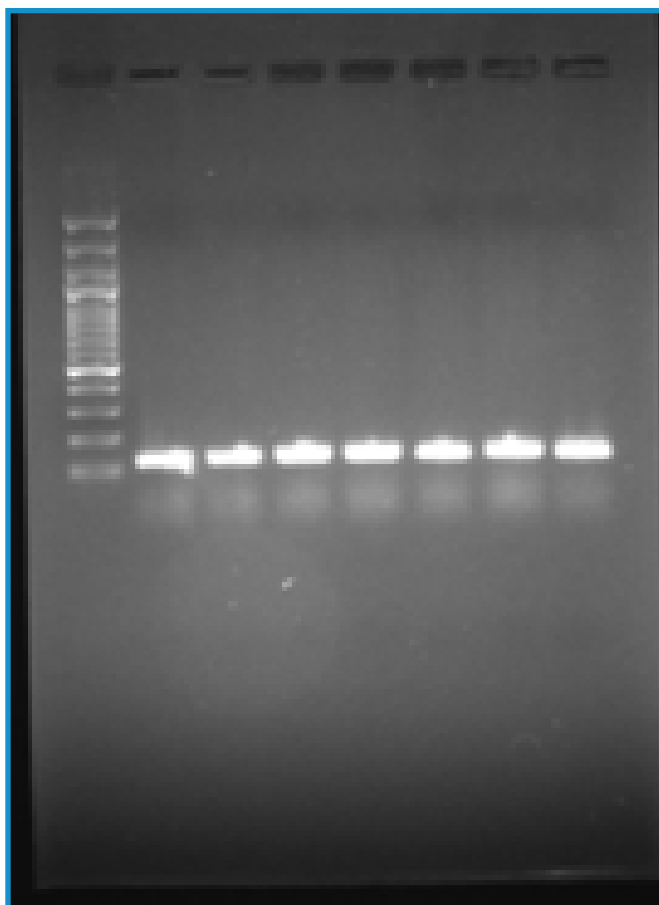
Table: Distribution of the ESBLs and ACBL genes in different samples

Type of ESBL/ACBL genes	Bacteria	Types of sample			Total
		Cloacal	Tracheal	Environmental	
<i>bla</i> _{SHV}	<i>E. coli</i>	25	24	2	51
	<i>Salmonella</i> spp.	07	12	1	20
	<i>Klebsiella</i> spp.	22	00	4	26
	Total	54	36	07	97
<i>bla</i> _{TEM}	<i>E. coli</i>	33	41	11	85
	<i>Salmonella</i> spp.	33	30	05	68
	<i>Klebsiella</i> spp.	39	00	07	46
	Total	105	71	23	199
<i>bla</i> _{CTX-M}	<i>E. coli</i>	20	14	04	38
	<i>Salmonella</i> spp.	08	18	02	28
	<i>Klebsiella</i> spp.	28	00	07	35
	Total	56	32	13	101
<i>bla</i> _{AmpC}	<i>E. coli</i>	39	48	10	97
	<i>Salmonella</i> spp.	16	24	03	43
	<i>Klebsiella</i> spp.	58	00	06	64
	Total	113	72	19	204

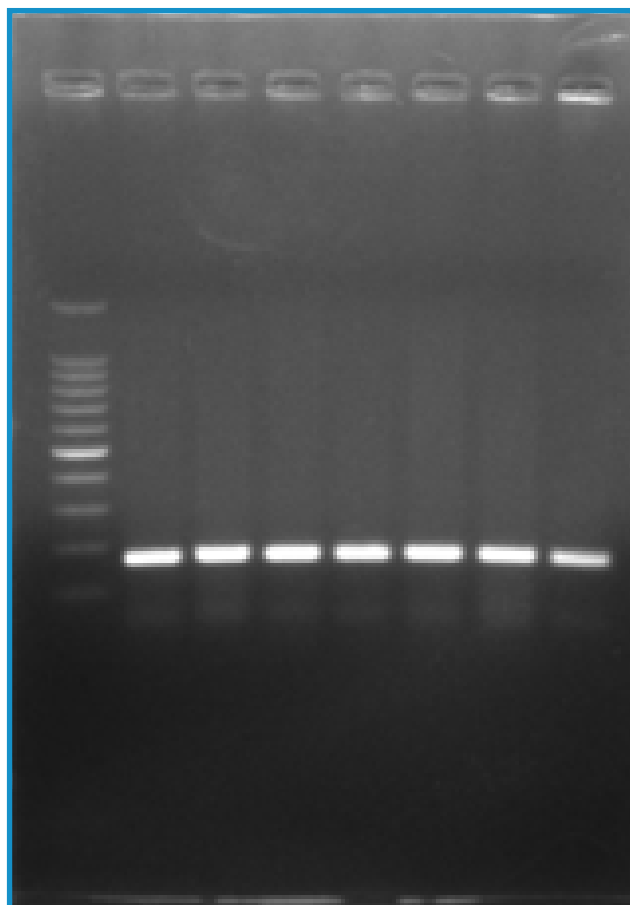
Table: Zone wise distribution of the ESBLs and ACBL genes in different bacteria

Bacteria	Genes	Coastal Saline Zone		Gangetic Alluvial Zone	
		No. of isolated bacteria	No. of positive Biofilm gene isolate	No. of isolated bacteria	No. of positive Biofilm gene isolate
<i>E. coli</i>	<i>bla_{SHV}</i>	77	37	41	14
	<i>bla_{TEM}</i>		54		31
	<i>bla_{CTX-M}</i>		28		10
	<i>bla_{AmpC}</i>		63		34
<i>Salmonella</i> spp.	<i>bla_{SHV}</i>	64	11	34	09
	<i>bla_{TEM}</i>		42		26
	<i>bla_{CTX-M}</i>		12		16
	<i>bla_{AmpC}</i>		18		25
<i>Klebsiella</i> spp.*	<i>bla_{SHV}</i>	Not done	00	79	26
	<i>bla_{TEM}</i>		00		46
	<i>bla_{CTX-M}</i>		00		35
	<i>bla_{AmpC}</i>		00		64

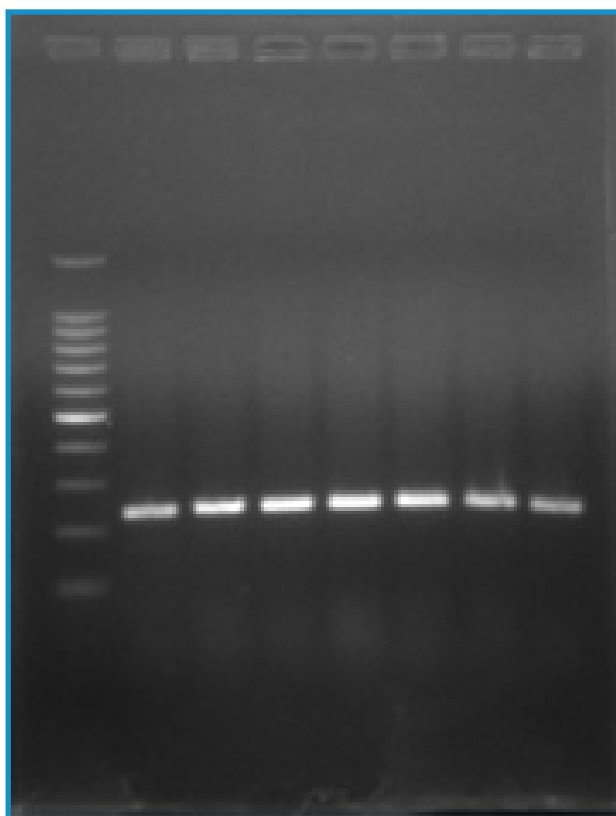
*All these isolates are from Gangetic Alluvial Zone



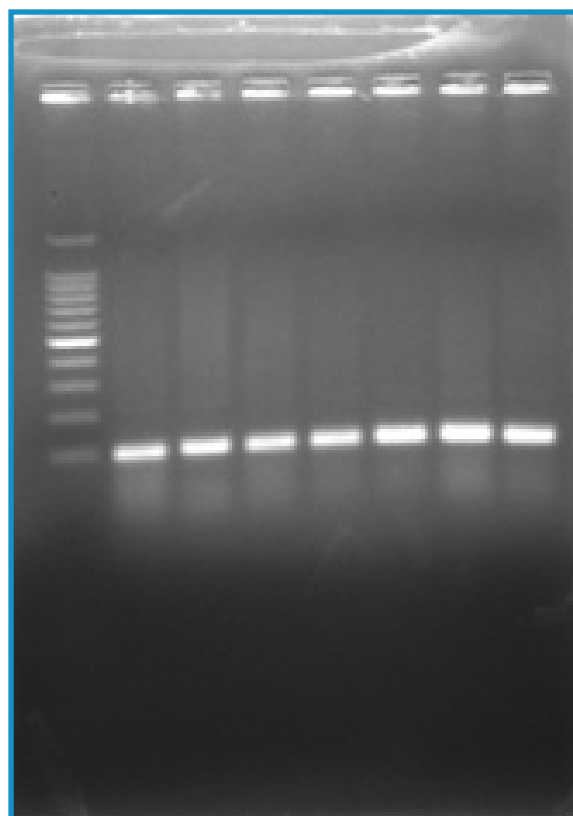
Agarose gel electrophoresis of PCR amplified product (130bp) of *Klebsiella pneumoniae* specific *16S rRNA* gene



Agarose gel electrophoresis of PCR amplified product (178bp) of *csgA* gene



Agarose gel electrophoresis of PCR amplified product (239bp) of *sdiA* gene



Agarose gel electrophoresis of PCR amplified product (120bp) of *rpoS* gene

5. Potentiality of phytobiotics to counter prevalent bacteria vis-a-vis to replace use of antibiotics in poultry diet in West Bengal

In poultry industry antibiotics are used in diet in sub-therapeutic level to prevent illness which may select for antimicrobial resistance in the commensal bacteria present in the gut. An urgent need to develop an alternative approach for the poultry farmers was felt because the antibiotic resistant bacteria are emerging as a potent health threat in the community. In the proposed project an attempt will be taken to develop a phytobiotic which can act against the common pathogenic bacteria of poultry. The study was conducted whether addition of the phytobiotic in diet of experimental poultry could maintain the normal growth performance and whether it has any effect on intestinal microbial population.

Salient achievements

- Occurrence of *Salmonella* and *E. coli* was higher in healthy poultry than cattle and pigs in studied samples collected from West Bengal
- Moderate occurrence of *Klebsiella* was detected in studied healthy pigs in West Bengal
- AmpC gene was detected as most prevalent antimicrobial resistance genes among the studied ESBL and AmpC-producing *E. coli* and *Salmonella* isolates followed by CTX-M in poultry and cattle in West Bengal
- *bla*_{CTX-M} was detected as most prevalent antimicrobial resistance genes among the studied ESBL and AmpC-producing *E. coli* isolates in pigs
- *Ocimum sanctum* Linn. (50 mg/ml) and *Nyctanthes arbor-tristis* (50 mg/ml) were found better effective than *Spondiadelphis*, *Solanum torvum*, and *Bryophyllum pinnatum* against ESBL-producing *E. coli* isolated from poultry

- Nano-Zinc having the particle sized ranged within 90-100 nm (20 mg/ml) produced good anti-bacterial activity against ESBL-producing *E. coli* isolates from poultry
- MIC values of studied plant extracts and nano-particles against ESBL-producing *E. coli* were detected
- Effects of dietary supplementation of selected phytobiotics (*Ocimum sanctum* Linn. and *Nyctanthes arbor-tristis*) on intestinal microbial population, growth, nutrient utilization and feed conversion efficiency of poultry was detected. Four hundred and twenty broiler chickens of 1 day of age were randomly divided into 6 treatments with 7 replicates of 10 birds each. Feeding of *Ocimum sanctum* Linn. reduced pathogenic gut bacterial population, increased beneficial bacterial population and increased growth, feed conversion efficiency of the birds.

6. A multi-stakeholder approach towards Operationalizing Antibiotic Stewardship in India's pluralistic rural health system (OASIS is the acronym of the project)

A multi-institutional project was initiated by Dr Indranil Samanta with London School of Hygiene and Tropical Medicine (LSHTM), Royal Veterinary College (RVC), Institute of Development Studies, UK; Public Health Foundation of India regarding value chain analysis of antibiotic usage in human and animals. The work started with formative research in two rural locations in district South 24 Parganas in West Bengal. During this phase qualitative interview of the stakeholders was conducted to know use of antibiotics in animals, mapping the pharmaceutical supply and value chains for human and animal antibiotic use. It was followed by stakeholder analysis, mapping community platforms for behavioral communication. A participatory study with the animal health care providers in West Bengal was conducted to find out the effect of COVID on animal health care services. The project team has held extensive consultations with groups of veterinary, medical, pharmaceutical and high-level government stakeholders. All groups have strongly recommended clear areas for interventions including development of tier-wise guideline for antibiotic use in human and livestock health starting with para-professionals (*these do not exist currently for paraveterinarians*). Moving forward with these recommendations, the project team has constituted two Expert Committees to work with the project team on developing a set of guidelines focusing primary level of the health care system for human and livestock health. The syndromic triage guidelines developed for common clinical conditions in backyard livestock will help paraprofessionals (paraveterinarians) to identify symptoms, refer to a formal veterinary professional when appropriate and determine when and how to optimize use of antibiotics. A feasibility study for guideline use will be conducted in a selected district in West Bengal to determine acceptability, ease of use, and practicality of the Syndromic Antibiotic Use Guidelines.



Team OASIS with PI (Dr Meenakshi Gautham, LSHTM, UK) and Co-PI (Dr Indranil Samanta, WBUAFS, Kolkata) with all the fellows and students working in the rural West Bengal



Interaction of PI, OASIS Project (Dr. Indranil Samanta) and Fellow (Mr. Suparna Munsu) with paraveterinarian in a Government animal health center



Interaction of PI, OASIS Project (Dr. Indranil Samanta) and Fellow with informal human health care provider in rural settings

7. DBT Network Programme On Bovine Tuberculosis Control: Mycobacterial Diseases in Animals Network (MyDAN) Program

Pre-slaughter screening of the representative cattle brought for slaughtering at the Govt. run Slaughterhouse under Kolkata Municipal Corporation, Tangra by SCCIT and IGRA is being done. And PM samples of the representative cattle after slaughter are also collected for isolation, identification and molecular characterization of MTBC as well as for histopathological studies. Sensitivity and specificity of all the tests employed for diagnosis of bovine tuberculosis both ante-mortem and post-mortem are being determined.

8. Development of virus like particle-based vaccine against Indian isolate of Porcine circovirus

In this study, preliminary studies were done with the PCV2d_ Indian isolate capsid sequence (orf2) was selected from for synthesis with codon optimization for *Spodoptera frugiperda* cells (total length 776bp). The sequence has been optimized for baculovirus expression system and modified at the 5' end and 3' end by adding respective restriction site and primer sequence. The synthesized orf2 sequence was amplified by PCR. The synthesized sequence subsequently cloned into pOPINE vector to produce recombinant plasmid containing PCV2d capsid sequence (orf2), as pOPINE_orf2 recombinant plasmid. The cloned pOPINE_orf2 recombinant plasmid successfully expressed in baculovirus expression system in Ao38 cell line which was confirmed by western blot. The current result clearly suggests that the expression of PCV2d_orf2 is possible in insect cell.

9. Profiling and identifying early pregnancy-related circulating microRNA signature in goat (*Capra hircus*)

In the initial phase of the project in Black Bengal does have been selected on the basis of body weight, number of pregnancy, health condition. Artificial insemination process has been standardized in NDRI, Kalyani farm. With the aim to identify pregnancy biomarker in goat several blood samples have been collected aseptically from the pregnant and non-pregnant goat and stored for downstream molecular biology works



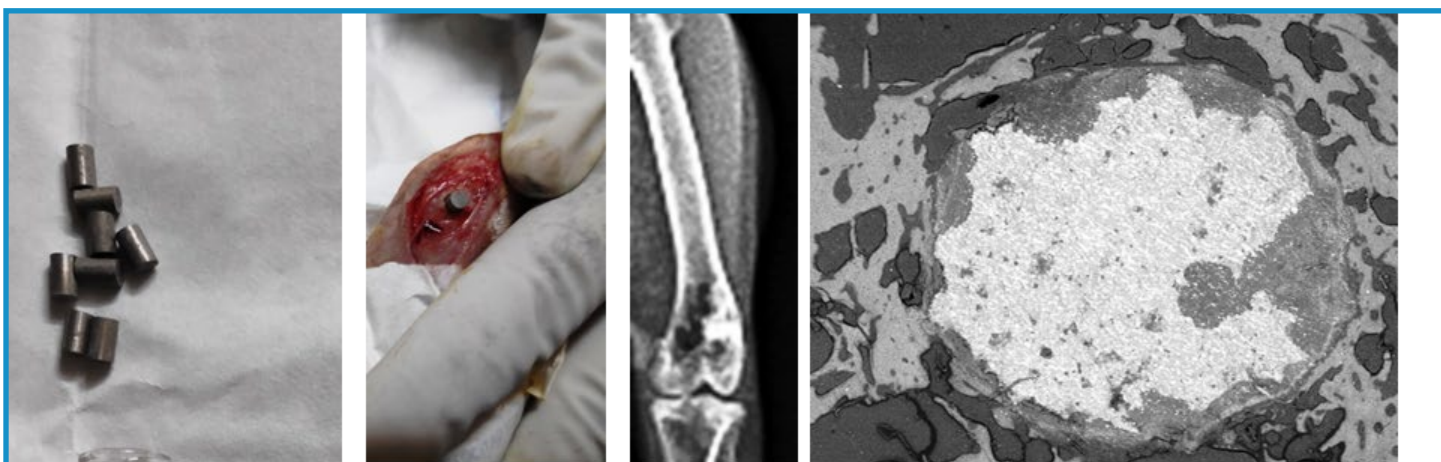
A. Selected Black Bengal does at NDRI, Kalyani farm. B. Insertion of vaginal speculum
C. Artificial insemination D. Collection of blood samples

10. Monitoring of drug residue and environmental pollutants

Development of analytical technique for sulphaquinoxaline residue in animal substrates

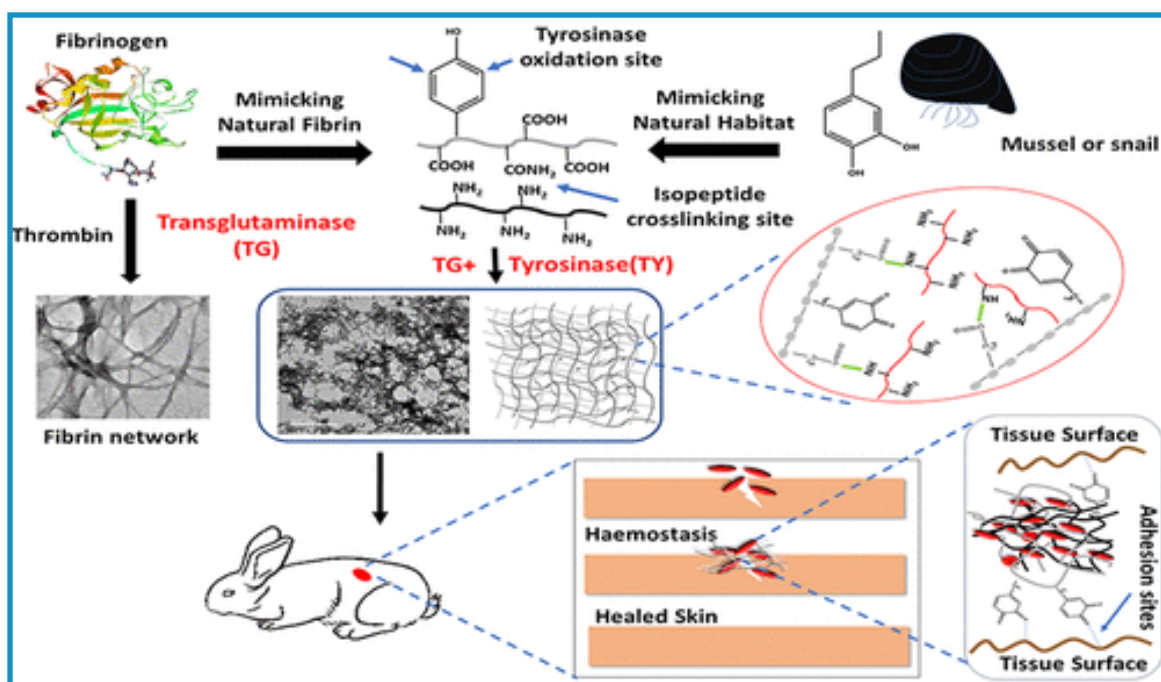
11. Development of Polypyrrole Coated Mg alloys for Degradable Fracture Fixation Devices

The project is in budding stage. We have carried out in depth animal trial with Mg based alloy implants with their detailed characterization based on radiology, histology, fluorochromelabelling, scanning electron microscopy and micro-CT. The implants show good biocompatibility and bone regeneration properties.



12. Engineering nature inspired peptide-based nanomedicine for blood clotting and wound healing

We report an engineered adhesive peptide-based hybrid regenerative medicine, sealant 5, which is designed integrating the structural and functional features of fibrin and mussel foot-pad protein. Though fibrin and sealant 5 have exhibited comparable efficacy in suture-free wound closure, *in vivo* H&E staining images have revealed infiltration of very few immune cells as well as the presence of abundant collagen formation in the case of sealant 5-treated wound. Such nature-inspired non-immunogenic sealants offer exciting possibilities for the treatment of uncontrolled bleeding *vis-à-vis* wound closure.



Technologies generated in the Department:

Sl.No.	Name of the technology	Name of the technology developer	Date of technology development	Outcome (commercialization/ patent etc.) of the technology developed
1	Development of affordable wound dressing patch based on fish collagen-ion doped bioactive glass	Samit Kumar Nandi, Biswanath Kundu, Sonali Jana, Prabal Ranjan Ghosh and Pradyot Datta.	2020-21	Indian Patent submitted on 19.04.2021. Fish collagen-doped bioactive glass electrospun mats/fibers for diabetic wound healing and the process of preparing the same. Application No. 202131017968 CBR No. 5926.
2	Development of Peptide based tissue sealant	Snehasis Biswas, Vinod Kumar, V. Kishore, Rituparna Sinha Roy, Samit Kumar Nandi.	2019-20	Indian Patent submitted 2019. Peptide based tissue sealant, Process and Application thereof Application no. 201831040193

5.6.2 HIGHLIGHTS OF THE PROJECTS CONDUCTED IN THE FACULTY OF FISHERY SCIENCES

1. All-India Network project on Fish Health

Objective: Safety of florfenicol and determination of withdrawal period in *Oreochromis niloticus*

A total of 21 strains of fish bacterial pathogens were used for the determination of MICs and MBCs against florfenicol (FFC). The range of MICs and MBCs were 0.60-1.25 and 1.25-2.50 $\mu\text{g/mL}$ for *A. hydrophila*, 0.30-0.60 and 1.25-2.50 $\mu\text{g/mL}$ for *E. tarda*, and 0.08-0.30 and 0.30-0.60 $\mu\text{g/mL}$ for *E. ictaluri*. The safety of dietary FFC at 5 different doses, viz. 0-10 times the therapeutic dose at 15 mg/kg biomass/day for 10 consecutive days in Nile tilapia *Oreochromis niloticus* was evaluated. A dose-dependent increase in mortalities, clinical biochemistry, and reduction in feed intake and biomass was noted. The residues of FFC and its metabolites increased on day 10 of feeding in a dose-dependent manner and reduced thereafter with the suspension of feeding. The withdrawal period of FFC in *O. niloticus* was calculated as 6 days based on the MRL of 1 $\mu\text{g/g}$. Histologically a dose-dependent alterations such as degeneration of renal tubules, degeneration of renal tubular epithelium, hydropic swelling, vacuolation, necrotized renal tubule, glomerulopathy with dilated Bowman's space and mineralization in the kidney, glycogen-type vacuolation, cytoplasmic vacuolation, cytoplasmic degeneration, and cellular hypertrophy in the liver, epithelial hyperplasia, epithelial lifting, curling and swollen tips of secondary lamellae and erosion of secondary lamellae in the gills, increased sinusoidal space

and splenic necrosis in the spleen and loss of absorptive vacuoles, swollen lamina propria, mucinous degeneration, degenerated epithelial layer and necrosis of absorptive region in the intestine were noted in FFC dosed *Oreochromis niloticus*. With the cessation of FFC dosing, an improvement in the tissue histoarchitecture was noted in all organs.

2. National Surveillance Programme for Aquatic Animal Health (NSPAAD)

Significant achievements from July 2021 to March 2022:

- Documented the prevalence of OIE listed diseases such as (IMNV) and diseases of National concern such as Argulosis, Lernaeosis, Aeromoniasis, Vibriosis, *Edwardsiella tarda*, and some other diseases like nutritional & environmental problems like CMS in *L. vannamei*, Exophthalmia in *Anabas testudineus*, Tumor in *Carassius auratus* and Tilapia Lake Virus (TiLV) in West Bengal. A total of 13 nos. of diseases had been identified among them, bacterial 03, parasitic 04, viral 02, nutritional disorders 01, Stress mediated diseases 03.
- 4 districts (5 blocks each) are fully covered under active surveillance. 04 districts (approx. 15 blocks) are covered under passive surveillance.
- A total of 04 nos of training (farmer's level) were made [NFDB/MANAGE funded].
- Total 01 no of Fish and Shrimp Disease Calendar was prepared.
- 02 nos of PG students completed their thesis work under the NSPAAD program.
- 01 no. of book chapter has been published by Bhumi Publishing House, Kolhapur Maharashtra.
- The PI has attended 07 nos of webinars as participant and 05 nos as a Resource Person for various organizations of repute. The two research scholars have attended 07 nos of webinars as participants each and one as a resource person in one of the webinars during the present reporting period.
- Submitted 32 nos of biological information sheets have been deposited, of which 30 nos finfish biological information sheets and 02 crustacean biological information sheets to the NSPAAD website for the development of the National Database. This information includes both fish and shellfish.
- Prevalence of Tilapia Lake Virus (TiLV) from South 24 Parganas, North 24 Parganas, and Hooghly in *Oreochromis niloticus* and *Oreochromis mossambicus* [Both Active and Passive areas].
- Farm Advisory services through Whatsapp, messages, e-mail, TV programmes (DD Bangla & other channels) & over the telephone to the farmers/hatchery personnel's/NGOS/Private entrepreneurs through whom a strong rapport has been developed among the fish/shrimp farming community and also with the Govt. Machinery

5.6.3 HIGHLIGHTS OF THE PROJECT CONDUCTED IN THE FACULTY OF DAIRY TECHNOLOGY

1. Strengthening Post-Graduate Education and Outreach Programmes at Faculty of Dairy Technology, West Bengal University of Animal and Fishery Sciences, Kolkata, West Bengal

NAHEP (IG) Project

- a) **Infrastructure Development:** Under on-going NAHEP (IG) project following infrastructures have been developed for maintaining environmental safeguard and ensuring clean and green campus.

Waste Pit and Waste Shed: A waste pit and waste shed were constructed for ensuring safety of the environment and clean and green campus.

- b) **Capacity Building Programme** – Due to partial restriction imposed to combat Corona pandemic, various online capacity building programmes have been conducted.



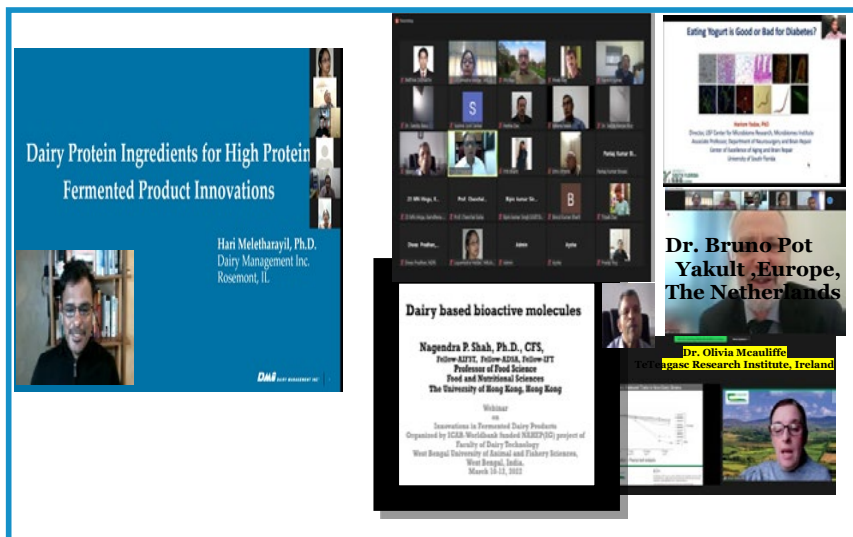
i. ONLINE LECTURE SESSION:

- **Virtual Lecture Session** on ‘Advances in **Milk Fat Adulterants Detection**’ was delivered by Dr. Vivek Sharma, PS, DC Division, ICAR-NDRI, Karnal on 05.10.2021. Total No. of Participants were 63.
- **Special virtual Lecture Series** on ‘**Technological Aspects of Cheese Processing**’ was delivered by Dr. Bikash Chandra Ghosh, PS (Retired), and Prof. Emiretus DT Division, ICAR-NDRI, SRS, Bangaluru .Total No. of Participants was 63.
- **Alumni Lecture** session on ‘Value Chain, Pricing and Product Commercialization’ by **Mr. Ipsit Chakrabarti**, Managing Director, PZ Wilmar, Lagos, Nigeria on 14.05.2021. Total No. of Participants was 53.
- **Alumni Lecture** session on ‘**Technical Advancement in Milk Powder Technology and Energy Saving Analysis**’by **Mr. Arjun Sarkar**, Senior Technical Engineer, SSP Pvt. Ltd. on 12.09.2021. Total No. of participants was 62.

ii. **VIRTUAL NATIONAL WORKSHOP:** A six days National Workshop on “Starter Cultures for Fermented Dairy Products” was conducted under NAHEP at F/O DT, WBUAFS from 17.01.2022 to 22.01.2022. During 6 days 8 resource persons from different research Institutes and Industries of National repute delivered theoretical lectures along with practical knowhow of the relevant area. Total No. of Participants was 308.

iii. NATIONAL / INTERNATIONAL WEBINAR:

- A National Webinar on “Valuing Mental Health” was organized on 20.08.2021. Dr. R. C. Agrawal, ND, NAHEP & DDG (Education), ICAR was the Chief Guest. Swami Atmapriyananda, Pro-Chancellor, RKM, VERI, Belur Math, Howrah; and Dr. Prama Bhattacharya, Assistant Professor, Jindal School of Psychology and Counseling, O.P. Jindal Global University, Haryana were the speakers. About 134 participants joined the programme.



- A National Webinar was organized on National Milk Day-2021 (26.11.2021) to commemorate Birth Centenary of Late. Dr. Verghese Kurien. The theme was “Dynamic Dairy Cooperative–Farmer’s Delight” . Mr. Bijin Krishna, IAS, MD, West Bengal Milk Federation was the chief guest. Dr. Hema Tripathi, NC, NAHEP (M&E and IG), ICAR, New Delhi was the Guest of Honour. Dr. S.M. Deb, Head, ICAR-NDRI, ERS, Kalyani graced the programme as the Special Guest. Hon’ble Vice-Chancellor, Prof. Chanchal Guha presided over the programme in presence of the Dean, F/O DT, Prof. T.K, Maity.
- An International Webinar on “Innovation on Fermented Dairy Products” ‘**Ferminnovation-2k22**’ was organized from 10th March – 12th March, 2022. Total of 11 eminent Speakers from different national and International Institutes and Industries presented lectures. Six panelists in Plenary sessions also contributed their vision. Total of 204 participants attended the three days webinar.

iv. OUTREACH PROGRAMME:

- Four days On-line training programme on “Milk products development for augmenting income” was arranged from 27.09.2021 to 30.09.2021. In this outreach program total of 50 rural and urban youths especially those who

belong to underprivileged section received training and encouragement for initiating/ enhancing entrepreneurial activities with milk and milk products.

- **One 5 days Hands On Training Programme** on “Milk products development for augmenting income’ was organized from 21.03.22 to 25.03.22 at F/O Dairy Technology. Total of 25 participants received training successfully.

5.6.4 HIGHLIGHTS OF THE PROJECT CONDUCTED IN THE DIRECTORATE OF RESEARCH, EXTENSION & FARMS

1. National Information System in Agricultural Education Network of India (NISAGENET)

The National Information System on Agricultural Education Network in India (NISAGENET) portal is under continuous monitoring at the Central Server of IASRI, New Delhi under the supervision of NISAGENET team, IASRI. The main objective of this project is to generate different types of reports on agricultural education in India. The nodes are provided with unified information system for collection, compilation and modification of data which are later analysed and compiled at the Central unit to portray about the activities of the agricultural education system in India. The portal provides a wide spectrum of information relevant to the SAUs and Deemed universities under ICAR.

NISAGENET Cell was established at West Bengal University of Animal and Fishery Sciences in January, 2005 to update and upload information about the University on the NISAGENET portal server.

The NISAGENET system as a whole works on collection, compilation and analysis of information about the activities of the agricultural education system in India. It provides all the information as desired by National Statistical Commission (NSC-2001) from the data available at Central Server. The statistical data is also being provided to Ministry of HRD from IASRI, New Delhi, as per requirement from time to time.

2. Expansion of Activities of Biotech-KISAN Hub in Five Aspirational Districts (Nadia, Murshidabad, Birbhum, Maldah and South Dinajpur)

Biotech-KISAN Hub Programme is linking available Science & Technology to the farmers of Five Aspirational Districts (Nadia, Murshidabad, Birbhum, Maldah and South Dinajpur) of West Bengal, through understanding their problems and to provide a suitable alternative solution for their better livelihood implemented in West Bengal University of Animal and Fishery Sciences from January 2020 on the basis of sanction order of DBT vide no BT/KIS/123/SP35985/2019 Dated 29.11.2019. The achievement has so far been observed under the project (till 31st March, 2022) is described below. At the beginning, a survey about the socio-demographic picture, socio-economic status, adoption of technology, knowledge level and constraints faced in animal husbandry and fishery practices has been made to assess the problems of the local farmers for linking available Science & Technology and thereby to provide an alternative solution for their better livelihood. Out of the survey 2100 numbers of farmers are being selected as beneficiaries of Bio-Tech KISAN Hub. 48 nos. of Farmers’ training programme on scientific animal husbandry and scientific aquaculture practices with suitable curriculum for capacity building of the small and marginal farmers of Aspirational districts has been organized using both physical and virtual platform. Total 5260 farmers have been trained from Aspirational Districts (Birbhum- 1146, South Dinajpur- 871, Maldah- 1241, Murshidabad- 1042 and Nadia- 960). Out of the total trained farmers 3237 farmers are farm women, 421 farmers are tribal and 580 farmers are marginal farmers. 1723 nos. of farm women have been provided fellowship of an amount of Rs 1000/- per head for cope up their farm need. Through application of different FLDs like application of region specific Mineral Mixture supplementation, Deworming with specific Anthelmintics, Vaccination for Goat against PPR, and Goat Pox, Vaccination for Poultry, Fodder cultivation and Application Lime in divided dose for water treatment, A total of 30063 nos of farmers of Aspirational districts have been benefitted out of which 21663 nos are farm women. Establishment of modern and mechanized slaughter house for hygienic Chevon and Chicken production and Sale counter for marketing of these biotech kisan hub products was made for promoting entrepreneurship development. A complete integrated model farm with fish and duck at Germplasm Centre, Mohanpur has been established and ornamental fish culture unit was also developed to demonstrate and inspire small and marginal farmers. Development of modern Poultry hatchery for Vanraja Chicks was made at Murshidabad

KVK for the benefit rural stake holders for hatching of their egg. Superior quality of Black Bengal Goat (2505 nos.), 28 Days' old Vanraja chicks (20,375 nos.) and quality fingerlings of Indian major carps (1,80,000 nos) has been distributed among 2100 beneficiaries of these aspirational districts and average economic gain achieved as 41.19% total economic gain (Rs 47,325 per year) annually and enhancement of population strength of livestock and fish among these farmers as 172% has been observed in just two years after implementation of the project activities. Such enhancement in economic gain in a short period is considered as a glimpse of and it surely expected to be more in future days. A total 11 FPOs and 110 FIGs have been constituted for effective entrepreneurship development. Documentary film on sheep and goat production has been in local language for promotion of knowledge among the stake holders of biotech kisan hub. Fortnight publication of Farm journal "KISAN Barta" has been published regular basis for the farmers of West Bengal. In the event of 75 years of Independence 'Azadi Ki Amrit Mohotsav', a series of programme has been planned to organize to reach nearly 5000 farmers in 5 districts. Publication of two research papers (entitled 'Impact of training on Sheep and Goat production among the farm women of Sundarban of West Bengal', 'Study on Socio-Economic Status and Constraints Faced by the Livestock Farmers of the Aspirational Districts of West Bengal, India' and new website btktraining.in for conducting training programme easily, regular contact with farmers through social media Facebook, Whatsapp, Youtube channel and mobile app are being made as ICT to fulfill the objectives.



Photograph of field level Farmers' training programme

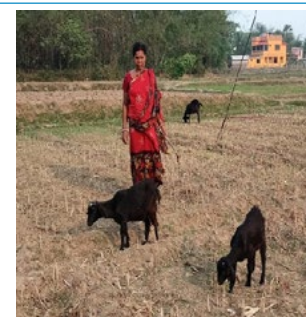


Photographs showing different activities

Inspiring Success Stories of Women Farmers

Empowering and investing in rural women is also pre-requisite to fulfilling the vision of the Sustainable Development Goals that aims to end poverty and hunger, protect the environment, improve health parameters and empower all women. This fact is reflected in the inspiring stories of women among five Aspirational districts (Nadia, Murshidabad, Birbhum, Maldahh and South Dinajpur) who have fought legal, social and cultural obstacles to bring about significant social and economic reforms in their family. The inspirational success stories of some of the women farmers through small ruminant, poultry and fish farming are collated below:

Name of Farmer	Smt. Archana Mal
Address	Village- Daranda, Illambazar Block, Birbhum
Gender	Female
Age	48yrs
Caste	SC
Education	Class VIII
Landholding	Agricultural land 4Bigha,(250.24 Decimal) Non-Agricultural land 10 katthas (31.28 Decimal)
Marital status	Married
Occupation	Housewife
No of Family member	8



1. Smt. Archana Mal

INTRODUCTION:

Daranda village, a remote part of Illambazar Block, located at Birbhum, district is the promising part of this Aspirational district for goat husbandry which is surrounded by forest of West Bengal witnessed a success story in small ruminant particularly Black Bengal Goat rearing has witnessed a success story of a backward female farmer with her small ruminant particularly Black Bengal goat rearing which has created a milestone and will definitely prove helpful in inspiring and ensuring participation of other farmers (men/women) for their social and economic upliftment. Smt. Mondal told that “I am doing goat farming as a source of income, but non availability of quality goats, the high cost of inputs and associated health hazards have always been a worry, but after the activities of Biotech KISAN hub started, all the problems have been resolved.

INTERVENTION OF BIOTECH KISAN:

She had actively participated in training organized by the Mission mode Programme of DBT, Govt of India entitled “Establishment of Biotech-KISAN Hub” at the West Bengal University of Animal and Fisheries Sciences in Kolkata. She was successfully trained with scientific goat husbandry including different managerial practices, housing and overall management, selection and breeding strategy/practices for breed improvement, health care and management, feeding practices, formulation and dispensation of balanced feed mixture for bucks and does, common diseases of goats and their treatment, various contagious diseases and their prevention by vaccination, importance and economic benefit of various milk and meat products, different methods of identification in goats etc. She had become selected as beneficiaries of **Biotech KISAN Hub** programme for her livelihood improvement. As per mandate of the project, Smt. Archana Mal had provided 3 nos. of quality Black Bengal does and one buck obtained from Germplasm centre of the project. Moreover, she had also purchased 6 nos does for her own cost.

ACHIEVEMENTS:

At present she has 15 Black Bengal goats, does and one buck. She has opened her own bank account in local branch of cooperative bank. Being a member of a FPO, she has used to sell her farm products and invest her earnings in her bank account. In addition, apart from that, Smt. Archana Mal has purchased 10 kottahs (31.28 **Decimal**) of agricultural land in her village and made two roomed brick house worth Rs 20,000/- approximately through selling Black Bengal Goat which considered to be a remarkable success of a house wife of Aspirational districts through Bio Tech KISAN Hub by reaching unreached area of the district for direct linkage between science laboratories and farms and obtaining alternative livelihood options through small Ruminant especially Black Bengal Goat. It has also been observed that her average annual family economic gain in terms of family income is 77.16%. Her achievement in such a short time sounds remarkable and serves as good example for those who want to be an entrepreneur of small ruminant.

Initial Flock Strength	Initial sellable flock (Annual)	Animal provided by Biotech KISAN hub	Animal purchased	Total animal	Total Flock Strength	Annual total sellable flock strength	Total Flock Strength (%)	Annual total sellable flock strength (%)
3	5	4	6	13	15	21	176.92	320

Before initiation of project 1.5 years after implementation of project work Annual enhancement

Per family Annual return from Goat (Rs)	Total Annual income per family (Rs)	Per family Annual return from Goat (Rs)	Total Annual income per family (Rs)	Per family Annual return from Goat (%)	Total Annual income per family (%)
8,200.00	55,600.00	34,000.00	98500.00	314.63	77.16

IMPACT ON OTHER FARMERS:

She is recognized as a progressive farm woman and Master Trainer among others farm women in the district. Being a master trainer, she has been regularly providing training to the fellow farmers of her locality about scientific goat husbandry. She also provides her quality buck for mating does of other goat owners with nominal charges which reduced the possibility of inbreeding. She is now a source of inspiration for all the women and other farmers of the locality who are learning scientific goat husbandry practices for improving their livelihood. More than 100 neighboring women farmers have adopted quality goat rearing due to Smt. Archana Mal's success. Her experience has changed local perceptions about Black Bengal goat in the remote area of Birbhum District.

2. Farida Bibi

INTRODUCTION:

Mrs. Farida Bibi is another good example of scientific Black Bengal Goat rearing success story as a result of Biotech-KISAN intervention. She is a farmer of a Raghunathpur village, near Nakashipara Block is the remote part of Nadia District of West Bengal surrounded by river and forest has witnessed another success story in small ruminant particularly Black Bengal Goat rearing as their livelihood. She was a house wife but now she is a successful entrepreneur in her locality which is the poorest part in the district. Her story creates a motivational opportunity among the farmers of the entire area.

Name of Farmer	Mrs. Farida Bibi
Address	Vill Raghunathpur Block- Nakashipara, Nadia.
Gender	Female
Age	45yrs
Caste	ST
Education	Class VIII
Landholding	Agricultural land 2Bigha(125.12 Decimal), Non-Agricultural land 5katthas(15.64 Decimal)
Marital status	Married
Occupation	Housewife
No of Family member	6



INTERVENTION OF BIOTECH KISAN:

During the year 2019-2020, the implementation of the Biotech KISAN hub activities in Nadia District, she was trained on scientific goat rearing and provided package of practices. She has learnt about productivity, enhancement activities such as better feeds, vaccinations, de-worming, improved castration methods, formal marketing channels and hygienic shelters through the qualified experts of the University and ICAR. The training has helped, Mrs. Farida Bibi to benefit at all levels of the value chain the Biotech KISAN Hub team had gave her 3 quality Black Bengal does and one buck obtained from the Germplasm centre of the project. She has also invested some own contribution and purchased 4 additional does from the local market. Quality feed, Mineral mixture supplementation, periodically health check-up and vaccination have also been provided by the project team apart from regular supervision.

ACHIEVEMENTS:

Mrs. Farida Bibi is now a progressive goat farmer of Raghunathpur with herd capacity of 11 Black Bengal does and one buck. As a member of FPO, she can get better price. The scientific goat rearing has enabled her to enhance her profitability resulting into savings in the form bank deposit and purchase of 10 gm gold ornaments. The substantial earnings also enabled her to renovate her residence with brick walls amounting of Rs. 80,000/- approximately. Her average annual family economic gain has been found to be 73.15%.

Initial Flock Strength	Initial sellable flock (Annual)	Animal provided by Biotech KISAN hub	Animal purchased	Total animal	Total Flock Strength	Annual total sellable flock strength	Total Flock Strength (%)	Annual total sellable flock strength (%)
3	6	4	4	11	14	18	190.91	200

Before initiation of project 1.5 years after implementation of project work Annual enhancement

Per family Annual return from Goat (Rs)	Total Annual income per family (Rs)	Per family Annual return from Goat (Rs)	Total Annual income per family (Rs)	Per family Annual return from Goat (%)	Total Annual income per family (%)
7,800.00	51,400.00	29,000.00	89000.00	271.79	73.15

IMPACT ON OTHER FARMERS:

The story of Mrs. Farida Bibi is motivating to other women goat farmers to become entrepreneurs. Since the goat meat is in great demand for the preparation of favourite local cuisines, her success has motivated her fellow villagers especially the womenfolk to rear Black Bengal goats as a means of nutritional and livelihood security and generation of additional income. A large numbers of farmers from adjoining areas have visited her goat farm and have been inspired to follow the scientific goat rearing practices.

3. New product development & quality improvement of meat & value added meat products by using different antioxidants, extenders & other functional additives

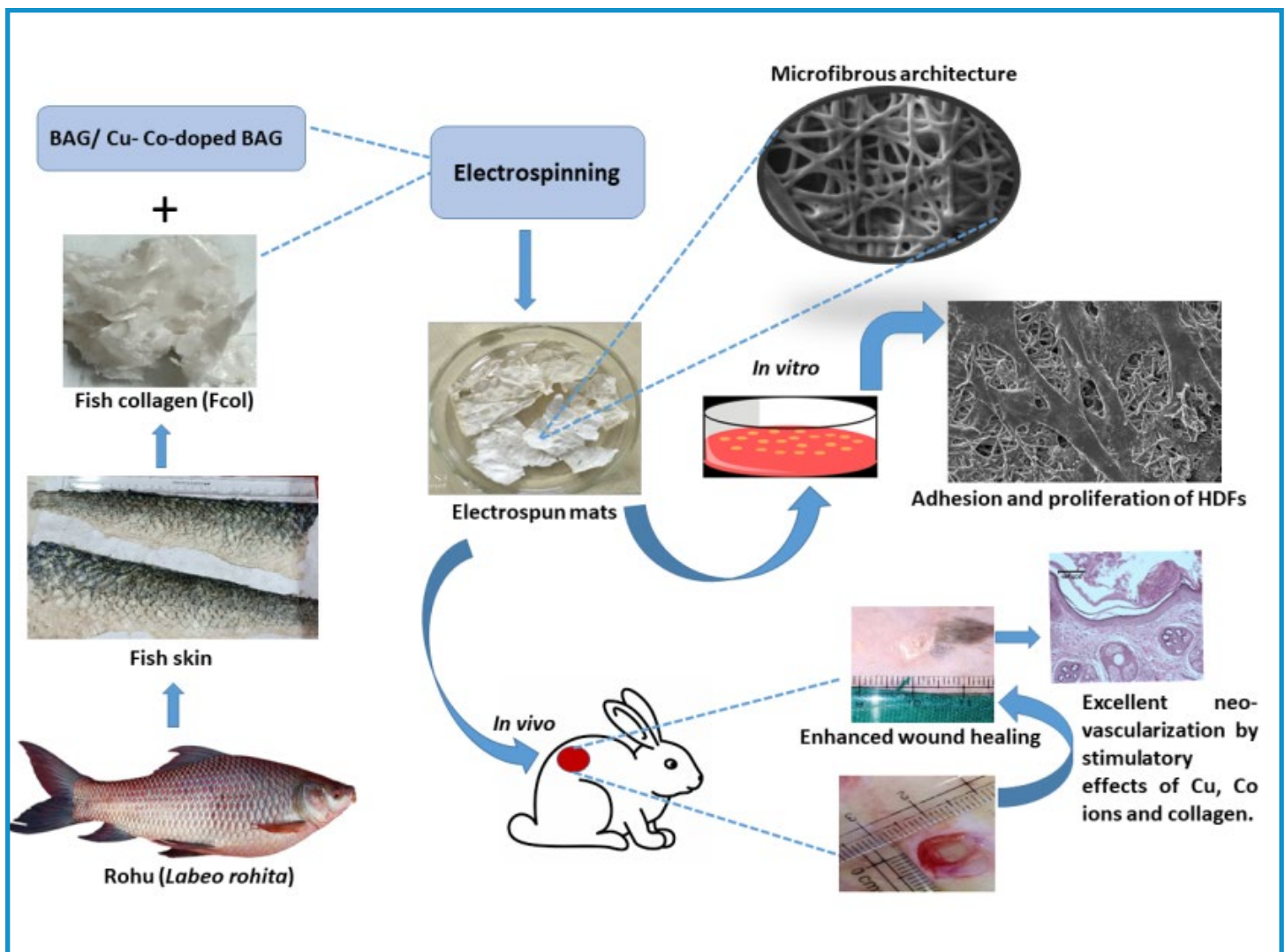
- Conducted research on Value added Meat Product Development in collaboration with Deptt. of LPT, F/O - V.A.S.
- Furnished Annual Technical Report for the year 2021-22 to the funding agency, along with Standard Operating Practices (SOP) for Hygienic meat processing.
- Conducted a 3 Days' Residential Hands on Training Programme on Hygienic Poultry Processing to the Meat Workers & Agricultural Field Assistants of WBCADC on and from 18.04.2022 to 20.04.2022.



5. 7. SALIENT ACHIEVEMENTS OF COMPLETED PROJECTS

1. Development of fish collagen-doped bioactive glass electrospun mats/fibers for diabetic wound healing

we fabricated four different types of electrospun mats as wound dressing materials/ dermal grafts by combining locally sourced fish (Rohu) skin-derived collagen with bioactive glass (Fcol/BAG) as well as with ion-doped bioactive glass (Fcol/CuBAG, Fcol/CoBAG, Fcol/CuCoBAG) aimed at achieving an accelerated wound healing. Our study demonstrates that fish collagen/ion-doped bioactive glass microfibrinous mat could potentially be used as a low-cost dressing material/ dermal graft for augmented cutaneous wound healing.





EXTENSION & OUTREACH ACTIVITIES



6

EXTENSION & OUTREACH ACTIVITIES

Extension involves the conscious use of communication of information to help people to form sound opinions and make good decisions. The objective of livestock, dairy and fishery extension education is development of farmers and entrepreneur by improving their living standards. This could be done by bringing about a desirable changes in the knowledge, attitude and skill; assisting farmers to realize their needs and problems; developing rural leadership; mobilizing people and their resources; providing knowledge about recent technologies and their application. In University extension, there is a set of actions that aims to integrate research and teaching, looking for society benefits. WBUAFS propagates the most up-to-date technological innovations through farm advisory, training, information and communication services by involving scientists from different departments via extension. Innovative technological applications have been developed with the goal of to not only being theoretical proof of concepts, but also to bring economic and social impacts at short, medium and long term to livestock farmers, dairy entrepreneurs and fish farming community.

6.1 EXTENSION EDUCATION

Extension education as a catalyst in the field of development education is an imperative for all universities and other allied institutions, whether technological, agricultural, liberal or conventionally oriented. The Directorate of Research, Extension & Farms is the key centre of WBUAFS for promoting development in agricultural and its allied sector through quick transfer of technology by providing training, consultancy and farm information to line departments' professional extension personnel and farmers. It also involves the assessment, refinement and adoption of technology through on-farm testing and front-line demonstrations. The directorate provides guidelines, monitors and evaluates the extension programs of Krishi Vigyan Kendras (KVKs) functioning under WBUAFS. The directorate also extends its support through disseminating farm information by publishing literature on dairy, fishery, livestock sector and related subjects. Besides, it aids to formulate and impart training to different categories of officers and functionaries from line departments of state and non- government organizations, conduct short and long-term trainings for farmers, farm women, youth and school dropouts, assess and refine the latest agricultural technology through front-line, demonstrations for their wider adoption, provide farm information services through various extension activities, including, literature, for the quick dissemination of technology. Through the DREF, WBUAFS extension service maintains live and intimate links with the departments' research on one hand and with the field-level functionaries of different state departments, development agencies and farmers on the other hand.

6.2 CONFERENCE/WORKSHOP/SYMPOSIUM/SEMINAR/ TRAINING

PROGRAMMES ORGANISED BY DIFFERENT DEPARTMENTS OF WBUAFS :

Faculty of Veterinary & Animal Sciences

Sl. No	Title	Program Type	Organizing Dept.	Venue	Date/ Duration
1.	Advance national training course "Recent Advances in Veterinary Pathology for Intensive Livestock Development" with WBUAFS and NADCL, Jammu.	Training course	Department of Veterinary Pathology	online	10-30 November, 2021, 21 days
2.	Winter School on 'Advanced Extension & Communication Strategies for sustainable livelihood through A.H. & Allied farming system'	Winter School	Department of Veterinary & A.H. Extension Education	Dept. of Veterinary & A.H. Extension Education, W.B. University of Animal & Fishery Sciences, Kolkata as sponsored by ICAR, MOA & FW, Govt. of India	15 th February to 07 th March, 2022

Faculty of Dairy Technology

Sl. No	Title	Program Type	Organizing Dept.	Venue	Date/ Duration
1.	ICAR sponsored 10 days short course on “Attracting rural youths for entrepreneurship development in dairy enterprises”.	Training	Dairy Business Management	Faculty of Dairy Technology, WBUAFS, Mohanpur , Nadia	16 th -25 th February, 2022
2.	Four days Online Training Programme on ‘Milk products development for augmenting income-IV’ Under NAHEP (IG), F/O Dairy Technology, WBUAFS	Training	Dairy Technology	F/O Dairy Technology, WBUAFS	27 th -30 th September, 2021
3.	Five days Hands on Training Programme on ‘Milk products development for augmenting income-V’ Under NAHEP (IG), F/O Dairy Technology, WBUAFS	Training	Dairy Technology	F/O Dairy Technology, WBUAFS	21 st 25 th March, 2022

Directorate of Research, Extension & Farms

Sl. No	Title	Program Type	Organizing Dept.	Venue	Date/ Duration
1	3 Days’ Residential training on “Application of Standard Operating Procedure during Poultry slaughter, dressing and processing”	Training	DREF, WBUAFS	Training Hall, Office of the DREF, WBUAFS	18.04.2022 to 20.04.2022
2	National training course (NTC) on “Recent Advances in Fisheries. Technology for Sustainable Rural Development”	Training	West Bengal University of Animal & Fishery Sciences (WBUAFS), Kolkata, West Bengal & National Agriculture Development Cooperative Ltd. (NADCL), Baramulla, UT of J & K	Online	21 days (May 18 to June 07, 2021)
3	Review Meeting of KVK for strengthening KVK activities.	Review Meeting	DREF	Training Hall, Office of the DREF, WBUAFS	10.09.2021
4	Review Meeting of KVK for strengthening KVK activities.	DREF, WBUAFS	DREF	-Do-	17.11.2021
5	Scientific Agri. Horticultural Practices to augment the income from small farming	Training	DREF	-Do-	07.12.2021-9.12.2021
6	Scientific Animal Husbandry & Aqua cultural Practices to augment the income from small farming	Training	DREF	-Do-	28.12.2021-30.12.2021
7	Bio-Tech Kissan Hub Scientific Aquacultural Practices	Training	DREF	Online Mode (Farmer’s Hostel, DREF, WBUAFS)	22.06.2021-24.06.2021 12.07.2021-14.07.2021 26.07.2021-28.07.2021
8	Bio-Tech Kissan Hub Scientific Animal Husbandry Practices	Training		-Do-	20.04.2021-22.04.2021 05.05.2021-07.05.2021 18.05.2021-20.05.2021 05.07.2021-07.07.2021



Fig 6.1: 3 Days' Residential training on "Application of Standard Operating Procedure during Poultry slaughter, dressing and processing" at DREF, WBUAFs

6.3 CONSULTANCY CELL AND ADVISORY SERVICES

Consultancy and advisory services are particularly to promote practical learning approach undertaken by the specialists in their field of expertise. In WBUAFS, these services are accomplished under the guidance of extension wing of Directorate of Research, Extension and Farms. Consultancy and advisory services are vital programs to train livestock farmers, dairy and fishery farmers and entrepreneurs for conception of new knowledge, widening and expansion of existing knowledge to boost the productivity and profitability in the respective fields which are crucial. DREF officers, scientists and faculty members deliver their expertise through lectures in training, workshop, farm or home visits, face-to-face discussions, over telephone, e-mails and postal communications. Consultancy wing also offer assistance in preparation of project schemes to farmers, entrepreneurs. They become aware of processing for bank loan. Beneficiaries also get ample knowledge through extension literature published by extension wing of DREF to begin their start up in small or large scale.

6.4 DOCUMENTARY FILMS

Documentary Video films have been created by WBUAFS both in vernacular as well as in English language. Documentaries related to animal husbandry, dairy and fish farming community for better understanding the scientific knowledge. These films are shown in different training programs organized by DREF in a regular manner.

6.5 ORGANIZATION OF ANIMAL / FISH HEALTH CAMPS

Animal / fish health camps are regularly organized by West Bengal University of Animal & Fishery Sciences for betterment of rural poor people for livelihood development. KVKs under the University are regularly organizing health camps for animal and fishes at free of cost. During the camp, inputs in terms of deworming tablets, mineral mixtures, vitamins etc for livestock and poultry farmers are provided and suggestion are also given for livestock, poultry and fish farming for enhancement of productivity. These camps serves as awareness programme to make the farmers learned about the importance of mineral mixture supplement, deworming, vaccination etc which ultimately led to the socio-economic upliftment of the rural poor, small marginal farmers, physically challenged landless labourers, women and the unemployed in general.

6.6 WOMEN EMPOWERMENT

Women comprise half of the rural population. The livestock sector offers tremendous opportunities for improving household incomes through women's participation. But the livestock sector needs stronger institutional support for more credit and upgrading women's livestock farming skills. In India, livestock production is largely in the hands of women. Despite their considerable involvement and contribution, significant gender inequalities also exist in access to technologies, credit, information, inputs and services

probably because of inequities in ownership of productive assets including land and livestock. The rapidly increasing demand for livestock products creates opportunities for empowerment of women. Therefore, to uplift the socio economic status of this group, WBUAFS and its three KVKs are organizing various training program throughout the year. The prime focus of the training is to mobilize women farmers to form self help groups (SHGs) through awareness programmes, provide them technical assistance through capacity building, and motivate them to generate on-farm as well as off-farm income through various activities. Demonstrations are laid out in the fields of SHG members to apprise them about productivity enhancing practices. Interaction with scientists and subject experts during exposure sensitize them to the benefits of diversified agricultural practices.

6.7 PUBLICATIONS

Extension wing of Directorate of Research, Extension & Farms publishes different type of literatures like newsletters, leaflets, booklets, pamphlets, handouts etc. on livestock and poultry rearing, fish farming, farm management etc on a regular basis. It also supervises publication of research papers and scientific popular articles in both online and offline mode as released by the faculty members, scientists and officials of the University. Various reports on research findings, practical class manuals, training programme compendiums are also being composed by the departments of the faculties under the dynamic direction of the Directorate of Research, Extension and Farms. The extension literatures are prepared and distributed amongst the stakeholders through the Extension wing of the Directorate. Books / booklets published in Bengali by the Extension wing of the Directorate of Research, Extension & Farms are also available for sale at a nominal rate. These booklets give the basic information and answers to relevant queries generally asked by the farmers and hence are found very useful to the farmers.

6.7.1 Publication of Academic, Scientific and Extension Literatures:

1. University Annual Report	1
2. Research Project Annual Reports	1
3. Course Practical Manuals	2
4. Text Books other Books/Book Chapters	49
5. Extension Book/Booklets/Pamphlets(Bengali)	18
6. Compendium of Training Programmes	5
7. Technical report	8

6.8 OTHER EXTENSION ACTIVITIES UNDERTAKEN

Sl. No.	Job Undertaken	Faculty / Dept
1.	Routine Biochemical and Hematological Tests from clinical samples are done regularly on payment basis.	Dept. of Vety. Bio-Chemistry, F/O VAS

6.9 ACTIVITIES OF KRISHI VIGYAN KENDRAS

KVK, is an integral part of the National Agricultural Research System (NARS), aims at assessment of location specific technology modules in agriculture and allied enterprises, through technology assessment, refinement and demonstrations. KVKs have been functioning as Knowledge and Resource Centre of agricultural technology supporting initiatives of public, private and voluntary sector for improving the agricultural economy of the district and are linking the NARS with extension system and farmers. The mandate of KVK is Technology Assessment and Demonstration for its Application and Capacity Development. In addition, KVKs produce quality technological products (seed, planting material, bio-agents, livestock etc) and make it available to farmers, organize frontline extension activities, identify and document selected farm innovations and converge with ongoing schemes and programs within the mandate of KVK.

At present there are three KVKs under West Bengal University of Animal & Fishery Sciences functioning in the districts of Jalpaiguri, Murshidabad and North 24 Parganas. A glimpse of information about these KVKs for 2021-22 are as under :

Sl.No.	Information on	KVK Jalpaiguri	KVK Murshidabad	KVK North 24 Parganas
1.	Funding	ICAR ATARI Kolkata, Zone - V		
2.	SAC Meeting Dates	24 th February 2021	6 th January 2022	23 rd May 2022
3.	Several Programs and Days Celebrated	World Soil Day National Science day Mahila Kisan Divas Gandhi Jayanti World Food Day Jai Jawan Jai Kisan National Women Farmer's Day Azadi Ka Amrit Mahotsav World Tribal Day	World Soil Day Swachh Bharat Programme Mahila Kisan Divas programme	World Soil Day

Brief report of the activities of these KVKs areas hereunder :

6.9.1 KRISHI VIGYAN KENDRA, JALPAIGURI

1. Technical Achievements

A. Details of target and achievement of mandatory activities by KVK during the year

OFT												FLD													
No. of technologies tested:												No. of technologies demonstrated:													
Number of OFTs		Number of farmers										Number of FLDs		Number of farmers											
Target	Achievement	Target	Achievement										Target	Achievement	Target	Achievement									
			SC	ST	Others		Total							SC	ST	Others		Total							
			M	F	M	F	M	F	M	F	T				M	F	M	F	M	F	M	F	T		
09	09	90	57	21	02	00	17	9	76	30	106	22	22	460	255	67	24	08	93	38	372	113	485		

Training												Extension activities													
Number of Courses		Number of Participants										Number of activities		Number of participants											
Target	Achievement	Target	Achievement										Target	Achievement	Target	Achievement									
			SC	ST	Others		Total							SC	ST	Others		Total							
			M	F	M	F	M	F	M	F	T				M	F	M	F	M	F	M	F	T		
100	96	3500	1968	578	268	151	537	150	2773	879	3652	150	169	5000	2410	450	218	30	1489	621	4117	1101	5121		

Impact of capacity building											Impact of Extension activities										
Number of Participants trained		Number of Trainees got employment (self/ wage/ entrepreneur/ engaged as skilled manpower)									Number of Participants attended		Number of participants got employment (self/ wage/ entrepreneur/ engaged as skilled manpower)								
Target	Achievement	SC	ST	Others		Total				Target	Achievement	SC	ST	Others		Total					
		M	F	M	F	M	F	M	F	T			M	F	M	F	M	F	M	F	T
10000	9364	4690	1116	512	189	2136	818	7338	2123	9364	60	65	803	150	72	10	196	207	1071	367	1438

Seed production (q)		Planting material (in Lakh)	
Target	Achievement	Target	Achievement
25	31.8	1.00	1.06

Livestock strains and fish fingerlings produced (in lakh)		Soil, water, plant, manures samples tested (in lakh)	
Target	Achievement	Target	Achievement
100 no.s Livestock	133 Livestock	250	275
10 lakhs nos of Fish Fry & fingerlings	12.6 lakhs		

2. Give details of indigenous technology practiced by the farmers in the KVK operational area

Sl. No.	Crop / Enterprise	ITK Practiced	Purpose of ITK
1	Poultry		
2	All Livestock	Turmeric Paste for control of humpsore, ash with kerosin oil	Control of humpsore
3	Cattle	Feeding leaves of bamboo plant	Gorur Patla Paykhana (Diarrhoea)
4	Goat	Feeding leaves of Jack fruit tree	Chaagoler Patla Paykhana (Diarrhoea)
5	Fish	Use of neem leaves and stems in pond	Control of pest and quality water
		Use of garlic in formulated fish feed	For disease prevention
		Use of Khejur, babla and bamboo stems in fish culture pond	Control of pest and quality water
		Application of turmeric	Control of diseases and quality water

3. Details of organic farming practiced by the farmer

Sl. No.	Crop / Enterprise	Area (ha)/ No. covered	Production	No. of farmers involved	Market available (Y/N)
1	Leafy vegetables	0.025	1.6 q	10	Y
2	Scented rice	5	3.5q	40	Y
3	Mustard	12	7.2 q	27	Y
4	Pointed Gourd	0.5	120 q	07	Y

4. Details of Soil samples analyzed

Number of soil samples analyzed			No. of Farmers	No. of Villages	Amount realized (in Rs.)
Through mini soil testing kit/labs	Through soil testing laboratory	Total			
Yes	Yes	175	265	12	--

5. Cases of large scale adoption

Horizontal spread of technologies	
Technology	Horizontal spread
1 RIR Poultry	Spread to 15villages of 7 blocks and 260 families
2 Exotic Vegetables	Spread to 12 villages of 4 blocks and 54 farmers
3 Green fodder	Spread to 12 villages of 7 blocks and 58 farmers
4 Vermi compost	Spread to 16 villages of 8 blocks and 84 farmers
5 Azolla cultivation	Spread to 8 villages of 4 blocks and 37 farmers

Horizontal spread of technologies		
Technology	Horizontal spread	
6.	Fish cultivation in Tarpaulin Tank	Spread to 18 villages of 8 blocks and 165 farmers
7	Rice transplanter	Spread to 12 villages of 4 blocks and 65 farmers
8	Pheromone Trap	Spread to 20 villages of 5 blocks and 253 farmers
9	Poly mulching	Spread to 15 villages of 4 blocks and 68 farmers
10	Portray	Spread to 10 villages of 4 blocks and 38 farmers

6. During the financial year KVK took following initiatives as per following details:

- a) Mushroom cultivation for nutritional security of rural household
- b) Multitier poultry cage farming for doubling farmers' income
- c) Multitier vegetable cultivation to get more income per unit area
- d) Production of ornamental fingerlings and aquarium development for entrepreneurship development
- e) Introduction and popularization of ground nut seed planter for drudgery reduction
- f) Introduction & popularization of CRIJAF SONA
- g) Popularization of Manual Paneer making Machine
- h) Awareness & Introduction of Bee Keeping at KVK
- i) Fish cultivation in Tarpaulin Tank for Rural youth and Migrant labour
- j) More number of V/C conducted during COVID 19 lockdown period
- k) Mask & Sanitizer distribution to the adopted villages
- l) Mask & Sanitizer distributed among the FPO / FPC members
- m) Popularization of Ornamental Bird Culture
- n) FPO Meet with Reliance Foundation for better Agri Marketing
- o) Whatsapp group formation for digital dissemination technology with farmers

7. Functional linkage with different organizations

Sl. No.	Name of organization	Nature of linkage
1	ATMA, Dept. Of Agriculture, Govt. of West Bengal	1. Training 2. Short term research 3. Demonstration
2	NHM, Dept. Of Horticulture, Govt. of West Bengal	1. Training 2. Demonstration 3. Exposure visit 4. Publishing literature
3	MGNREGS, Jalpaiguri, Govt. of West Bengal	1. Land levelling 2. Drainage 3. New earthen (Katcha) road 4. Reshaping of earthen road

Sl. No.	Name of organization	Nature of linkage
4	Department of Forests, Govt. of West Bengal	To impart awareness programmes Development of Social Forestry
5.	District Horticulture Officer , Jalpaiguri, Deptt. Of Horticulture, Govt. of West Bengal	Training, Demonstration
6.	Assistant Director of Agriculture, Maynaguri, Deptt. Of Agriculture, Govt. of West Bengal	Agriculture Fair (Block Krishi Mela), Training, Demonstration
7.	Assistant Director of Agriculture, Matiali, Deptt. Of Agriculture, Govt. of West Bengal	Training, Demonstration
8.	Reliance Foundation	Agri Marketing
9.	NABARD	Project for tribal development programme, Training
10.	Uttar Bangya Krishi Viswavidyalaya, Pundibari, Coochbehar	Technical support, demonstration, training
11.	Central Plantation Crop Research Institute, ICAR, Mohitnagar, Jalpaiguri	Technical support, training
12	Animal Resources Development Department, Govt. of West Bengal Jalpaiguri	Joint diagnostic and Technical support
13	Indian Farmers Fertilizers Co. optv. Ltd., Siliguri , Darjeeling	Training
14	SSB, Falakata	Training And Demonstration
15	University of North Bengal, Siliguri, Darjeeling	Training
16	University of Kalyani, Nadia, West Bengal	Training
17	National Tea Research Foundation, Kolkata	Training
18	All India Radio, Siliguri	Technology Broadcasting
19	Jalpaiguri Doordarshan Kendra, Jalpaiguri	Technology Telecasting
20	MANAGE, Hyderabad	Training programme
21	SAMETI, Narendrapur, Kolkata	Training
22	BDO & Panchayet Sanity Office, Maynaguri	Infrastructure development
24	Tea Board, Jalpaiguri	Training & Soil Testing
25	West Bengal SCSTOBC & Dev. Finance Corpn, Jalpaiguri	Training
26	Indian Meteorological Department (IMD)	Training & Monitoring
27	KRIBHCO, Siliguri	Training and Demonstration
28	ICAR- CIFE, Kolkata	Training and Input distribution
29	WBSCST&OBCDFC, Jalpaiguri	Training and Input distribution
30	IFFDC	Training

8. Joint activity carried out with line departments and ATMA

Name of activity	Number of activity	Season	With line department	With ATMA	Both
Joint field visit with Assistant Director of Agriculture of Malbazar, Dhupguri Block	2	Kharif & Rabi	With Line Department	ATMA	Both
Joint Field Visit with IFFCO	2	Pre Kharif	IFFCO		
Joint Activity with IFFCO	1	Kharif	IFFCO	IFFCO	
Training Programme	8	Round the Year	With Line Department	ATMA	Both-
Exposure Visit	4	Round the year	With Line Department & DAESI	ATMA	Both

Name of activity	Number of activity	Season	With line department	With ATMA	Both
Joint Field Visit with District Development Manager, NABARD	4	Rabi & Kharif	with District Development Manager, NABARD	-	-
FPO Promotion with District Development Manager, NABARD	8	Rabi & Kharif	with District Development Manager, NABARD	-	-
PRA for RAWE Probationary	2	Rabi	With Line Department	ATMA	Both
Animal Health camp & vaccination camp	1	Kharif	Dept. of ARD, Jalpaiguri & Dhupguri	-	-
FFS Training & Demonstration	2	Kharif	Dept. of Agriculture	ATMA	Both
Training & Exposure visit	2	Rabi	ATMA	-	-
Awareness of Govt. Flagship programme	2	Rabi & Kharif	Dept. Of Agriculture, Govt. of West Bengal	ATMA	Both
Video Conference CROP MANAGEMENT	1	Kharif	ATM A, Matiali	ATMA	
Video Conference AGRIL. & ALLIED SUBJECT	1	Kharif	WBUAFS	WBUAFS	
Video Conference HORTICULTURE	1	Kharif	CPCRI & DHO, Jalpaiguri	CPCRI & DHO	Both
Video Conference AQUACULTURE	1	Kharif	Department of Fisheries, Jalpaiguri	DFO	
MJCC preparation	4	Round the year	Fisheries Department, GoWB		
Training Programme	1	Winter	NIAM, Agriculture Marketing, Jalpaiguri	NIAM	
Training, Demonstration and Distribution	3	Kharif	CIFA-ICAR, Kolkata	CIFA-ICAR	
CDAP Preparation	1	--	Line Departments	ATMA	Both
Earthen Road preparation, Plantation	3	Round the year	MGNREGA		
Awareness on Farm Mechanization	1	Rabi & Kharif	Dept. of Agriculture		
Potato Seed production	1	Rabi	Dept. of Agriculture	ATMA	Both

9. *mKisan* Portal (National Farmers' Portal/ SMS Portal)

Type of message	No. of messages	No. of farmers covered
Crop	20	24600
Livestock	14	14225
Fishery	08	14375
Weather	12	13320
Marketing	02	7266
Awareness	08	13400
Training information	02	7266
Other	--	--
Total	68	116902

Training and interaction programme with Tribal SHG members of Nagrakata block listed under the Project funded by WBCSTOBCDFC, Jalpaiguri:

Training and interaction programme with Tribal SHG members of Nagrakata block listed under the Project funded by WBCSTOBCDFC, Jalpaiguri for Multi tier cage poultry farming was organised on 07.01.2021 through Jalpaiguri KVK. 30 beneficiaries of this project was trained and detailed about the project activities on the day.



Glimpses of some other activities of this KVK during this year



Telecast Programme of Hon'ble Prime Minister on Natural Farming (Zero Budget Natural Farming):



Farmer Scientist interaction on Organic Fertilizer Awareness Programme with Collaboration with KRIBHCO



Scientific Advisory Committee (SAC) meeting, 2021



Zonal Workshop on FPO

6.9.2. KRISHI VIGYAN KENDRA, MURSHIDABAD

TECHNICAL ACHIEVEMENTS

OFT

No. of technologies tested:

Number of OFTs		Number of farmers									
Target	Achievement	Target	Achievement								
			SC		ST		Others		Total		
			M	F	M	F	M	F	M	F	T
9	9	77	35	42	77	14	15	163	57	121	178

FLD

No. of technologies demonstrated:

Number of FLDs		Number of farmers									
Target	Achievement	Target	Achievement								
			SC		ST		Others		Total		
			M	F	M	F	M	F	M	F	T
9	9	77	35	42	77	14	15	163	57	121	178

Training

Number of Courses		Number of Participants									
Target	Achievement	Target	Achievement								
			SC		ST		Others		Total		
			M	F	M	F	M	F	M	F	T
117	107	3510	1270	1906	3176	5246	2504	18470	3294	4941	8235

Extension activities

Number of activities		Number of participants									
Target	Achievement	Target	Achievement								
			SC		ST		Others		Total		
			M	F	M	F	M	F	M	F	T
117	107	3510	1270	1906	3176	5246	2504	18470	3294	4941	8235

Seed Production (q)	
Target (crop/fish/animal)	Achievement
Paddy (10q)	14q
Elephant Foot yams(15q)	18q
Turmeric (o.5q)	1q
Maize as fodder(75q)	83 q
Ground Nut(1q)	2.8 q
Wheat (1q)	0.5q
Oats as fodder(27 q)	36.5q
Total	155.8 q

Planting Material (Nos.)	
Target	Achievement
Lemon seedlings (15000)	16850
Mango seedlings (4000)	3250
Chilli seedlings (4000)	30307
Tomato seedlings (4000)	20235
Brinjal seedlings (5000)	17774
Cabbage(3000)	8619
Cauliflower (3000)	6870
Forest Plant (1500)	1350
Total	105255nos.

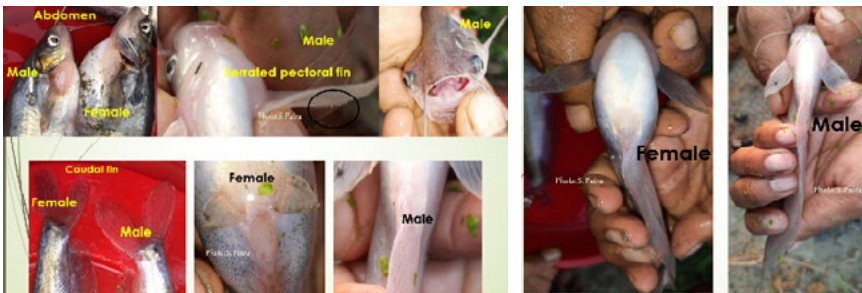
Livestock strains and fish fingerlings produced (nos.)	
Target	Achievement
Goat (1 nos.)	1 nos
Dairy (5 nos)	5 nos.
Fish fingerling/fry production (IMC & exotic carp) (33.5 lakh)	55.14 lakh
Ornamental fishes (8000 nos.)	9946 nos.
Total	55.14 lakh/9952 nos

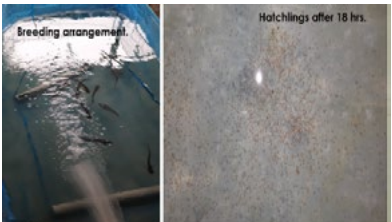
Soil & Water sample tested (nos.)	
Target	Achievement
Soil Sample Analyze (245 nos.)	237 nos.
Water Sample (35 nos.)	21 nos.
Total	258 nos.

Publication by KVKs							
Item	Number	No. circulated	No. of Research papers in NAAS rated Journals	Highest NAAS rating of any publication	Average NAAS rating of the publications	Details of awarded publication, if any	Details of Award given to the publication
Research paper	-	-	-	-	-	-	-
Seminar/conference/ symposia papers	1	-	1	NAAS-4.95, IF-0.971	NAAS-4.95, IF- 0.971	Best poster (3 rd)	AEDS,UP
Books	2	124	-	-	-	-	-
Bulletins	-	-	-	-	-	-	-
News letter	-	-	-	-	-	-	-
Popular Articles	1	-	-	-	-	-	-
Book Chapter	23	124	-	-	-	-	-

Publication by KVKs							
Item	Number	No. circulated	No. of Research papers in NAAS rated Journals	Highest NAAS rating of any publication	Average NAAS rating of the publications	Details of awarded publication, if any	Details of Award given to the publication
Extension Pamphlets/ literature	7	349	-	-	-	-	-
Technical reports	8	-	-	-	-	-	-
Electronic Publication (CD/ DVD etc)	1	1465	-	-	-	-	-
TOTAL							

Innovative methodology or innovative technology of Transfer of Technology developed and used during the year

Sl. No.	Name/ Title of the technology	Name/ Details of the Innovator(s)	Brief details of the Innovative Technology
1	Commercial seed production of pabda as a diversified fish species for aquaculture	Murshidabad KVK	<p>Male and female identification:</p>  <p>Induced breeding:</p> <ul style="list-style-type: none"> Injecting male and female @0.5 and 0.7-0.8 ml/kg of body weight of fishes. Then injected fishes release in to cemented tank with in hapa Water flow and aeration needed for better breeding and fertilization Within 7-8 hrs. breeding will be start at temperature 28°C. Hatching start after 18 to 22 hrs. of spawning. Yolk sac absorbed within 48 hrs. at temperature 28°C & then first feeding start. Larval rearing: The mouth of the larvae starts opening by the second day. A little amount of live feed is provided from that day onwards. During rearing period, cannibalism is observed from the second day onwards wherein the healthy larvae prey upon the weaker ones. Therefore, thinning the density of stocked spawn and subsequent segregation based on their size is essential; this is done using nets of different mesh size. Fish larvae are fed ad libitum with a heterogeneous mixture of live zooplankton alone up to 7th day. Later, mixed zooplankton (@ 8-10 cc/ l) along with tubifex worms and egg custard may be provided as larval feed twice a day @ 25% of the body weight of the spawn up to 15th day to obtain better survival and growth of fry. Chopped tubifex worms along with finely sieved zooplankton is the best food to control their cannibalistic nature. The larvae prefer darker places and hence it is necessary to provide hideouts and shelters for better survival.

Sl. No.	Name/ Title of the technology	Name/ Details of the Innovator(s)	Brief details of the Innovative Technology
1.			<p>Water depth management in hatching tank:</p> <p>1st day: -3-4 cm 2nd day: -3-4 cm 3rd day: 5-6 cm 4th day: -5-6 cm 5th day: -7-8 cm 6th day: -9-12 cm 7th day: -13-15 cm</p> <p>During this time <i>hydrilla</i> or <i>ceretophyllum</i> can be used for better hiding place</p> 
2.	Organic juice application in pond for better productivity	Murshidabad KVK	<p>Materials required:</p> <ul style="list-style-type: none"> • RCD-1kg/dec. • MOC-200g/dec. • Molasses-50g/dec. • Dry east-5g/dec <p>Procedure:</p> <ul style="list-style-type: none"> • Mixed well 4 ingredients in 30 lit. plastic drum/earthen pit • Pour 10 lit. water and stay for 1 week • Every day this mixture turns down to remove excess gas • During fermentation this drum not to be placed in direct sun light <p>Application:</p> <ul style="list-style-type: none"> • After 1 week this juice apply in pond • In every month we can apply one to two times depending on the pond water colour.

Cases of large scale adoption

Horizontal spread of technologies	
Technology	Horizontal spread
Elephant Foot Yam	125 farmers of this district presently cultivated this crop after receiving the technology from KVK
Black gram	After the starting of cluster front line demonstration of black gram variety PU-31, at present nearly 573 ha. of land is cultivated under this variety.
Low cost Vermicompost Production	28 farmers in Murshidabad district is presently producing Vermicompost for their own use through low cost Vermicompost production technology
Polyculture based fish farming (IMC and exotic carps along with different high growth rated and high value native fish species)	140 nos. of farmers practice this technology in different adoptive villages in Murshidabd district
Diversified fish species pabda culture in seasonal pond	29 nos. of farmers practice this technology in different adoptive villages in Murshidabd district
Diversified fish species singhi culture in seasonal pond	26nos. of farmers practice this technology in different adoptive villages in Murshidabd district
Diversified fish species tengra culture in seasonal pond	35nos. of farmers practice this technology in different adoptive villages in Murshidabd district
Diversified fish species magur culture in seasonal pond	30nos. of farmers practice this technology in different adoptive villages in Murshidabd district
Diversified fish species pengba culture in seasonal pond	23nos. of farmers practice this technology in different adoptive villages in Murshidabd district

Horizontal spread of technologies	
Technology	Horizontal spread
Diversified fish species ornamental culture in seasonal pond	11nos. of farmers practice this technology in different adoptive villages in Murshidabd district
Pangas fish culture in jute retting pond	32nos. of farmers practice this technology in different adoptive villages in Murshidabd district

Performance of Instructional Farm (Crops)

Name Of the crop	Date of sowing	Date of harvest	Area (ha)	Details of production			Amount (Rs.)		Remarks
				Variety	Type of Produce	Qty.(q)	Cost of inputs	Gross income	
Elephant foot yam	27.4.21	21.12.21	0.13	Kavur	Seed	18 q	7940.00	26250.00	Rest amount Kept in store
Kharif paddy	02.08.21	17.11.21	0.26	GS-3	Seed	14 q	10800.00	14000.00	-
Ground nut	11.03.21	06.07.21	0.13	-	Seed	2.8 q	5430.00	8320.00	-
Turmeric	28.06.21	-	0.13	Suranjana	Seed	1 q	2870.00	-	Standing crop

Performance of Production Units (bio-agents / bio pesticides/ bio fertilizers etc.,)

Sl. No.	Name of the Product	Qty. (Kg)	Amount (Rs.)		Remarks
			Cost of inputs	Gross income	
1.	<i>Tricoderma Viridi</i>	195	5469.00	0.00	-
2.	Vrmicompost	46500	23450.00	43050.00	-

Performance of instructional farm (livestock and fisheries production)

Sl. No.	Name of the animal / bird / aquatics	Details of production			Amount (Rs.)		Remarks
		Breed	Type of Produce	Qty.	Cost of inputs	Gross income	
1.	IMC and other exotic carps	Indian Major Carps and Exotic carps	Seed	38460000 nos.	6730.00	22290.00	Rest of fish seed stock in our KVK pond
2.	Singhi	Heteropneustes fossilis	Fingerling	1510 nos.	1950.00	3740.00	-
3.	Vietnam koi	A testudenus	Fingerling	3650 nos	2670.00	7300.00	-

mKisanPortal (National Farmers' Portal/ SMSPortal)

Type of message	No. of messages	No. of farmers covered
Crop	1	3664
Livestock	-	-
Fishery	1	3660
Weather	1	3658
Marketing	-	-
Awareness	-	-
Training information	-	-
Other	-	-
Total	3	10982

KVK Portal and Mobile App

Sl. No.	Particulars	Description
1.	No. of visitors visited the portal	-
2.	No. of farmers registered in the portal	-
3.	Mobile Apps developed by KVK	Yes
4.	Name of the App	Murshidabad Krishi
5.	Language of the App	Bengali
6.	Meant for crop/ livestock/ fishery/ others	Crop, Livestock, Fishery, Soil & Weather forecast
7.	No. of times downloaded	1291nos.

Resource Generation

Sl.No.	Name of the programme	Purpose of the programme	Sources of fund	Amount (Rs. lakhs)	Infrastructure created
1.	ATMA	Training programme	ATMA, Govt. of India	2.50	-
2.	STRY	Skilled training programme	MANAGE, Govt. of India	1.68	-
3.	Unnati Project	Training to SHG member	DRDC, Govt. of India	2.72	-
4.	NADAP	Vermibed preparation	CDB, Govt. of India	0.60	-

6.9.3. KRISHI VIGYAN KENDRA, NORTH 24 PARGANAS

In the recent few years this KVK has worked in different blocks covering 37 villages. During the year 2021-22, the KVK has conducted 12 nos. of On Farm Trails (OFT), 15 nos. of demonstration covering 615 nos. of beneficiaries. More over 90 training courses covering 2700 nos. of participants and 451 nos. of different extension activities has been followed up and all total 1825 nos. of farmers attended in these extension activities throughout the year. Total 80.00 quintal seed and 39000 nos. of planting material has been produced and supplied or marketed in the last year.

Achievements of Technologies:

1. Soil application of *Azotobacter* @ 750 g/ha + Sulphur @ 40 kg/ha along with 100 % RDF significantly increases the yield (1.77 t/ha) of sunflower with benefit cost ratio of 2.57.
2. Introduction of high yielding variety (GJG 17 & GJG 18) may effectively induce yield of groundnut resulted increases the pod yield (2.17 t/ha) of groundnut with benefit cost ratio of 2.51.
3. Evaluation of the efficacy of different chemicals for management of Sigatoka leaf spot diseases of banana caused by *Mycosphaerella* spp in the North 24 Parganas district. So, four sprays of combination of Mineral oil 1% + tebuconazole 50% + trifloxystrobin 25% WG @0.5 g/l with the onset of the disease at 30 days interval was proved to be effective and resulted the lowest per cent diseases index (16.12%) compared to control (27.29%). This treatment also gave a fairly good benefit: cost (B:C) ratio of 1.55 with highest yield (49.55t/ha).
4. Evaluation of the efficacy of different growth regulators on propagation of China rose (*Hibiscus rosa-chinensis*) in the North 24 Parganas district. NAA at 3000 ppm concentration may be taken for rooting of China rose towards multiplication as production of quality planting materials during rainy season, the second-best growth regulator may be considered of IBA at 3000 ppm for this purpose. Soft and semi hard wood cuttings treated with 0.2% Copper oxy-chloride (15 min.) then NAA 3000 ppm also gave best B:C ratio of 1.71 with 96.33% survivality rate and less days that is 26 days taken for good root initiation that is better growth and earlier marketing. Semi hard wood cutting is better for multiplication of seedlings.

5. Kadaknath birds showed better body weight gain and egg production capacity than haringhata black birds with B:C ratio 1.63:1 .
6. Among Gramapriya and vanaraja birds in rural condition, Vanaraja showed better weight gain where as Gramapriya birds showed better acceptability and overall performance in backyard system.
7. Practice of Dry cow therapy with supplementation of UAFSMIN-P is effective to reduce postpartum mastitis in high yielding cattle.
8. Use of anionic mixture ammonium chloride @ 80 gm/ day along with area specific mineral mixture UAFSMIN-P in feed can reduce the incidence of milk fever with better BC ratio (1.81:1).
9. By field level demonstration the following technologies has been successfully initiated in farmer's field.
 - a) Replacement of traditional variety by Gabindobhog (Scented Rice).
 - b) Cultivation of Mustard cv JD 6.
 - c) Foliar Spray of Boron as 0.5 % solution of borax at 15, 40 DAS and at flower initiation stage.
 - d) Cultivation of Blackgram cv Sulata.
 - e) Introduction of sweet potato in the cropping system.
 - f) Integrated disease management in Chilli by using Trichoderma viridi/ harzianum.
 - g) Use of eco-friendly technology to control fruit and shoot borer in brinjal.
 - h) Area specific mineral mixture (UAFSMIN- P) supplementation in cattle.
 - i) Area specific mineral mixture (UAFSMIN-P) supplementation in goat.
 - j) Rearing of improved variety Vanaraja birds.
 - k) Urea mineral mixture during draught period.
 - l) Use of kalazeera, Golmorich and Chirata @ 500mg/kg body weight.
 - m) Jayanti rohu culture in composite fish farming.
 - n) Application of lime in split dose in composite fish farming.
 - o) Farming of monosex tilapia.
 - p) Farming of *Mystus vittatus* (Tengra) in small seasonal pond.
 - q) Introduction of Hydroponic Fodder cultivation for better space utilization and improved nutritional status in animals.

Training Achievements:

1. Total 90 nos. of trainings courses of farmers and farm women has been conducted covering 2700 participants in which 1774 male and 926 female numbers of participants were present.
2. 7 nos. of Rural Youth training had been conducted covering 210 participants.
3. Two numbers of MANAGE NFDB sponsored fishery capacity building programme, five numbers ICAR sponsored Dairy farmers capacity building programme, two numbers of MANAGE DAESI course where, 430 numbers unemployed and interested youths participated.

Extension Achievements:

1. 15 nos. of Field days, 340 nos. of diagnostic service, 2 nos. of Clinic days, vaccination camp etc. mandated extension activities has been done. Total 451 extension activities done for the direct benefit of the farmers.
2. 9 nos. of extension literature (Namely *Sabji chas*, *Unnata padhhatite Masla Chas*, *Mushroom chas*, *Prosnotto borshakale pranir rog-jala*, *Poltry gout o tar protikar*, *Has –Murgir kichu somoys*, *Banaraja murgi palon-gamin bikasher natun sambhabona*, *Desi Pabda Macher Chas*, *Desi tengra macher chas*.) has been republished and circulated.
3. The “**Kojagori Farmers Producer Company Limited**” of Purba Khilkapur, Babpur, P.S.: Duttapukur, Dist.: North 24 Parganas is formed 13.10.15 under the Companies Act, 2013 The Babpur is the adoptive village of KVK and different mandated activities are going on in this village. The KVK helps in formation of Company along with the guidance of different district department. The company is now marketing agricultural produces from Babpur and other 6-8 villages. The company is now marketing the fish and fish products, establishment of banana ripening and storage structure, vegetable and fruit packaging unit.
4. Gobardanga Seba Farmers Samity (NGO), Gobardanga, N-24 Parganas District becomes one of the **Producer Organisation Promoting Institution (POPI)** under NABARD where KVK is playing a major role upon formation and functioning of this institution. KVK is also trying to link its adoptive villages through this POPI for smart agricultural market linkage for the benefits of farmers and by the help of KVK 4 nos. of FPC have been formed.

Universalization of Soil Health Card programme:

Under the USHC programme, North 24 Parganas KVK has been analyzed 65 number of soil samples and 185 number of water samples in grid with distribution of soil health card among the farmers in different programme like World soil day.

KVK Farm and Poly-house Activities:

In the year 2021-22, KVK produce different seeds namely Rice (var. *GS-I*, *Satabdi* and *Khitis*) aromatic rice like Gobinobhog, oil seeds (sesame var. *Rama*, *Mustard* var. *B54*), Pulses (like lentil var. *Moitree*, Gram var. *Prakash*) Tuber crop (Elephant Footyam var. Bidhan Kusum) and Vanaraja, Catla, Rohu, Mrigal (fry), Silver carp, common carp, Grass carp, Deshi Magur, Singhi, Tengra, Ornamental fish and planting materials (Brinjal, capsicum, tomato, cherry tomato, cabbage, brocolli etc.) in KVK Farm and Poly-house, respectively.

Extra-mandated activities-

NICRA programme- According to the climate vulnerability assessment, the north 24 parganas district has been selected by CRIDA, Hyderabad. As per the recommendation of ICAR-ATARI, Kolkata, The north 24 Parganas KVK has been selected as implementation unit in the district for the period of 5 years (2021-2026). The programme is already launched at the most vulnerable selected village (Samsernagar) of Hingalganj block where already custom hiring centre established and VCRMC and NRM work has been started.

RKVY Project for Infrastructural Development of KVK- KVK has bagged a mega project from RKVY, Dept. of Agriculture, Gov. of WB worth Rs. 223.85 lakh where a two storeied trainee hostel, Ultra facility conference hall for 150 participants, seed production unit, Bengal goat unit, poultry hatchery and brooding unit, ornamental fish breeding unit and IMC hatchery unit is being constructed targeting to the farming community of the district.

The newly established office of this KVK at its present location is currently catering to the training needs of the farmers ultimately leading to the remarkable progress in the rural agrarian economy.



6.10 TRANSFERABLE TECHNOLOGIES DEVELOPED

Certain useful technologies have been generated / developed through various research programmes undertaken by the three faculties and the Directorate of Research, Extension & Farms of the University. The technologies developed during the studies are lying ready for distribution to the grass root level. The developed and tested technologies might be of enormous help to the State farmers for improvement of their livelihood and income. These technologies may also be applied to the other regions of the country after going through proper refinement, thus in turn benefiting the vast farming community of the country. The technologies developed during the research works carried out in 2019-20 are as follows :

1. Vinit Vitthal Jadhav has generated the technologies of ‘Development of Chhana Kofta mix’ which is ready for commercialization in the Department of Dairy Technology in 2022.
2. Development of affordable wound dressing patch based on fish collagen-ion doped bioactive glass has been developed by Samit Kumar Nandi, Biswanath Kundu, Sonali Jana, Prabal Ranjan Ghosh and Pradyot Datta in 2020-21 in the Department of Veterinary Surgery & Radiology. Indian Patent submitted on 19.04.2021. Fish collagen-doped bioactive glass electrospun mats/fibers for diabetic wound healing and the process of preparing the same. Application No. 202131017968 CBR No. 5926.
3. Development of Peptide based tissue sealant has been done by Snehasis Biswas, Vinod Kumar, V. Kishore, Rituparna Sinha Roy, Samit Kumar Nandi in 2019-20 in the Department of Veterinary Surgery & Radiology. Indian Patent submitted 2019. Peptide based tissue sealant, Process and Application thereof’ Application no. 201831040193.



**PUBLICATIONS ON
RESEARCH FINDINGS**



7

PUBLICATIONS ON RESEARCH FINDINGS

7.1. FACULTY OF VETERINARY & ANIMAL SCIENCES

7.1.1. Department of Animal Biotechnology

Sl. No.	Scientific Research Publication in Journals
1.	Mukherjee A, Kar I, Das S, Acharya AP, Maity HK, Biswas P, Biswas S (2021): In silico analysis of bovine Glutathione-S-transferase M1 (GSTM1), an essential gene governing bull semen quality. <i>Indian J Anim Health</i> . 60(2): 205-212. NAAS rating: 5.25

7.1.2. Department of Animal Genetics and Breeding

Sl. No.	Scientific Research Publication in Journals
1.	Niang H; Roy M; Datta S; Sarkar U; Senapati P K and Bera S (2021): Studies on reproduction and genetic parameters of Black Bengal goat (<i>Capra hircus bengalensis</i>) at farmers' field under different agro-climatic zones of West Bengal. <i>Indian Journal of Animal Sciences</i> , 91(5): 401-405. NAAS Rating: 6.28

7.1.3. Department of Animal Nutrition

Sl. No.	Scientific Research Publication in Journals
1.	Samanta, A.K., Gali, J.M., Dutta, T.K., Rajkhowa, T.K., Mandal, G.P. and Patra, A.K. 2021. Effect of dietary phytobiotic mixture on growth performance, nutrient utilization, and immunity in weaned piglets. <i>Tropical Animal Health and Production</i> , 53, 459. https://doi.org/10.1007/s11250-021-02910-0 .
2.	Acharjee, S. Mandal, G.P., Patra, A.K., Debnath, B.C and B. Roy. 2021. Effects of feeding rice-based dried distillers grains with solubles and condensed distillers solubles on feed intake, milk production and fatty acid composition in lactating crossbred cows. <i>Animal Nutrition and Feed Technology</i> , 21: 233-247. doi: 10.5958/0974-181X.2021.00020.2.
3.	Chowdhury, M., Bardhan, R., Pal, S., Banerjee, A., Batabyal, K, Joardar, S.N, Mandal, G.P, Bandyopadhyay, S., Dutta, T.K., Sar, T.K., Samanta, I. 2022. Comparative occurrence of ESBL/AmpC beta-lactamase-producing <i>Escherichia coli</i> and <i>Salmonella</i> in contract farm and backyard broilers. <i>Letters in Applied Microbiology</i> , 74: 53-62. doi: 10.1111/lam.13581.
4.	Singla, A., J.S. Hundal, A.K. Patra, M. Wadhwa, V. Nagarajappa, and P. Malhotra, 2021. Effect of dietary supplementation of <i>Emblica officinalis</i> fruit pomace on methane emission, ruminal fermentation, nutrient utilization, and milk production performance in buffaloes. <i>Environmental Science and Pollution Research</i> , 10.1007/s11356-020-12008-z
5.	Singla, A., J.S. Hundal, A.K. Patra, M. Wadhwa, V. Nagarajappa, and P. Malhotra, 2021. Effect of dietary supplementation of <i>Emblica officinalis</i> fruit pomace on methane emission, ruminal fermentation, nutrient utilization, and milk production performance in buffaloes. <i>Environmental Science and Pollution Research</i> , 10.1007/s11356-020-12008-z
6.	Lalhriatpuii, M. and A.K. Patra, 2021. Feeding of rice beer waste improves growth performance, nutrient digestibility and nitrogen utilization in growing rabbits. <i>Journal of Animal Physiology and Animal Nutrition</i> , https://doi.org/10.1111/jpn.13545
7.	Reddy, S.C., P.K. Das, J. Mukerjee, A.K. Patra, S. Naskar, B.C. Das, D. Banerjee, 2021. Circadian changes in plasma major and trace minerals of Black Bengal goats during different seasons in hot-humid tropics of India. <i>Indian Journal of Animal Health</i> 60, 23-30.
8.	Mirzaei-Alamouti, H., H. Namdarpour, A. Abdollahi, H. Amanlou, A.K. Patra, M.H. Shahr, D. Aliyari, M. Vazirigohar, 2021. Nutrient digestibility, blood metabolites, and production performance of transition ewes fed dietary plant extract and monensin. <i>Small Ruminant Research</i> 202, 106453. https://doi.org/10.1016/j.smallrumres.2021.106453
9.	Huang, H., M. Szumacher-Strabel, A.K. Patra, S. Ślusarczyk, D. Lechniak, M. Vazirigohar, Z. Varadyova, A. Stochmal, M. Kozłowska, A. Cieslaka, 2021. Chemical and phytochemical composition, in vitro ruminal fermentation, methane production, and nutrient degradability of fresh or ensiled <i>Paulownia</i> hybrid leaves. <i>Animal Feed Science and Technology</i> , 279, 115038. https://doi.org/10.1016/j.anifeedsci.2021.115038

Sl. No.	Scientific Research Publication in Journals
10.	Samanta, A.K., J.M. Gali, T.K. Dutta, T.K. Rajkhowa, G.P. Mandal, and A.K. Patra, 2021. Effect of dietary phytobiotic mixture on growth performance, nutrient utilization and immunity in weaned piglets. <i>Tropical Animal Health and Production</i> 10.1007/s11250-021-02910-0.
11.	Puchalska, J., M. Szumacher-Strabel, A.K. Patra, S. Ślusarczyk, M. Gao, D. Petric, M. Nabzdyk, and A. Cieślak, 2021. The effect of different concentration of total polyphenols from Paulownia hybrid leaves on ruminal fermentation, methane production and microorganisms. <i>Animals</i> , 11(10), 2843. https://doi.org/10.3390/ani11102843
12.	Acharjee, S., G.P. Mandal, A.K. Patra, B.C. Debnath, and B. Roy, 2021. Effects of feeding rice-based dried distillers grains with solubles and condensed distillers solubles on feed intake, milk production and fatty acid composition in lactating crossbred cows. <i>Animal Nutrition and Feed Technology</i> 21: 233-247.
13.	Mirzaei-Alamouti, H., A. Beiranvand, A. Abdollahi, H. Amanlou, A.K. Patra, JR Aschenbach (2021). Growth performance, eating behavior, digestibility, blood metabolites, and carcass traits in growing-finishing fat-tailed lambs fed different levels of dietary neutral detergent fiber with high rumen undegradable protein. <i>Agriculture</i> , 11:1101.
14.	Yanza, Y.R., M. Szumacher-Strabel, D. Lechniak, S. Ślusarczyk, P. Kolodziejewski, A.K. Patra, Z. Váradyová, D. Lisiak, M. Vazirigohar, A. Cieslak (2022). Dietary <i>Coleus amboinicus</i> Lour. decreases ruminal methanogenesis and biohydrogenation, and improves meat quality and fatty acid composition in longissimus thoracis muscle of lambs. <i>Journal of Animal Science and Biotechnology</i> , 13, 5. https://doi.org/10.1186/s40104-021-00654-3
15.	Singh, S., J.S. Hundal, A.K. Patra, R.S. Sethi, and A. Sharma, 2021. A composite polyphenol-rich extract improved growth performance, ruminal fermentation, and immunity, while decreasing methanogenesis and excretion of nitrogen and phosphorus in growing buffaloes. <i>Environmental Science and Pollution Research</i> , http://doi.org/10.1007/s11356-021-17674-1
16.	Kholif, A.E., G.A. Gouda, T.A. Morsy, O.H. Matloup, M. Fahmy, A.S. Gomaa, A.K. Patra, 2022. Dietary date palm leaves treated with fibrolytic enzymes decreased methane production and improved feed degradability and fermentation kinetics in a ruminal in vitro system. <i>Waste and Biomass Valorization</i> , https://doi.org/10.1007/s12649-022-01752-7
17.	Patra, A.K., Z. Yu, 2021. Genomic insights into the distribution of peptidases among <i>Prevotella</i> and <i>Paraprevotella</i> species. <i>Micobiology Spectrum</i> , 10, e02185-21 https://doi.org/10.1128/spectrum.02185-21
18.	Kholif, A.E., Gouda, G.A., A.K. Patra (2022). The sustainable mitigation of <i>in vitro</i> ruminal biogas emissions by ensiling date palm leaves and rice straw with lactic acid bacteria and <i>Pleurotus ostreatus</i> for cleaner livestock production. <i>Journal of Applied Microbiology</i> , 132, 2925-2939. DOI: 10.1111/jam.15432

71.4. Department of Avian Science

Sl. No.	Scientific Research Publication in Journals
1.	Biswas P, Biswas S*, Pakhira M C, Kar I, Maity H K (2021): Multidrug resistant acute mastitis in a doe: A field report. <i>Ind J Anim Health</i> 60 (1): 103-105. NAAS rating: 5.25 / Impact Factor: Nil
2.	Mukherjee A, Kar I, Das S, Acharya A P, Maity H K, Biswas P and Biswas S (2021): <i>In silico</i> analysis of bovine Glutathione-S-transferase M1 (GSTM1), an essential gene governing bull semen quality. <i>Ind J Anim Health</i> 60 (2): 205-212. NAAS rating: 5.25 / Impact Factor: Nil
3.	El-Saadony M.T, Alagawany M, Patra A.K., Kar I., Tiwari R., Dawood, K. Dhama M.A.O., Abdel-Latif H.M.R. (2021) The functionality of probiotics in aquaculture: An overview, <i>Fish & Shellfish Immunology</i> , doi.org/10.1016/j.fsi.2021.07.007 , NASS rating: 10.581 / Impact factor: 4.581
4.	Patra A.K. & Kar I. (2021) Heat stress on microbiota composition, barrier integrity, and nutrient transport in gut, production performance, and its amelioration in farm animals. <i>Journal of Animal Science and Technology</i> 63(2):211-247, doi: 10.5187/jast.2021.e48, NASS rating: 7.685 / Impact factor: 1.685
5.	Mondal S, Roy B, Biswas P, Rana T, Kar I and Das S (2021) Influence of dietary zinc and manganese chelate on productive and reproductive performance of layer chicken, <i>Indian J Anim Health</i> , DOI: https://doi.org/10.36062/ijah.2021.05221 , NASS rating: 5.25
6.	Mondal. M, Maity.A, Mandal.D, Mridha.F, Jana.P.S, Pakhira.M.C., Roy.M, and Kshatriya.P, (2021). Diagnosis and Therapeutic Management of Canine Ehrlichiosis. <i>Indian J Vet Public Health</i> , 7 (2): 43-47.
7.	Mondal. M, Maity.A, Mandal.D, Jana.P.S., Roy.M, Pakhira.M.C, Mridha.F, Soren.A, Raj. R., and Kumar.K, (2021). Diagnosis and Therapeutic Management of <i>Hepatozoonosis</i> in Dog. <i>Indian J Vet Public Health</i> , 7 (2): 43-47. NAAS rating: 5.68 / Impact Factor:



7.1.5. Department of Livestock Production Management

Sl. No.	Scientific Research Publication in Journals
1.	Asish Debbarma, Nilotpal Ghosh , SyamalNaskar, MenalshLaishram, Sachin Tripura and SujataDey (2021) Effect of surgical and chemical castration on physiological parameters in Ghungroo male piglets. <i>The Pharma Innovation Journal</i> , 10(12): 2155-2159. ISSN (E): 2277- 7695, ISSN (P): 2349-8242. NAAS Rating: 5.23
2.	H Niang, M Roy, S Datta, U Sarkar, P K Senapati and S Bera (2021): Studies on reproduction and genetic parameters of Black Bengal goat (<i>Capra hircusbengalensis</i>) at farmers' field under different agro-climatic zones of West Bengal. <i>Indian Journal of Animal Sciences</i> 91 (5): 401–405. NAAS rating: 6.28
3.	Debeshi Dutta, Dwipiyoti Natta, SoumenMandal, Nilotpal Ghosh (2022) MOONitor: An IoT based multi-sensory intelligent device for cattle activity monitoring. <i>Sensors and Actuators: A. Physical (ELSEVIER)</i> , 333 (2022) 113271, https://doi.org/10.1016/j.sna.2021.113271 . Impact Factor 3.407
4.	N Debbarma, A Haldar, S Bera , T Debnath, A Paul, S Chakraborty and K Dhama (2022): Effect of Different Management Systems on the Performance of Black Bengal Goat for Sustainable and Profitable Farming. <i>Journal of Veterinary Medicine and Animal Sciences</i> http://meddocsonline.org NAAS rating : 7.821 / Impact Factor : 1.821
5.	M Podder, S Bera , S Naskar, D Sahu, J Mukherjee and A K Patra (2022): Physiological, bloodbiochemical and behavioural changes of Ghungroo pigs in seasonal heat stress of a hothumid tropical environment. <i>International Journal of Biometeorology</i> https://doi.org/10.1007/s00484-022-02281-7 NAAS rating : 9.787 / Impact Factor : 3.787

VII.1.6. Department of Livestock Products Technology

Sl. No.	Scientific Research Publication in Journals
1.	A.K.Vidyarthi, S.Biswas , R.Banerjee, G.Patra , G.Mahapatra, P WaghayeandR.K.Patel (2022). Bioactive Compounds from Selected Fruits Improve Quality and Oxidative Stability of Wallago Attu Fish Nuggets. <i>Indian Journal of Animal Research</i> . 10.18805/IJAR.B-4506. NAAS-6.40
2.	D Dhara, S Biswas , O Biswas, G Patra , P Kandasawamy (2021). Effect of pomegranate peel powder on cooked spent layers chicken meatballs. <i>Indian Journal of animal Health</i> . DOI: https://doi.org/10.36062/ijah.2021.spl.01921 . NAAS-5.25
3.	R.Banerjee, B.M.Nveena, K.Mohan, S.Biswas , S.Batabyal (2021) Proteomic Technologies and their application for ensuring meat quality, safety and authenticity. <i>Current Proteomics</i> . 10.2174/1570164618666210114113306.
4.	R Banerjee, NB Maheswarappa, YP Gadekar, S Biswas , G Patra , D Bhattacharyya , G Mahapatra, AK Vidyarthi (2021). Authentication of muscle foods: A proteomic and metabolomic insight. DOI: https://doi.org/10.36062/ijah.2021.spl.01221
5.	M. Sinhamahapatra and S. Biswas (2021). Surface decontamination - a prerequisite for safe production of muscle food. DOI: https://doi.org/10.36062/ijah.2021.spl.02321 .
6.	Dhananjoy Dhara , Subhasish Biswas , Olipriya Biswas (2022). Effect of Bael (<i>Aegle marmelos</i> L.) Pulp Residue on Quality and Storability of Chicken Meatballs from Spent Layers. DOI: 10.18805/ajdfr.DR-1837.

7.1.7. Department of Veterinary Anatomy & Histology

Sl. No.	Scientific Research Publication in Journals
1.	Behera M, Sathapathy S, Mandal A K (2021). Gross morphometrical changes in leg bones of post-hatch male broiler chickens with special reference to growth plate cartilage. <i>Explor Anim Med Res</i> , 11(2): 188-197. (NAAS rating: 5.85)
2.	Singh D, Mandal AK, Das P, Ray S, Tudu N K, Batabyal S, Gautam A K, Islam M and Kumar M (2021). Gross anatomical studies on the glycogen body in pot hatch broiler chicken with reference to age. <i>Journal of Entomology and Zoology Studies</i> , 9(1):999-1001. (NAAS rating: 5.53)
3.	Islam M M, Das P, Roy B, Mandal A K, Ray S, Tudu NK, Samanta I, Mukherjee J, Batabyal S and Datta S (2022). Effect of selenium-enriched yeast supplement on the gross morphology and morphometry of the small intestine during post-hatch growth of chicken. <i>The Pharma Innovation Journal</i> , 11(3):1318-1323. (NAAS rating: 5.23)
4.	Adhikary J, Das P and Ranjan R (2021). Gross and histomorphological studies on the lens of eyeball of Murrah buffaloes (<i>Bubalus bubalis</i>). <i>Indian J Vet Anatomy</i> , 33(2):111-112. (NAAS rating: 4.86)

7.1.8. Department of Veterinary Biochemistry

Sl. No.	Scientific Research Publication in Journals
1.	Sinha, B.S., Sarkar, S., Lodh, C., Gupta, A.R., Batabyal, S. and Jas, R., (2021). Prevalence of Bovine Theileriosis in South Bihar. <i>Pharma Innov. J.</i> , 776-780.
2.	Rawat, K., Pal, A., Banerjee, S., Pal, A., Mandal, S. C., & Batabyal, S. (2021). Ovine CD14- an Immune Response Gene Has a Role Against Gastrointestinal Nematode <i>Haemonchus contortus</i> -A Novel Report. <i>Frontiers in immunology</i> , 12, 664877. Impact factor : 6.429
3.	Bandyopadhyay S, Banerjee J, Bhattacharyya D, Tudu R, Samanta I, Dandapat P, Nanda PK, Das AK, Mondal B, Batabyal S , Dutta TK. (2021). Companion Animals Emerged as an Important Reservoir of Carbapenem-Resistant Enterobacteriaceae: A Report from India. Current Microbiology . 78(3):1006-16. Impact factor : 2.16
4.	Islam MM, Das P, Roy B, Mandal AK, Ray S, Tudu NK, Samanta I, Mukherjee J, Batabyal S , Datta S (2022). Effect of Selenium-enriched yeast supplement on the gross morphology and morphometry of the small intestine during post-hatch growth of chicken. <i>The Pharma Innovation Journal</i> ; 11(3): 1318-1323. NAAS Rating: 5.23
5.	Mondal M, Maity A, Mandal D, Jana P S, Roy M, Pakhira M C, Mridha F, Soren A, Raj R and Kumar K (2021): Diagnosis and Therapeutic Management of <i>Hepatozoonosis</i> in Dog. <i>International Journal of Current Microbiology and Applied Science</i> 10(08): 550-555. NAAS rating: 5.38
6.	Mondal M, Maity A, Mandal D, Mridha F, Jana P S, Pakhira M C, Roy M and Kshatriya P (2021): Diagnosis and Therapeutic Management of Canine Ehrlichiosis. <i>Indian Journal of Veterinary Public Health</i> 7(2) : 43-47 NAAS rating: 4.44
7.	Hains D S, Polley S, Liang D, Saxena V, Arregui S, Ketz J, Barr-Beare E, Rawson A, Spencer J D, Cohen A, Hansen P L, Tuttolomondo M, Casella C, Ditzel H J, Cohen D, Hollox E J, and Schwaderer A L (2021): Deleted in malignant brain tumor 1 genetic variation confers urinary tract infection risk in children and mice. <i>Clinical and translational medicine</i> , 11(7), e477. https://doi.org/10.1002/ctm2.477 Impact factor : 11.492
8.	Patra G, Efimova M A, Sahara A, Al- Abodi H, Borthakur S, Ghosh S, Polley S and Debbarma A (2021): Prevalence of endoparasitic fauna of various species of birds in North-Eastern region of India. <i>Biological Rhythm Research</i> , 52:6, 882-894, DOI: 10.1080/09291016.2019.1608725 Impact factor : 1.219
9.	Patra G, Polley S, Efimova M A, Sahara A, Debbarma A and Alam S S (2022): Prevalence and molecular detection of tick borne pathogens in goats and ticks from different parts of North Eastern regions of India. <i>International Journal of Acarology</i> , 48:2, 106-113, DOI: 10.1080/01647954.2022.2036232 Impact factor : 1.056
10.	Patra G, Efimova M A, Sahara A, Borthakur S K, Ghosh S, Behera P, Polley S, and Debbarma A (2022): Incidence of ecto-and endo-parasitic fauna in small wild ruminants from North Eastern region of India, <i>Biological Rhythm Research</i> , 53:2, 185-196, DOI: 10.1080/09291016.2019.1628401 Impact factor : 1.219
11.	Kesh S S, Palai S and Biswas S (2021): Drugs Contraindicated in Cats. <i>The Pharma Innovation Journal</i> , 10(6S), 452-456 NAAS rating: 5.23

7.1.9. Department of Veterinary Clinical Complex

Sl. No.	Scientific Research Publication in Journals
1	Rana T (2022) Influence and Implications of the Molecular Paradigm of Nitric Oxide Underlying Inflammatory Reactions of the Gastrointestinal Tract of Dog: A Major Hallmark of Inflammatory Bowel Disease, <i>Inflammatory Bowel Diseases</i> , (Oxford Academic) 2022; izac017, https://doi.org/10.1093/ibd/izac017 . NAAS rating: NIL/Impact factor: 5.325
2	Rana T (2021) Prospects and future perspectives of selenium nanoparticles: An insight of growth promoter, antioxidant and anti-bacterial potentials in productivity of poultry. <i>Journal of Trace Elements in Medicine and Biology</i> . Volume 68, December 2021. NAAS rating : 9.85 / Impact Factor : 3.849
3	Rana, T. Nano-selenium on reproduction and immunocompetence: an emerging progress and prospect in the productivity of poultry research. <i>Trop Anim Health Prod</i> 53, 324 (2021). https://doi.org/10.1007/s11250-021-02698-z . NAAS rating : 7.56 / Impact Factor : 1.559
4	Roy, S., Mukherjee, P., Das, P.K., Ghosh, P.R., Datta, P., Kundu, B. and Nandi, S.K., 2021. Local delivery systems of morphogens/biomolecules in orthopedic surgical challenges. <i>Materials Today Communications</i> , 25: 1-17. Impact Factor: 9.383



Sl. No.	Scientific Research Publication in Journals
5	Roy S, Mukherjee P, Nandi SK. In vivo imaging tools for functional assessment of biomaterials implanted bone regeneration. <i>J Clin Images Med Case Rep.</i> 2021; 2(6): 1504. Impact Factor: 7.8
6	F. Mridha, C. K. Ghosh and S. Halder. 2021. Surgical management of traumatic wing in an Indian black kite (<i>Milvismigrans</i>). <i>Indian J Anim Health.</i> 60(1): 106-108.
7	F. Mridha, S. Halder and C.K. Ghosh. 2022. Pulse Oximetry led Evaluation of Anaesthetic Hypoxemic Effect using Propofol, Thiopental Sodium and Propofol-Thiopental Sodium mixture in Total Intravenous Anesthesia (TIVA) in Canine by Saturation of Peripheral Oxygen (SpO ₂) Estimation. <i>International Journal of Agriculture Sciences.</i> 14(4): 11232-11233. NAAS rating :4.73 / Impact Factor : 1.90.
8	Mondal, M., Maity, A., Mandal, D., Jana, P.S., Roy, M., Pakhira, M.C., Mridha, F., Soren, A., Raj, R. and Kumar, K. 2021. Diagnosis and therapeutic management of Hepatozoonosis in dog. <i>International Journal of Current Microbiology and Applied Sciences</i> , 10(08): 550-555. NAAS rating: 5.38
9	Mondal, M., Maity, A., Mandal, D., Mridha, F., Jana, P.S., Pakhira, M.C., Roy, M. and Kshatriya, P. 2021. Diagnosis and therapeutic management of Canine Ehrlichiosis. <i>Indian Journal of Veterinary Public Health</i> , 7(2): 43-47. NAAS rating: 5.38

7.1.10. Department of Veterinary Epidemiology & Preventive Medicine

Sl. No.	Scientific Research Publication in Journals
1.	Mondal, M., Maity, A., Mandal, D., Jana, P. S. , Roy, M., Pakhira, M. C., Mridha, F., Soren, A., Raj, R. and Kumar, K. (2021). Diagnosis and Therapeutic Management of Hepatozoonosis in Dog. <i>Int.J.Curr.Microbiol.App.Sci.</i> 10(08): 550-555.

7.1.11. Department of Veterinary Gynaecology & Obstetrics

Sl. No.	Scientific Research Publication in Journals
1.	Kumar, K., Jha, A.K., Ray, Kalyani , Gautam, A.K. and Singh D. (2021). Diagnosis of Tvt with Cell Cytology and Efficacy of Treatment with Vincristine Sulfate in Non- Descriptive Indian Canine Breeds. <i>Indian Journal of Animal Research.</i> 55(11): 12-1355 DOI 10.18805/IJAR.B-4175. NAAS rating : 6.44 Impact Factor : 0.44
2.	Sarkar, A., Ray, Kalyani , Basu, S., Jha, A.K., Mandal, A., Mandal, D., Sarkar, P., Kumar, K. and Datta, S. (2022). Clinico-pathological Studies on Canine Mammary Tumors in Dachshund Dog. <i>Indian Journal of Animal Research.</i> 56(3): 336-341. DOI: 10.18805/IJAR.B-4271. NAAS rating : 6.44 Impact Factor : 0.44

7.1.12. Department of Veterinary Microbiology

Sl. No.	Scientific Research Publication in Journals
1.	Bandyopadhyay, S., Banerjee, J., Bhattacharyya, D., Tudu, R., Samanta, I., Dandapat, P., Nanda, P.K., Das, A.K., Mondal, B., Batabyal, S., Dutta, T.K. (2021). Companion animals emerged as an important reservoir of carbapenem-resistant <i>Enterobacteriaceae</i> : a report from India. <i>Current Microbiology</i> 78(3):1006-1016. [NAAS rating: 8.19; IF: 2.19]
2.	Bandyopadhyay, S., Bhattacharyya, D., Samanta, I., Banerjee, J., Habib, M., Dutta, T.K. and Dutt, T., 2021. Characterization of multidrug-resistant biofilm-producing <i>Escherichia coli</i> and <i>Klebsiella pneumoniae</i> in healthy cattle and cattle with diarrhea. <i>Microbial Drug Resistance</i> 27 (11): 1457-1469. [NAAS Rating: 9.43; IF: 3.43]
3.	Lalhruaipuii, K., Dutta, T.K., Roychoudhury, P., Chakraborty, S., Subudhi, P.K., Samanta, I., Bandyopadhyay, S., Singh, S.B. (2021). Multidrug-resistant extended-spectrum β -lactamase-producing <i>Escherichia coli</i> pathotypes in North Eastern Region of India: backyard small ruminants–human–water interface. <i>Microbial Drug Resistance</i> 27 (12): 1664-1671 [NAAS Rating: 9.43; IF: 3.43]
4.	Arnold, J.C., Day, D., Hennessey, M., Alarcon, P., Gautham, M., Samanta, I. and Mateus, A. (2021). “If It Works in People, Why Not Animals?”: A Qualitative Investigation of Antibiotic Use in Smallholder Livestock Settings in Rural West Bengal, India. <i>Antibiotics</i> , 10(12):1433 [MRC(UK) funded project finding in which I. Samanta acts as PI of WBUAFS center; NAAS Rating: 10.64; IF: 4.64]
5.	Chowdhury, M., Bardhan, R., Pal, S., Banerjee, A., Batabyal, K., Joardar, S.N., Mandal, G.P., Bandyopadhyay, S., Dutta, T.K., Sar, T.K. and Samanta, I. (2022). Comparative occurrence of ESBL/AmpC beta-lactamase-producing <i>Escherichia coli</i> and <i>Salmonella</i> in contract farm and backyard broilers. <i>Letters in Applied Microbiology</i> 74 (1): 53-62 [I Samanta as Corresponding author; NAAS Rating: 8.86; IF: 2.86]

Sl. No.	Scientific Research Publication in Journals
6.	Bhattacharyya, D., Banerjee, J., Habib, M., Thapa, G., Samanta, I., Nanda, P.K., Dutt, T., Sarkar, K., Bandyopadhyay, S. (2022). Elucidating the resistance repertoire, biofilm production, and phylogenetic characteristics of multidrug-resistant <i>Escherichia coli</i> isolated from community ponds: A study from West Bengal, India. <i>Water Environment Research</i> 94: e1678 [NAAS Rating: 7.95; IF: 1.95]
7.	Das, P.K., Samanta, I. (2021). Role of backyard poultry in South-East Asian countries: post COVID-19 perspective. <i>World's Poultry Science Journal</i> 77 (2) : 415-426 [NAAS Score: 8.92; IF: 2.92]
8.	Baidya, S., Jana, P.S., Guha, C., Biswas, U., Samanta, I. (2021). Molecular Epidemiology of Canine Parvovirus (CPV 2) in Dogs in and around Kolkata and Comparison between Field Isolate and Vaccinal Strain. <i>Indian Veterinary Journal</i> 98 (03): 15 – 20 [I. Samanta as corresponding author]
9.	Islam, M., Das, P., Roy, B., Mandal, A.K., Ray, S., Tudu, N.K., Samanta, I., Mukherjee, J., Batabyal, S., Datta, S. (2022). Effect of Selenium-enriched yeast supplement on the gross morphology and morphometry of the small intestine during post-hatch growth of chicken. <i>The Pharma Innovation Journal</i> SP-11(3): 1318-1323 [NAAS score: 5.23]
10.	Biswas A, Dash G, Mali P, Joardar SN, Dey B, Roy A and Karmakar S (2021): Histopathology of head kidney tissues in challenged rohu, <i>Labeo rohita</i> Hamilton after vaccinating with <i>Aeromonas hydrophila</i> antigens. <i>Fish and Shellfish Immunology Reports</i> . https://doi.org/10.1016/j.fsirep.2021.100025 .
11.	Amla, Dey, S., Batabyal, K., Joardar, S.N., Samanta, I. and Isore, D.P. (2022). Prevalence of Shigatoxigenic, Enteropathogenic and Antimicrobial Drug Resistant <i>Escherichia coli</i> from Captive Wild Animals of Alipore Zoo, Kolkata, India. <i>Indian Journal of Animal Research</i> . (In Press) [NAAS score 6.44] [Dey. S. as corresponding author]
12.	Mondal, T., Batabyal, K., Dey, S., Samanta, I., Isore, D.P., Banerjee, A., Singh, A.D. (2021): Detection of Multi-drug resistant Extended-spectrum Beta-lactamases producing <i>Escherichia coli</i> from Chicken meat in West Bengal. <i>Indian J. Vet. Public Hlth.</i> , 2021, 8(1): 46-54. (ISSN No. 0976-948X)
13.	Joardar S.N. (2021). Emerging threat of bluetongue in eastern and north-eastern Indian states. <i>Indian Journal of Comparative Microbiology, Immunology and Infectious Diseases</i> . 42 (2): 171-175
14.	Joardar S.N. (2022). Prevalence and sero-epidemiology of bluetongue with special reference to eastern and nor-eastern states of India. <i>Journal of Basic and Applied Zoology</i> . https://doi.org/10.1186/s41936-022-00271-0
15.	Mithin UC, Buragohain R, Das PK, Mandal TK, Hansda RN, Joardar SN, Samanta I and Sar TK (2022). Pharmacokinetics of ceftriaxone-tazobactam (8:1) combination in healthy and <i>Escherichia coli</i> induced diarrhoeic birds. <i>ADMET and DMPK</i> . doi: https://doi.org/10.5599/admet.1170
16.	Rather MA, Deori PJ, Gupta K, Daimary N, Deka D, Qureshi A, Dutta TK, Joardar SN and Mandal M (2022). Ecofriendly phytofabrication of nanoparticles using aqueous extract of <i>Cuphea carthagenesis</i> and their antioxidant potential and antibacterial activity against clinically important human pathogens. <i>Chemosphere</i> . https://doi.org/10.1016/j.chemosphere.2022.134497 . Impact Factor : 7.086

7.1.13. Department of Veterinary Pathology

Sl. No.	Scientific Research Publication in Journals
1.	Patra N. C. (2021) “Recent Advances in Accreditation Systems in Higher Agricultural Educational Institutes (HAER) in India: A Review. <i>IIJLS</i> . page no 2867- 2883.

7.1.14. Department of Veterinary Pharmacology & Toxicology

Sl. No.	Scientific Research Publication in Journals
1.	Tapas Kumar Sar, Rinku Buragohain, Rabindra Nath Hansda, Tapan Kumar Mandal(2022). Enhanced plasma persistence of ceftriaxone following single intramuscular injection with prior oral dosing of a mammary protective commercial herbal drug as complementary therapy. <i>Phytomedicine Plus</i> . Pp. 100228; Vol.2(2).
2.	Mithin U.C, Rinku Buragohein, Pradip K. Das, Tapan K. Mandal, Rabin N Hansda, Siddhartha N Joardar, Indranil Samanta and Tapas K. Sar (2022). Pharmacokinetics of ceftriaxone-tazobactam (8:1) combination in healthy and <i>Escherichia coli</i> induced diarrhoeic birds. <i>ADMET & DMPK</i> . http://doi.org/10.5599/admet.1170



7.1.15. Department of Veterinary Public Health

Sl. No.	Scientific Research Publication in Journals
1.	Singh, A.D., Debnath, C. and Banerjee, A., 2021. Epidemiological investigation, characterization and antifungal susceptibility profile of <i>Microsporum canis</i> isolated from pet animals. <i>Veterinarski arhiv</i> , 91(4), pp.339-347. NAAS rating : 6.5.
2.	Abhishek Dharm Singh, Chanchal Debnath, Saktipada Pradhan, Samiran Mondal, Ripan Biswas, Rahul Barua, Tapas Kumar Sar., 2021./ Exploration of in vitro synergistic antifungal potential of <i>Ficus racemosa</i> and <i>Cassia fistula</i> L. against multi-drug resistant <i>Microsporum canis</i> . <i>Explor Anim Med Res</i> , 11(1): 115-118. NAAS rating : 5.85.
3.	Biswas, R., Debnath, C., Samanta, I., Barua, R. and Singh, A.D. (2020). Ecology of bats and their role in emerging zoonotic diseases. <i>Rev. Sci. Tech. Off.Int. Epiz.</i> 39(3): 1077-1090. NAAS rating : 7.18.

7.1.16. Department of Veterinary Surgery & Radiology

Sl. No.	Scientific Research Publication in Journals
1.	Santanu Mandal, Viraj, Samit Kumar Nandi and Mangal Roy. 2021. Effects of multiscale porosity and pore interconnectivity on in vitro and in vivo degradation and biocompatibility of Fe-Mn-Cu scaffold. <i>Journal of Materials Chemistry B</i> 9(21): 4340-4354. NAAS rating : 12.33.
2.	Piyali Das, Rutusmita Mishra, Bavya Devi, Kanike Rajesh, Piyali Basak, Mangal Roy, Partha Roy, Debrupa Lahiri and Samit Kumar Nandi. 2021. Decellularized xenogenic cartilage extracellular matrix (ECM) scaffolds for the reconstruction of osteochondral defects in rabbits. <i>Journal of Materials Chemistry B</i> , 9:4873. NAAS rating : 12.33.
3.	Subhasis Roy, Prasenjit Mukherjee, Pradip Kumar Das, Prabal Ranjan Ghosh, Pradyot Datta, Biswanath Kundu and Samit K Nandi. 2021. Local delivery systems of morphogens/biomolecules in orthopedic surgical challenges. <i>Materials Today Communications</i> . 27: 102424 IF 3.383 . Thompson Reuters-3.383; NAAS=6+3.383=9.383.
4.	Prerak Gupta, Gaurab Ranjan Chaudhuri, G. Janani, Manoj Agarwala, Debaki Ghosh, Samit K. Nandi and Biman B. Mandal. 2021. Functionalized Silk Vascular Grafts with Decellularized Human Wharton's Jelly Improves Remodeling via Immunomodulation in Rabbit Jugular Vein. <i>Advanced Healthcare Materials</i> 2100750. Thompson Reuters-9.933; NAAS=6+9.933=15.933.
5.	Subhasis Roy, Prasenjit Mukherjee and Samit Kumar Nandi. 2021. In vivo imaging tools for functional assessment of biomaterials implanted bone regeneration. <i>Journal of Clinical Images & Medical Case Reports</i> 2: 1-10. Thompson Reuters-1.2; NAAS=6+1.2=7.2.
6.	Jana, Sonali, Das, Piyali, Mukherjee Joydip, Banerjee Dipak, Ghosh Prabal Ranjan, Das Pradip Kumar, Bhattacharya Rup Narayan and Nandi Samit Kumar. 2022. Waste derived biomaterials as building blocks in the biomedical field. <i>Journal of Materials Chemistry B</i> 10:489 – 505. NAAS rating : 12.33.
7.	Sonali Jana, Pradyot Datta, Himanka Das, Prabal Ranjan Ghosh, Biswanath Kundu and Samit Kumar Nandi. 2022. Engineering vascularizing electrospun dermal grafts by integrating fish collagen and ion-doped bioactive glass. <i>ACS Biomaterial Sciences and Engineering</i> . 8(2):734–752. Thompson Reuters-4.749; NAAS=6+4.749=10.749.
8.	Itishree Ratha, Pradyot Datta, Nimu Chand Reger, Himanka Das, Vamsi Krishna Balla, K. Bavya Devi, Mangal Roy, Samit Kumar Nandi, Biswanath Kundu. 2022. In vivo osteogenesis of plasma sprayed ternary-ion doped hydroxyapatite coatings on Ti6Al4V for orthopaedic applications. <i>Ceramic International</i> DOI: https://doi.org/10.1016/j.ceramint.2022.01.004 . NAAS rating : 10.53.
9.	Bibrita Bhar, Bijayashree Chakraborty, Samit K. Nandi, and Biman B. Mandal. 2022. Silk-based phyto-hydrogel formulation expedites key events of wound healing in full-thickness skin defect model. <i>International Journal of Biological Macromolecules</i> 203: 623–637. NAAS rating : 12.95.
10.	Jasna Nambiar, Sonali Jana and Samit Kumar Nandi. 2022. Strategies for Enhancing Vascularization of Biomaterial-based Scaffold in Bone Regeneration. <i>The Chemical Record</i> DOI: 10.1002/tcr.202200008. Thompson Reuters-6.771 NAAS=6+6.771= 12.771
11.	S. Hazra, N. Maity, A. Konar (2021). Topical Pirfenidone drops diminish opacity in dogs with corneal defects, in vitro safety, and in vivo efficacy – A pilot study, <i>Revue Vétérinaire Clinique</i> 54 (2021): 63-68; Elsevier Impact factor: 0.6

7.1.17. Department of Veterinary & Animal Husbandry Extension Education

Sl. No.	Scientific Research Publication in Journals
1.	Development of cognitive learning scale to test the knowledge level of Vety. Students on ICT; <i>S.M. Nanda, A. Goswami & S. Biswas.</i> ; IRJEE, Vol:22(1)-Jan-March, 2022(NAAS Rate-5.22)
2.	Job satisfaction of Veterinarians in relation with various SPV in Odisha & WB, India. <i>S.M. Nanda, A. Goswami, S. Biswas, d. Ganguly & D.saha.</i> ; The Pharma Innovation, SP11(1):1046-1051,2022(NAAS-5.23)
3.	A comparative study on various SPA of selected santhal & sabar tribes of DD district in WB; Swarna Biswas & S. Biswas (Corr. Author); <i>Env. & Ecology</i> ; Vol. No.39(3) Sept, 2021(NAAS-5.25)
4.	Kakani Vijay Prakash, Debasis Ganguli, Arunasis Goswami and Chanchal Debnath. 2021. Animal Husbandry Mobile Apps in Transformation Livestock Farming. <i>Int. J. Curr. Microbiol. App. Sci.</i> 10(09): xx-xx. doi:https://doi.org/10.20546/ijcmas.2021.1009.xx

7.2. FACULTY OF FISHERY SCIENCES

7.2.1 Department of Aquaculture

Sl. No.	Scientific Research Publication in Journals
1	S K Das and A Mandal (2021): Environmental amelioration in biofloc based rearing system of white leg shrimp (<i>Litopenaeus vannamei</i>) in west Bengal, India. <i>Aquatic Living Resources</i> 34: 17 pp. NAAS rating: 7.885 / Impact Factor: 1.885
2	S K Das and A Mandal (2021): Supplementation of biofloc in carp (<i>Cyprinus carpio</i> ver. <i>communis</i>) culture as a potential tool of resource management in aquaculture. <i>Aquatic Living Resources</i> 34: 12 pp. NAAS rating: 7.885 / Impact Factor: 1.885.
3	M K Pati, R Nasar and S K Das (2021): Investigations on the need matrix of Primary Fishermen's Cooperative Societies in the district of North 24 Parganas, West Bengal. <i>Indian J Anim. Health</i> 60 (1), 31-39 (NAAS: 5.25).
4	S Saha, P Jana, TK Ghosh, RN Mondal, Maiti S, S Karmrkar, B. Dey and, S N Boda (2021): Immunostimulatory Potency Developed in <i>Pangasianodon hypophthalmus</i> Against <i>Aeromonas hydrophila</i> Through <i>Ocimum sanctum</i> Supplemented Diet. <i>Animal Nutrition and Feed Technology</i> 21:135-150 (NAAS: 6.15).
5	Sourav, Maiti, Suvendu Saha, Prasanta Jana, Arka Chowdhury, Sanjib Khatua and Tapas Kumar Ghosh (2021): Effect of dietary <i>Andrographis paniculata</i> leaf extract on growth, immunity, and disease resistance against <i>Aeromonas hydrophila</i> in <i>Pangasianodon hypophthalmus</i> . <i>Journal of Applied Aquaculture</i> https://doi.org/10.1080/10454438.2021.1959861. Impact Factor: 1.33

7.2.2 Department of Aquatic Animal Health

Sl. No.	Scientific Research Publication in Journals
1.	Das, S.K., Nagesh, T.S., Das, A., Abraham, T.J., and Vishwanath, T.S., 2022. Stress mitigating and growth-enhancing effect of dietary vitamin E in Indian major carps cultured in east Kolkata wetlands, India. <i>Proceedings of the Zoological Society</i> , DOI: 10.1007/s12595-021-00429-8 (NAAS: 4.42).
2.	Abraham T.J., Adikesavalu, H., Patra, A., Banerjee, S. and Paul, P., 2021. Characterization of <i>Vogesella perlucida</i> associated with ascites of diseased <i>Clarias gariepinus</i> (Burchell) with and ruptured intestine syndrome. <i>Fisheries and Aquatic Life</i> , 29: 255 – 264. DOI 10.2478/aopf-2021-0028 (NAAS: Nil; IF: 0.82)
3.	Abraham T.J., Adikesavalu, H., Patra, A., Banerjee, S. and Paul, P., 2021. Characterization of <i>Vogesella perlucida</i> associated with ascites of diseased <i>Clarias gariepinus</i> (Burchell) with and ruptured intestine syndrome. <i>Fisheries and Aquatic Life</i> , 29: 255 – 264. DOI 10.2478/aopf-2021-0028 (NAAS: Nil; IF: 0.82)
4.	Singha, J. Abraham, T.J., Roy, A., Dash, G., Nagesh, T.S. and Patil, P.K., 2021. Use of aquadugs, chemicals, and biological products in freshwater aquaculture systems of West Bengal, India. <i>Journal of Fisheries and Life Sciences</i> , 6(1): 7-18. (NAAS: Nil; IF: Nil)
5.	Roy, A., Abraham, T.J., Singha, J., Julinta, R.B. and Boda, S., 2021. Efficacy of oral oxytetracycline therapy against <i>Aeromonas caviae</i> infection in Nile tilapia <i>Oreochromis niloticus</i> (L.) juveniles. <i>Journal of Fisheries</i> , 9(3): 93206. (NAAS: Nil; IF: Nil)



Sl. No.	Scientific Research Publication in Journals
6.	Abraham, T.J., Roy, A., Julinta, R.B., Singha, J., Patil, P.K., Krishna, E.K.N., Rajisha, R., and Kumar, K.A., 2021. Accumulation and clearance of tissue residues and health status of Nile tilapia <i>Oreochromis niloticus</i> (L.) juveniles as influenced by the extended oral oxytetracycline-dosing. <i>Environmental Science and Pollution Research</i> ,28: 55362-55372. https://doi.org/10.1007/s11356-021-214854-x (NAAS: 10.223; IF: 4.223)
7.	Bardhan, A., Abraham, T.J., Qureshi, Q.A. and Chakraborty, R., 2021. Antibiotic-resistant motile aeromonads associated with cultured Indian major carps, pond water, and pond sediment. <i>Bacterial Empire</i> , 4(4): e310. DOI: 6 https://doi.org/10.36547/be.310 . (NAAS: Nil; IF: Nil)
8.	Sarker, S., Singha, J. and Abraham, T.J., 2021. Effect of dietary supplementation of Indian pennywort <i>Centella asiatica</i> leaf powder on the growth performance of <i>Labeorohita</i> (Hamilton 1822). <i>Journal of Medicinal Herbs</i> , 12(3): 31-37 .doi: 10.30495/MEDHERB.2021.686162.(NAAS: Nil; IF: Nil)
9.	Abraham, T.J., Roy, A., Julinta, R.B., Singha, J., and Patil, P.K., 2021. Dietary therapeutic dose of oxytetracycline influences histopathological alterations in Nile tilapia <i>Oreochromis niloticus</i> (L.). <i>Aquaculture Research</i> , 52(11): 5925-5930. https://doi.org/10.1111/are.15445 , (NAAS: 7.748; IF: 1.748)
10.	Das, A., Nagesh, T.S., Das, S., and Abraham, T.J., 2021. Stress responses of Indian major carps cultured in the East Kolkata Wetland, West, India. <i>Aquatic Research</i> , 4(4): 351-362. https://doi.org/10.3153/AR21030 (NAAS: Nil; IF: Nil) Bardhan, A., and Abraham, T.J., 2021. Antibiotic resistance in motile <i>Aeromonas</i> spp. of Indian major carps sold in retail markets of peri-urban Kolkata, India. <i>Journal of Aquatic Food Product Technology</i> , 30(7): 788-793. DOI: 10.1080/10498850.2021.1945178 (NAAS: 7.103; IF: 1.103)
11.	Abraham, T.J.,Julinta, R.B., Roy, A., Singha, J., Patil, P.K., Kumar, A.K., Paria, P., and Behera, B.K., 2021. Dietary therapeutic dose of oxytetracycline negatively influences the antioxidant capacity and immune-related genes expression in Nile tilapia <i>Oreochromis niloticus</i> (L.). <i>Environmental Toxicology and Pharmacology</i> 87(2021): 103685. https://doi.org/10.1016/j.etap.2021.103685 (NAAS: 10.86; IF: 4.86)
12.	Priyadarsani, L., Abraham, T.J.,Adikesavalu, H., Dash, G., and Nagesh, T.S., 2021. Effects of dietary supplementation of vitamin E and commercial probiotics on the innate immunity of <i>Labeorohita</i> against <i>Aeromonas hydrophila</i> infection. <i>Fish and Shellfish Immunology Report</i> , 2(2021) 100013, https://doi.org/10.1016/j.fsirep.2021.100013 (NAAS: Nil; IF: Nil)
13.	Patil, P.K., Geetha, R., Ravishankar, T., Avunje, S, Solanki, H.S., Abraham, T.J., Vinoth, S.P., Jithendran, K.P., Alavandi, S.V. and Vijayan, K.K., 2021. Economic loss due to diseases in Indian shrimp farming with special reference to <i>Enterocytozoonhepatopenaei</i> (EHP) and white spot syndrome virus (WSSV). <i>Aquaculture</i> , 533(2021) 736231. https://doi.org/10.1016/j.aquaculture.2020.736231 (NAAS: 10.242; IF: 4.242)
14.	Roy, A., Abraham, T.J.,Julinta, R.B., Singha, J., Boda, S., Dash, G., Nagesh, T.S.,Sar, T.K., and Patil, P.K., 2021. Influence of fluctuating water temperature and dietary oxytetracycline on the safety of monosex Nile tilapia <i>Oreochromis niloticus</i> fries. <i>Bulletin of Environmental Contamination and Toxicology</i> , 107: 361-367. https://doi.org/10.1007/s00128-021-03227-2 (NAAS: 8.151; IF: 2.151)
15.	Sau, S., Nagesh, T.S., Trivedi, R. K., Abraham, T.J., Dubey, S.K., Rout, S.K., Biswas, I., and Bhakta, D., 2021. Spatial distribution and diversity inventory of macro-benthic fauna in the Indian Sundarban. <i>Indian Journal of Fisheries</i> , 68(1): 9-18. DOI: 10.21077/ijf.2021.68.1.72391-02 (NAAS: 6.26; IF: 0.38).
16.	Hoque, F and Abraham, T.J., 2021. Adhesion and colonization of potential probiont <i>Pseudomonas aeruginosa</i> FARP72 in theintestine ofyellowtail catfish, <i>Pangasius pangasius</i> . <i>Archives of Microbiology</i> , 203:2711–2717. https://doi.org/10.1007/s00203-021-02188-8 (NAAS: 7.884; IF: 1.884)
17.	Bardhan, A., Qureshi, Q.A. and Abraham, T.J., 2021. Cluster analysis of oxytetracycline and chloramphenicol susceptibility in <i>Aeromonas</i> spp. and <i>Escherichia coli</i> from the aquaculture environment. <i>Mediterranean Journal of Infection, Microbes, and Antimicrobials</i> , 10: 5, DOI: 10.4274/mjima.galenos.2021.2020.5. (NAAS: Nil; IF: Nil)
18.	Avijit Biswas, Gadadhar Dash, Prasenjit Mali, Siddhartha Narayan Joardar,Biswadeep Dey, Anwasha Roy, SutanuKarmakar2021, Histopathology of head kidney tissues in challenged rohu, <i>Labeorohita</i> Hamilton after vaccinating with <i>Aeromonas hydrophila</i> antigens. <i>Fish and Shellfish Immunology Reports</i> ,2,(2021)100025
19.	Debajyoti Pradhan andGadadhar Dash,2021.Impacts of Climate change on Shrimp farming inIndia, <i>International Journal of Researches in Biosciences, Agriculture and Technology</i> , Special-17, 2021: 459-471
20.	Sanjib Saha andGadadhar Dash,2021,Climatic Stress on cultured <i>Scylla</i> sp.: Impact onLivelihood and Public health in West Bengal. <i>International Journal of Researches in Biosciences, Agriculture and Technology</i> , Special-17, 2021: 331-344.

Sl. No.	Scientific Research Publication in Journals
21.	Sanjib Saha and Gadadhar Dash, 2021, Zoonotic vibrio diversity and diseases in mud crab fishery: Impacts on public health in India, Uttar Pradesh Journal of Zoology, 42(19): 48-58, NAAS Score: 4.21
22.	Prasenjit Mali. Swagat Ghosh. Gadadhar Dash. T. Jawahar Abraham. Supratim Chowdhury. Sudhir Kumar 2021. A study on the ground reality of freshwater fish farming in biofloc tank in West Bengal, India. J. Inland Fish. Soc. India 53 (3&4): 132-142 NAAS Score: 5.7

7.2.3 Department of Fishery Engineering

Sl. No.	Scientific Research Publication in Journals
1.	Shaik Kouser, Subhasis Dolui, N A Talwar, Gora Shiva Prasad, Satyanarayana Boda and Manjusha: Preliminary studies of a prototype electric dipnet for fish capture. The Pharma Innovation Journal 2022; SP-11(4):827-835 Vutukuri. NAAS Rating: 5.23
2.	Biswas O and Kandasamy P (September, 2021): Development and experimental investigation of portable solar-powered thermoelectric cooler for preservation of perishable foods. International Journal of Renewable Energy Research, 11(3) (2021): 1292-1303. (Indexed in Scopus, Web of Science and UGC group-II Journals)
3.	Biswas O, Kandasamy P, Mandal G and Panda D. (October, 2021): Effectiveness of solar thermoelectric cooler for fish preservation: Experimental study on quality characteristics of Pangasius bocourti fish fillets during storage. Journal of Experimental Biology and Agricultural Sciences. 9(5): 618-629. (Indexed in Scopus Listed and UGC group-II Journals)
4.	Biswas O, Kandasamy P, Patnaik S, Lorenzo J M and Das A K. (December, 2021): Effect of phytochemicals on quality and safety aspects of meat and meat products. Indian J Anim Health (2021), 60(2)-Special Issue: 97-108. (NAAS: 5.25)
5.	Biswas O, Kandasamy P and Das S K (February 2021): Effect of dragon fruit peel powder on quality and acceptability of fish nuggets stored in a solar cooler (5 – 1 °C). J Food Sci Technol. Springer. (Impact Factor: 2.701(2020))

7.2.4. Department of Fishery Extension

Sl. No.	Scientific Research Publication in Journals
1	Ghosh A., Dana S. S., Sharma A., Saha P., Basu D., and Goswami Rupak. (2022): Perception of fishers about livelihood developmental interventions by various GOs and NGOs in Indian Sundarbans: A comparative study. Indian Journal of Fisheries. 69(1): 146-153. DOI: 10.21077/ijf.2022.69.1.91566-16. NAAS rating-6.5
2	Gupta R., Dana S. S., Saha B., Bhattacharyya D. and Maity A (2020): A Study on the Communication-Media Exposure of Fisheries Self-help Group Members in Nadia district, West Bengal. <i>Indian Journal of Extension Education</i> , 56(4):76-80. NAAS rating-5.95
3	Das S. and Saha B. (2021): Constraints Identified in Fish Seed Production to Marketing and Suggestions for Strengthening the Fish Seed Production Venture in Bankura District. <i>Indian Journal of Extension Education</i> , 57(1):94-100. NAAS rating-5.95
4	Ghosh A., Basu D., Dana, S. S., and Chakraborty S. (2021). Perception on Handling Practices and Training Needs of Agricultural Input Dealers: An Exploratory Study in West Medinipur, West Bengal, <i>Indian Journal of Extension Education</i> , 57(3) NAAS rating-5.95
5	Chattopadhyay C., Saha B., Ojha S.N. (2021): A Study on Socio-economic Status of Tribes Involved in Fisheries in Purulia district, West Bengal, <i>Indian Journal of Extension Education</i> , 57(2): 28-35, NAAS rating-5.95
6	Maity, A., Saha, B., Pandit, A. and Patra, P. (2021): Farming practices of <i>Litopenaeus Vannamei</i> : An empirical study in West Bengal, India, <i>Journal of the Inland Fisheries Society of India</i> , 53(1&2):101-108. NAAS rating-5.71



7.2.5 Department of Fish Processing Technology

Sl. No.	Scientific Research Publication in Journals
1	T. Ghorai T, Dora K C and Chowdhury S (2021).Quality evaluation of fish protein soluble (FPS) injected seabass (<i>Lates calcarifer</i>) fillets through texture profile analysis during chilled storage.Indian J. Fish. 68(3): 105-110. DOI: 10.21077/ijf.2021.68.3.103195-14 NAAS rating : 6.50 / Impact Factor : 0.50
2	Mali P, Ghosh S, Dash G, Abraham, T J, Chowdhury S and Das, S K (2021): A study on ground reality of freshwater fish farming in biofloc tank in West Bengal, India. <i>J. Inland Fish. Soc.India</i> 53 (3&4): 132-142. NAAS rating : 5.71 / Impact Factor : 0.0
3	Ikbal A, Nath S and Chowdhury S (2021): Role of value-added fish products for boosting entrepreneurship. <i>Green Report</i> 2(5): 28-31.
4	Nath S, Chatterjee P, Chowdhury S, Ray N and Mukherjee S (2021): Antimicrobial activity of turmeric (<i>Curcuma longa</i>) extract and its potential use in fish preservation. <i>Indian J Anim Health</i> 60(2) - Special Issue: 109-118. DOI: https://doi.org/10.36062/ijah.2021.spl.02121 NAAS rating : 5.25 / Impact Factor : 0.0
5	Karki S, Chowdhury S, Nath S, Dora K C and Murmu P (2021): Phytochemistry and ethnomedicinal use of <i>Bergenia</i> species-A miraculous herb. <i>Indian J Anim Health</i> 60(2) - Special Issue: 143-152. DOI: https://doi.org/10.36062/ijah.2021.spl.02221 NAAS rating : 5.25 / Impact Factor : 0.0
6	Ikbal A, Bhattacharya A and Chowdhury S (2021): High Pressure Processing: A Novel Seafood Preservation Approach. <i>Chronicle of Bioresource Management</i> 5(3):090-094.
7	Ikbal A, Chowdhury S, Murmu P, Dora K C, Nath S, Roy S and Saklani P (2022). Surimi Powder Inclusion with Semolina-based Pasta Product– A Potential Method of Protein Fortification. <i>International Journal of Bio-resource and Stress Management</i> 13(2):144-154.
8	Sardar T, Chowdhury S, Murmu P, Nath S and Chakrabarti S (2021). Pulse light technology: A novel method for food preservation. <i>International Journal of Agriculture Sciences</i> 13(2): 10627-10631. NAAS rating : 4.58 / Impact Factor : 0.0

7.2. 6. Department of Fishery Resources Management

Sl. No.	Scientific Research Publication in Journals
1	Anwasha Roy, T. Jawahar Abraham, R. Beryl Julinta, Jasmine Singha, Satyanarayana Boda, Gadadhar Dash, T.S. Nagesh , Tapas Kumar Sar, Prasanna Kumar Patil (2021). Influence of Fluctuating Water Temperature and Dietary Oxytetracycline on the Safety of Monosex Nile Tilapia <i>Oreochromis niloticus</i> Fries. <i>Bulletin of Environmental Contamination and Toxicology</i> . 107: 361-369. NAAS: 7.66.
2	Susovan Sau, T.S. Nagesh , R.K. Trivedi, T.J. Abraham, S.K. Dubey, S.K. Rout, I. Biswas and Dibakar Bhakta (2021). Spatial distribution and diversity inventory of macro-benthic fauna in the Indian Sundarban. <i>Indian Journal of Fisheries</i> . 68(1): 9-18. NAAS: 6.29.
3	B. B. Chirwatkar , S. K. Das, D. Bhakta, T. S. Nagesh and S. Behera (2021). Growth, mortality and stock assessment of <i>Arius arius</i> (Hamilton, 1822) from Hooghly-Matlah estuary, West Bengal. <i>Indian Journal of Geo Marine Sciences</i> . 50(04): 302-309. NAAS: 6.33
4	D. Bhakta, S.K. Das, B.K. Das, B.K. Behera, T.S. Nagesh , C. Johnson and H.J. Chakraborty (2021). Morphological and molecular analysis of <i>Otolithoides pama</i> (Hamilton, 1822) (Perciformes: Sciaenidae) from Hooghly-Matlah estuarine system of West Bengal, India. <i>Indian Journal of Geo Marine Sciences</i> . 50(03): 219-227. NAAS: 6.33
5	Bhakta, D., Das, S.K., Das, B.K. and Nagesh, T.S. 2021. Biology of reproduction in <i>Otolithoides pama</i> (Hamilton, 1822) in Hooghly-Matlah Estuary of West Bengal, India. <i>Indian J. Fish.</i> , 68(1): 27-39. DOI: 10.21077/ijf.2021.68.1.90574-04. NAAS: 6.29
6	Kumar, A. Das, S.K.& Bhakta, D.2021.Dynamics Of selected biological indices of <i>Labeo rohita</i> (Hamilton,1822) in East Kolkata wetlands, A Ramsar site. <i>J. Inland fish. Soc. India</i> , 53 (3 &4) :161-168
7	Bhakta, D. and Das, S.K. 2021. Sciaenid species diversity and associated gears at in Hooghly-Matlah Estuary of West Bengal, India. <i>J. Mar. Biol. Ass. India</i> , 63(1): 56-61. doi:10.6024/jmbai.2021.63.1.2230-08.
8	Kumar, A. Das, S.K. and Bhakta, D. 2021. Temporal variations in bio-indices of <i>Oreochromis niloticus</i> (Linnaeus, 1758) in East Kolkata wetlands, India. <i>J. Inland Fish. Soc. India</i> , 53(1&2): 66-74.

7.3. FACULTY OF DAIRY TECHNOLOGY

7.3.1. Department of Dairy Microbiology

Sl. No.	Scientific Research Publication in Journals
1.	Saha P, Bajaj R, Mann B, Sharma R and Mandal S (2022): Isolation and characterisation of micellar casein from buffalo milk using microfiltration technique with modified buffer composition. <i>Int. J. Dairy Technol</i> 75 (2): 308-320. NAAS rating: 10.37 / Impact Factor: 4.374
2.	Kumari V, Kumar N and Mandal S (2021): Evaluation of technological attributes of <i>Lactococcus lactis</i> cultures for preparation of <i>Dahi</i> and <i>Misti Dahi</i> (Sweetened Dahi). <i>Asian J. Dairy and Food Res</i> 40 (4): 358-364. NAAS rating: 5.75 / Impact Factor:

7.3.2. Department of Dairy Technology

Sl. No.	Scientific Research Publication in Journals
1.	Bansal, V., Khetra, Y., & Debnath, A. (2021) Study of the keeping quality of cheese dipstored in PET Bottles: Sensory, physico-chemical, textural and microbiological aspects. <i>Indian Journal of Dairy Science</i> , 74(5). NAAS Rating: 5.95

VII.4. DIRECTORATE OF RESEARCH, EXTENSION & FARMS

Sl. No.	Scientific Research Publication in Journals
1.	Bhattacharjee Sreetama, Dhara K. C., Kesh S. S., Ghosh S., Dasgupta (Das) P., Giri A. K., Sarkar B., Roy S., Bose S., & Dey A (July 2021). Study on Socio-Economic Status and Constraints Faced by the Livestock Farmers of the Aspirational Districts of West Bengal, India. Page 331-340, Volume V, Issue VII, <i>International Journal of Research and Innovation in Social Science (IJRISS)</i> . ISSN 2454-6186.
2.	Bhattacharjee, S., Dhara, K., Ghosh, S., Das, P., Giri, A., Sarkar, B., Roy, S., & Bose, S. (January, 2022). Study on Knowledge Level of the Livestock Farmers of Aspirational Districts of West Bengal, India. <i>International Journal of Livestock Research</i> , 12(1), 19-26. DOI: https://dx.doi.org/10.5455/ijlr.202111111111811
3.	Nikita Bhalakiya, Nilufar Haque, Pankaj Patel, Gaurav Kumar and Deepesh Bharat Mishra. Effect of heat stress on hematological parameter of lactating Kankrej cow during summer season as compared to thermoneutral period <i>The Pharma Innovation Journal</i> . 2021; SP-10(11): 457-460. (NAAS rating of 5.23)
4.	Nilufar Haque, SK Asraf Hossain, Rajesh Kumar, Pramod Kumar. Climate Change and Ageing. <i>Journal of Animal Feed Science and Technology</i> . 2020;8(2):57-64.
5.	Safayat Husain, Rajesh Kumar, Bhoopendra Singh, Sushant Srivastava, Rabindra Kumar, Pramod Kumar, Nilufar Haque . Impact of Different Therapeutic Protocols on Blood Biochemical Markers and Fertility in Anestrus Sahiwal Cows. <i>Ind J Vet Sci and Biotech</i> (2021): 17(4), 49-53.



HUMAN RESOURCE DEVELOPMENT (HRD)



8

HUMAN RESOURCE DEVELOPMENT (HRD)

The essence of Human Resource Development is education, which plays a significant and remedial role in balancing the socio-economic fabric of the country. Since citizens of India are its most valuable resource, our billion-strong nation needs the nurture and care in the form of basic education to achieve a better quality of life. Faculty members and scientists of West Bengal University of Animal & Fishery Sciences always look forward for interactive and collaborative work with the scientists from other institutes within the state, inside country and internationally to strengthen its basic, applied and strategic research in the fields of Veterinary and Animal Sciences, Dairy Technology and Fishery Sciences. They participate in different conferences, training programmes, summer/winter school, short courses on their related subjects, seminars, symposiums, workshops etc. to refresh and update themselves with the latest scientific knowledge and technologies. WBUAFS also encourages its faculty members to participate in such Human Resource Development programs. The important programs attended by the Faculty members and scientists during 2021-22, are enlisted below:

8.1. PARTICIPATION OF THE TEACHERS / SCIENTISTS/ OFFICERS IN THE SEMINAR, SYMPOSIUM, WORKSHOP, TRAINING PROGRAMMES ETC.

8.1.A. FACULTY OF VETERINARY & ANIMAL SCIENCES

8.1.A.1. Department of Veterinary Public Health

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Dr. Chanchal Debnath	Scientific Seminar for Celebration of World Zoonosis Day, 2021	Online platform by APHV, Kolkata	06.07.2021
	Seminar on World Veterinary Day 2021	Online platform by APHV, Kolkata	24.04.2021
	Seminar on Rabies on World Rabies Day	Farmers' Hostel, WBUAFS	28-09-2021
Dr. Rahul Barua, Assistant Professor	National Webinar on "SAFE FOOD NOW FOR A HEALTHY TOMORROW"	Organized CAAST, CEARAFS Mumbai Veterinary College, Parel, Mumbai-400012, MAFSU	07/06/2021
	Online-ICAR sponsored Winter School on "Prescribing Human Health Using Foods of Animal Origin"	Organized by Division of LPT, IVRI	08/02/2022 to 28/02/2022
	International Workshop on "Antimicrobial Resistance in Food-borne Pathogens: Safety Concern"	Organized by Division of VPH, ICAR-IVRI, Izatnagar, Bareilly-243122, U.P.	14/03/2022 to 16/03/2022
Dr. Ripan Biswas	One week International e-training on "Gene Cloning: Advances and Applications in Veterinary Sciences.	Organized under ICAR-NAHEP CAAST, BVC, MAFSU	31 st May-4 th June 2021
	National E-Training on "Advances in Quality Assurance and Hygienic Production of Animal Origin Foods" organized under ICAR-NAHEP-CAASt	Organized under ICAR-NAHEP CAAST, BVC, MAFSU	17 th Jan-28 th Jan 2022
	National Webinar On "Role of Proteins in Human Nutrition: Challenges and Opportunities"	Organized under ICAR-NAHEP CAAST, BVC, MAFSU	24 th December 2021
	webinar "Introduction to Research Study Designs"	Central Research Laboratory and Department of Pharmacology, Tagore Medical College and Hospital	28 th January 2022

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
	Scientific Seminar for Celebration of World Zoonosis Day, 2021	Online platform by APHV, Kolkata	06.07.2021
	Seminar on World Veterinary Day 2021	Online platform by APHV, Kolkata	24.04.2021
	Seminar on Rabies on World Rabies Day	Farmers' Hostel, WBUAFS	28-09-2021

8.1.A.2. Department of Animal Genetics & Breeding

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Dr. Sanjoy Datta Assistant Professor (Ph.D. Scholar)	Digital Teaching Technologies	ICAR-NAARM (Online mode)	1-31st December, 2021
Dr. Uttam Sarkar Assistant Professor	Digital Teaching Technologies	ICAR-NAARM (Online mode)	1-31st December, 2021

8.1.A.3. Department of Animal Biotechnology

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Ayan Mukherjee Assistant Professor	Metabolism to Drug Discovery: Where Chemistry unite Biology	Amity Institute of Biotechnology, Haryana	16 th to 19 th Dec., 2021
Aditya Pratap Acharya Assistant Professor	1 st Indian Fisheries Outlook, Priming Indian Fisheries In Attaining Sustainable Development Goals	ICAR- Central Inland Fisheries Research Institute, Barrackpore.	22-24 th March 2022
Ayan Mukherjee, Assistant Professor	Theoretical foundations of Educational; Technology	ICAR-The National Academy of Agricultural Research Management (NAARM)	1-30 th June, 2021
Aditya Pratap Acharya Assistant Professor	Digital Teaching Techniques	ICAR-The National Academy of Agricultural Research Management (NAARM)	1-31 st December 2021.

8.1.A.4. Department of Avian Science

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Dr. Hemanta Kumar Maity Assistant Professor	Recent advances in the Disease diagnosis and Vaccines	NDVSU, Jabalpur	27 th July-16 th August 2021
Probhakar Biswas, Assistant Professor, WBUAFS	Recent advances in the Disease diagnosis and Vaccines	NDVSU, Jabalpur	27 th July-16 th August 2021
	International Websymposium on camel and disease control	Online	22 June 2021
	National E-Training on "Chemical Residue Analysis" organized under ICAR-NAHEP-CAAST Project entitled "Centre of Excellence for Advanced Research on Animal Food Safety"	Online	4-6 th May, 2021
	KADAKNATH TREPNEURSHIP MEET - 2021	Online	22.06.2021
	"Enhancing Teaching and Managerial Skills among the Faculty of SAU and SVU" By MANAGE	Online	28-30 th June, 2021
	Poultry Disease Diagnosis, Department of Veterinary Pathology, GADVASU, Ludhiana	Online	7 th to 11 th June 2021

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
	Management of infertility in cattle by TANUVASU and IIT Kanpur	Online	6 Weeks MOOCS Completed on 15.10.2021 ETC.
Indrajit Kar, Assistant Professor.	Poultry Disease Diagnosis	Department of Veterinary Pathology, GADVASU, Ludhiana	7 th to 11 th June, 2021

8.1.A.5. Department of Livestock Production Management

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Nilotpal Ghosh Professor	OIE Virtual Workshop for Veterinary Education Establishments (VEEs) in India	Online	7-9 June 2021
Dr. Santanu Bera, Assistant Professor	Expert for Training Prog. on “Goat Rearing”	SAMETI, Narendrapur R K Mission	01-02.07.2021
	Expert for Training Prog. on “Goat diseases & it's Prevention”	SAMETI, Narendrapur R K Mission	14-15.07.2021
	Digital Hygiene & Fact Checking	DMA, West Bengal	19.09.2021
	Webinar on “Climate Resilient Animal Production System through rganic Management”	NAHEP-CAAST, AAU	20-21.10.2021
	Expert for Training Prog. on “Dairy Processing Technology for increasing income of Rural House holders”	SAMETI, Narendrapur R K Mission	17.12.2021
	Prog. on “Women Empowerment through Goat keeping”	Radio Kolkata	09.02.2022
	Expert for Awareness Prog. on “Women Empowerment through AH interventions”	Krishi o HastashilpoMela, Purbasthali-I	13.02.2022
	Resource person for Training Programme on ‘Commercial Layer Bird Farming’	SAMETI, Narendrapur R K Mission	18.02.2022
	Live phone in Prog. on “Govt. Schemes of Livestock Management”	Krishidarshan, DD Bangla	22.02.2022
	International Webinar - ‘FERMINNOVATION 2K22’	F/O Dairy Technology, WBUAFS	10-12.03.2022

8.1.A.6. Department of Livestock Products Technology

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Dr. Gopal Patra, Assistant Professor	ICAR sponsored winter school on obtaining globally Recognized certification for ensuring quality and safety of milk, meat, poultry and fish and establishing food testing Laboratory	ICAR- National Research Centre on Meat, Hyderabad	8 th -28 th February, 2022



8.1.A.7. Department of Veterinary Anatomy & Histology

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Dr. Arun Kumar Mandal, Associate Professor	Online training on “ Application of Anatomy for clinical practice and forensics”	Organized by College of Vety Sc. & AH, Anjora, Durg, CG	Oct, 5-12, 2021

8.1.A.8. Department of Veterinary Clinical Complex

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Dr M Mondal, Associate Professor	International Veterinary Pathology Congress 2021 and XXXVIII Annual Conference of IAVP and International Symposium of on “ Advances in Veterinary Pathology for Diagnosis and Control of Emerging and Re-emerging Diseases of Livestock, Wild Animals and Poultry”	College of Veterinary & Animal Science, Rajasthan University of Veterinary and Animal Sciences, Bikaner	17-19 December 2021
	4 th Zonal (Central) Conference-2021 and National Symposium of IAVP on “ Livestock Diseases and their Impact on Sustainable Production”	College of Veterinary Science & AH, Rewa, MP	5-6 October 2021
Dr. T Rana, Assistant Professor	“Gene Cloning: Advances and Applications in Veterinary Sciences”, Mumbai Veterinary College, MAFSU, Nagpur, India	Online	31 st May-4 th June, 2021,
	Investigative Approaches for animal diseases diagnosis, Bihar Animal Science University	Online	25-27 th May, 2021,
	Chemical Residue Analysis, Mumbai Veterinary College, MAFSU, Nagpur, India	Online	4-6 th May, 2021,
	Advanced Microscopic techniques in Biomedical Research, N.T.R. College of Veterinary Sciences, Gannavaram, Tirupati	Online	28-30 th June, 2021,
	Impact of Oxidative stress on male and female reproduction, NAHEP, IDP, ICAR-NDRI, Karnel, Hariyana	Online	July, 1 st , 2021,
	Not-too-Conventional Thoughts about Embryo Culture, NDRI, Karnel, India	Online	June, 15, 2021,
	Celebration of World Veterinary Day Association of Public Health Veterinarian, West Bengal	Online	24 th April, 2021,
	Poultry Entrepreneurship Development, Assam Agricultural University	Online	12-14 th July, 2021,
	World Veterinary Day, Cooch Behar KVK, UBKV, Cooch Behar, WB, India	Online	24 th April 2021,
	International Workshop on “Scientific writing”, June, IDP-NAHEP, ICAR-NDRI, Karnel, Hariyana	Online	23-24 th , 2021,
	World Zoonosis Day, ICAR-NAHEP-CAAST, Mumbai Veterinary College, MAFSCU, Nagpur, India	Online	6 th July, 2021,
11 th National Conference on One Health Initiative on Prevention and control of Emerging & Reemerging Zoonotic Diseases in India, Heart Care foundation, Delhi Agricultural Research Fund	Online	6 th July, 2021,	

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Dr CK Ghosh, Assistant Professor	Webinar on “Clinical Management of CKD in small animals”	Online	30.01.22
	ICAR sponsored e-short course on “Recent Advances in Diagnosis and Therapeutic Approach to Metabolic and Deficiency Diseases in Dairy Cattle”	Online	01.02.22-10.02.22
Dr Subhasis Roy, Assistant Professor	Managing Agro-Chemicals for Crop and Environmental Health	Online	February 25-26, 2022
Dr Falguni Mridha, Assistant Professor	Ethical practice in publication and use of animals in research and development	OUAT, Bhubaneswar online	19-02-22
	2.5 hours of CPD	ONLINE	21-10-21
	National Research Prospects in Animal & Fishery Sciences and Biotechnology	WBUAFS, Kolkata	03-04-21
	International virtual webinar on “ Not-too-conventional thoughts about embryo culture”	NDRI, Karnal	15-06-21
	International workshop on “ Scientific writing”	NDRI, Karnal	23 -06-21to 24 -06-21
	International Webinar on “ Bacterial and viral diseases of sheep and goat”	Online Sathya zeograzing, Pasudhan Praharee, Alembic Pharmaceuticals and Sangli, bluecross welfare foundation	11-07-21
	International Webinar on “ Diagnosis and differential diagnosis of PPR in in small ruminants in field level”	ONLINE, Sathya zeograzing, Pasudhan Praharee, Alembic Pharmaceuticals and Sangli, bluecross welfare foundation	18-07-21
	Webinar series for veterinarians on “ Nutritional approaches to managing lower urinary tract diseases in cats and dogs”	ONLINE, ORGANISED BY ROYAL CANIN	23-07-21
	International Webinar on “Clinical management of metabolic and nutritional diseases in sheep and goat”	ONLINE, Sathya zeograzing, Pasudhan Praharee, Alembic Pharmaceuticals and Sangli, bluecross welfare foundation	25-07-21
	National Webinar on “ Diagnosis, therapeutic and control measures of goats in Rajasthan”	ONLINE, Sathya zeograzing, Pasudhan Praharee, Alembic Pharmaceuticals and Sangli, bluecross welfare foundation	08-08-21
National Webinar on “Semen freezing, Artificial Insemination and PD in goats”	ONLINE, Sathya zeograzing, Pasudhan Praharee, Alembic Pharmaceuticals and Sangli, bluecross welfare foundation	15-08-21	

8.1.A.9. Department of Veterinary Microbiology

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Dr. S. N. Joardar, Professor	Webinar to celebrate ‘World Environment Day, 2021’	Webinar by PASE and Vigyan Prasar	5 th June, 2021
	National Science Day-2021 celebration	Mohanpur campus, WBUAFS	28 th February, 2022



Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Dr. D.P. Isore, Associate Professor	Webinar on “Precilincal disease modelling –The heart of the matter”	Translational outcome research group, Dept. of Zoology, University of Calcutta (Online mode)	11/07/2021
	Training on “Concepts and applications of pharmacology for meeting challenges of one health in 21 st century”	Dept. of Vety. Pharmacology and Toxicology, CVSc, Jabalpur(M.P.) (Online mode)	12/07/2021-01/08/2021
	Webinar on “Time travel with billion years old elongation factor-Tus”	Translational outcome research group, Dept. of Zoology, University of Calcutta(Online mode)	25/07/2021
	Training on ‘Designing new age foods of animal origin”	Department of LPT, Mhow, M.P. (Online mode)	02/08/2021-16/08/2021
	Participated in “Digital colloquim on avenues for veterinarians in phrama industries: Drug development and validation”	College of Veterinary and Animal Sc., Mannuthy, Kerala Veterinary and Animal Science University (Online mode)	14/09/2021-18/09/2021
	Training on”Immunology- A tool for disease management”	Department of Veterinary Microbiology, Mhow,M.P. (Online mode)	11/10/2021-31/10/2021
	National webinar series , Expertopedia	ICAR-CIPET, Ludhiana, Punjab(Online mode)	18/10/2021
	Webinar on “Important animal disease and their control program in India”	ICAR Research Complex for Eastern Region, Patna(Online mode)	23/10/2021
	Webinar on “Tick borne haemoprotozoan diseases in animal and its management”	Alembic Pharmaceuticals Ltd, Mumbai(Online mode)	24/10/2021
	International e-Training cum Orientation Programme on “Physiological and biotechnological inter-ventions for the improvement of production, reproduction and health status in animals”	Dept. of Vety. Physiology and Biochemistry, CVS&AH, Mhow (Online mode)	16/11/2021-06/12/2021
	Faculty development programme on “Open source tools for research”	Teaching Learning Centre, Ramanujan College,University of Delhi (Online mode)	9/12/2021-15/12/2021
	Training on “Basics and ethics of laboratory animal experimentation in biomedical research”	Krantisinh Nana Patil College of Veterinary Science, Maharastra (Online mode)	20/12/2021-24/12/2021
	International webinar and memorial oration of ISVPT-2021	Dept. of Vety. Pharmacology and Toxicology, Veterinary College and Research Institute, Namakkal, T.N. (Online mode)	21/12/2021
	Training on “ Current concepts of methodology research”	Kerala Veterinary and Animal Science University, Academic Staff College (Online mode)	12/01/2022-25/01/20 22
	National training on “Postmortem examination:Gross description,report writing & challenges in forensic pathology”	PG Institute of Veterinary and Animal Sciences, MAFSU, Akola, Nagpur (Online mode)	08/02/2022-12/02/2022
International webinar on “Innovations in fermented dairy products”	NAHEP-Innovation Grant, Faculty of Dairy Technology, WBUAFS (Online mode)	10/3/2022-12/3/2022	

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Dr. Indranil Samanta, Assistant Professor	Participated (Online) in ‘Strengthening collaboration between human and animal health sectors for improved health security’	World Health Organization (Online mode)	08/06/2021
	Training programme for ‘CPCSEA Nominees’	Committee for the purpose of control and supervision of experiments on animals (CPCSEA), DAHD, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India (Online mode)	15/06/2021-16/06/2021
	Participated in WHO webinar entitled ‘Diseases of man and beast and their impact on lives and livelihoods’	World Health Organization (Online mode)	06/07/2021
	Invited lecture on “Novel approaches to detect biofilm forming and ESBL producing bacteria of <i>Enterobacteriaceae</i> family from Livestock and poultry” in 21 days training program	Department of Veterinary Microbiology, College of Veterinary Science & A.H., Nanaji Deshmukh Veterinary Science University, Jabalpur (Online mode)	03/08/2021
	Invited lead paper presentation entitled ‘Strategies to be prioritized for mitigation of AMR in livestock’ in XXVI Annual Convention of Indian Society of Veterinary Immunology and Biotechnology (VIBCON-2019/20/21)	College of Veterinary Science, GADVASU, Ludhiana (Online mode)	04/02/2022
	Invited lecture on ‘Fungal infections of animals and antifungal resistance’ in a training program entitled ‘Diagnostic modalities of emerging infectious diseases in food and companion animals with special reference to drug-resistance’	Eastern Regional Station, ICAR-IVRI (Online mode)	05/02/2022
Dr. Kunal Batabyal, Assistant Professor	Participated in “Meet the Scientists” on ‘National research prospects in animal & fishery sciences and biotechnology’	Indian Journal of Animal Health, Kolkata (Online mode)	03/04/2021
	International Webinar on ‘One health approach during pandemics’,	Centre for Tropical Health, RIVER, Puducherry (Online mode)	24/04/2021
	Webinar in the celebration of ‘World veterinary day’	Association of Public Health Veterinarians (APHV), Kolkata (Online mode)	24/04/2021
	International e-Training on ‘Chemical residue analysis’	ICAR-NAHEP – CAAST in Centre of Excellence for Adv. Res. on Anim. Food Safety, MVC, Mumbai (Online mode)	04/05/2021-06/05/2021
	International e_Training on ‘Gene cloning: Advances and applications in veterinary sciences’	ICAR-NAHEP – CAAST, Centre of Excellence for Adv. Res. on Anim. Food Safety, MVC, Mumbai (Online mode)	31/05/2021-04/06/2021
	Webinar on ‘Systematic approaches for achieving health benefits of medicinal plants’,	Bihar Animal Science University, Patna (Online mode)	16/06/2021



Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
	National Training on 'New horizon of canine disease diagnostics and therapeutics',	PG Institute of Veterinary and Animal Sciences, MAFSU, Akola, Nagpur (Online mode)	22/06/2021 -26/06/2021
	11 th National Conference on 'One health initiative on prevention and control of emerging & re-emerging zoonotic diseases in India'	Millennium India Education Foundation, New Delhi (Online mode)	06/07/2021
	Training on 'Recent advances in disease diagnosis & vaccines'	Dept. of Vety. Micro., COVSc &AH, NDVSU, Jabalpur (Online mode)	27/07/2021 -16/08/2021
	Training on "Recent approaches in forensic pathology"	Dept. of Vety. Pathology, CVS & AH, NDVSU, Jabalpur, MP (Online mode)	01/09/2021 -14/09/2021
	International Training cum Orientation Program on "Immunology -A tool for disease management"	Dept. of Vety. Micro., CVS&AH, Mhow, MP (Online mode)	11/10/2021 -31/10/2021
	Participated in Webinar on 'Tick-borne haemoprotozoan diseases in animals and its management',	Continuing Vety. Education & CAU, Aizawl (Online mode)	24/10/2021
	International e-Training cum Orientation Programme on "Physiological and biotechnological inter-ventions for the improvement of production, reproduction and health status in animals"	Dept. of Vety. Physio. and Biochem., CVS&AH, Mhow (Online mode)	16/11/2021 -06/12/2021
	International Symposium on "Novel knowledge, innovative practices and research in theriogenology"	College of Vety. and Anim. Sciences, Mannuthy (Online mode)	27/12/2021 -29/12/2021
	Training on 'Current concepts of methodology in research'	Kerala Vety. and Anim. Sciences Univ., Direct-orate of Entrepreneurship, ASC, Kerala (Online mode)	27/12/2021 -29/12/2021
	National E-Training on "Advances in quality assurance and hygienic production of animal origin foods"	Organized under the ICAR-NAHEP-CAAST Project (Online mode)	17/01/2022 -28/01/2022
	Participated in 3 weeks e short course on 'Municipal (Urban) public health veterinarian'	Dept. of Vety. Publ.Health. & Epidemiology, CVS&AH, Mhow (Online mode)	07/02/2022 -27/02/2022
	ICAR sponsored short course 'Entrepreneurship develop-ment in veterinary Science and livestock products industry',	ICAR-NRC on Meat, Hyderabad (Online mode)	08/03/2022- 17/03/2022
Dr.Samir Dey, Assistant Professor	Participated in "Meet the Scientists" on 'National research prospects in animal & fishery sciences and biotechnology'	Indian Journal of Animal Health, Kolkata (Online mode)	03/04/2021
	Training on " Application of intellectual property rights(IPR) for different aspect of animal genetic resources in India"	College of Veterinary Science, Mhow,M.P. (Online mode)	10/7/2021- 20/07/2021
	Training on" Emerging,re-emerging and transboundary animal diseases in India: Recent advances in diagnosis and control strategies"	College of Veterinary Science & Animal Husbandry, Aizawl, Mizoram (Online mode)	20/09/2021- 29/09/2021

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
	Training on "Immunology- A tool for disease management"	Department of Veterinary Microbiology, Mhow, M.P. (Online mode)	11/10/2021-31/10/2021
	Webinar on "Important animal disease and their control program in India"	ICAR Research Complex for Eastern Region, Patna (Online mode)	23/10/2021
	Workshop on "Microbial phylogeny –Bacteria, virus, fungi"	SAGE University, Bhopal and Bharat Eco Solutions and Technology,Pune (Online mode)	16/12/2021-18/12/2021
	Training on "Basics and ethics of laboratory animal experimentation in biomedical research"	Krantisinh Nana Patil College of Veterinary Science, Maharastra (Online mode)	20/12/2021-24/12/2021
	Training on " Current Concepts of Methodology Research:	Kerala Veterinary and Animal Science University,Academic Staff College (Online mode)	12/01/2022-25/01/20 22
	Presented Poster paper in VIBCON(2019/20/21),XXVI Annual convention of ISVIB and International conference on "transforming livestock economy through innovations in immunology and biotechnology"	College of Veterinary Science, GADVASU, Ludhiana (Online mode)	4/2/2022-5/2/2022
	Webinar on "Basic diagnostic aids for diagnosis of gastrointestinal tract affections"	Alembic Pharmaceuticals Ltd, Mumbai(Online mode)	08/02/2022
	ICAR sponsored training on 'Entrepreneurship development in veterinary science and livestock products industry'	ICAR-NRC on Meat,Hyderabad (Online mode)	08/3/2022-17/3/2022
	International webinar on "Innovations in fermented dairy products"	NAHEP-Innovation Grant, Faculty of Dairy Technology, WBUAFS (Online mode)	10/3/2022-12/3/2022
	VIROCON-2021, National conference of virology	Department of Microbiology, AIIMS, Bibinagar, Hyderabad (Online mode)	26/3/2022-28/3/2022

8.1.A.10. Department of Veterinary Pathology

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Dr Nimai C Patra, Assistant Professor	"Recent Advances in Disease Diagnosis and Vaccines" from NDVSU, Jabalpur	online	21 days, from 27 th July – 16 th August 2021
	"Concept and Application of Pharmacology for meeting challenges of One Health in 21 st Century" from NDVSU, Jabalpur.		21 days, from 12 th July to 1 st August 2021
	"Management of Infertility in Cattle" from agMOOCS.	online course	6-week
	"Budget Utilisation Procedure" from NAARM.	online training	3 days, from 9-11 th August, 2021
	50 th Annual Conference of Indian Academy of Cytologists	online	3 days, from 19-21 st November, 2021
	"Current concept of Methodology in Research" from KVASU.	web-based training	14 days



Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
	National E-training on “Advances in Quality Assurance and Hygienic Production of Animal Origin Foods” from MVC, Mumbai.	online	10 days
	Training from Ministry of Education Govt. of India on “Open-Source Tools for Research”.	online	7 days, from 9- 15 th December 2021
	“Physiological and Biotechnological Interventions for the Improvement of Production, Reproduction and Health Status in Animals”. from NDVSU	E-training	21 days, from 16 th November to 6 th December 2021
	“Food Safety Management System” from QCI	online training	5 days, from 14-18 th February 2022
	“Emerging and Re-emerging Viral Diseases”	online VIROCON2021	March 22-28, 2022
	“Valuing the Mental Health” from NAHEP, WBUAFS.	webinar	20 th August 2021,
	“Opportunities in Value addition to Meat” from ICAR-NRC on MEAT.	International webinar	13 th June, 2021

8.1.A.11. Department of Veterinary Pharmacology & Toxicology

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Dr. T.K. Mandal (Professor) Dr. T.K. Sar (Associate Professor)	World Veterinary Day	Virtual mode	24 th April, 2021
Dr. T.K. Mandal(Professor) Dr. T.K. Sar (Associate Professor)	World Zoonosis Day	Virtual mode	6 th July, 2021
Dr. T.K. Mandal (as speaker)	Rational use of Veterinary drug and vaccine : need of guidelines for public health	Virtual mode	22 nd Feb., 2021
Dr. T. K. Mandal (Professor)	World Environment Day - Extensive use of Pharmacological products and environmental hazards on	Virtual mode	5 th June, 2021
Dr. Raja L. (Assistant Professor)	Concepts and applications of Pharmacology for meeting challenges of One health in 21 st century at NDVSU	Virtual mode	12 July – 1 st Aug, 2021
	Drug development &Regulatory affairs at MAKUAT	Virtual mode	26-31 July, 2021
	Laboratory quality management system &Internal audit as per IS/ ISO/IEC 17025:2017 at NITS, BIS	Virtual mode	04-07 Jan, 2022

8.1.A.12. Department of Veterinary Surgery & Radiology

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Prof. Samit Kumar Nandi, Professor	Invited guest lectureon ““IPR & Technology management for Commercialization in AH Development” in ICAR, New Delhi Sponsored Winter School on “Advanced Extension & Communication strategies for sustainable livelihood through Animal Husbandry & Allied farming system” from February,	Dept. of Veterinary & A.H. Extension Education, F/O-Vety& Animal Sc. WBUAFS	15th to 07th March, 2022

8.1.A.13. Department of Veterinary & Animal Husbandry Extension Education

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Dr. S. Biswas, Assoc. Professor, VAHEE	Concept & Application of Pharmacology for meeting challenges of one Health in 21cent.	NDVSU, Jabalpur, MP	12 th July-1 st August, 2021
	Immunology-A Tool for disease management	NDVSU, Jabalpur, MP	11-31 st Oct., 2021
	Physiological & BT intervention for improvement of Production, Reproduction & Health status in animals	NDVSU, Jabalpur, MP	16 th Nov-06 th December 2021
	CBP Program on Research Data analysis & visualization	Dr. HSG University, Sagar, MP	14-27 th December, 2021
	Advances in Quality assurance & Hygienic production of animal Origin foods	MAFSU, ICAR-NAHEP-CAST, MVC, Mumbai	17-28 th January, 2022
	Communication & Management skill in Transfer of agro-technology	Punjab Agril. University, Ludhiana,	09-18 th March, 2022
	International E-Seminar on An Integrated approach to prevent Rabies in animals & Humans: Best Possible One Health	TANUVAS, Madras, Chennai	28-29 Sept, 2021
	International E-seminar on One health approach during Pandemics	RIVER, Puducherry, India	24 th April, 2021
	Implementation of social safeguard policy for A. Husbandry	MVC, MAFSU, Nagpur, MS	23 rd Nov., 2021
	International e-workshop on Scientific Writing	ICAR-NDRI, Karnal, Haryana	23-24 th June, 2021
	External Paper setter of MVSc& Ph.D. Entrance Exam VAHEE-Th. Paper of 2021	SVPUAT, Meerut, UP	May, 29, 2021
	B.Sc(Hons) Sem-V, CBCS Exam on ARD	W.B. State University,	09 th March, 2022
	MSc. External Theory & Pract. ARD Exam	RKMVU, Narendrapur	01 st March, 2022
Vocational-NSQF Syllabi on Poultry Framing & Poultry farm worker for Class-VIII & XII level students of WB	WBSCVE&T, Got of W.B.	08.06.2021	

8.1.B. FACULTY OF FISHERY SCIENCES

8.1.B.1. Department of Aquaculture

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Prof. S. K. Das (as Organizer)	Meet the Scientists on National Research Prospects in Animal & Fishery Sciences and Biotechnology	On-Line	3 rd April, 2021
Prof. S. K. Das (as Special Guest and Invited Expert)	Conservation and Culture of Small Indigenous Fishes, KVK, Asokenagar	On-Line	10 th July, 2021
Prof. S. K. Das (as Resource Person)	National Webinar on <i>Biofloc Technology: An Emerging Ecological Tool in Aquaculture</i> ”, Guahati University	On-Line	30 th July, 2021
Prof. S. K. Das (as Member of the Organizing Committee and Session Chairman)	Integrated Approaches towards Sustainable Management of Environment for Safe Food, Nutrition and Improved Health	Kalyani University	December 15 to 17, 2021



Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Prof. S. K. Das	1 st Indian Fisheries Outlook-2022: Priming Indian Fisheries in attaining Sustainable Development Goals	ICAR-CIFRI, Barrackpore	22-24 th March 2022
Dr Surya Kanta Sau	Faculty Development Programme on Transforming teachers for sustainable post COVID world	On- Line	16-20 th August, 2021
	National Awareness cum Training programme on PMSSY	Online	1 day

8.1.B.2. Department of Aquatic Animal Health

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
T.J. Abraham Professor and Head	1st Indian Fisheries Outlook 2022 on “Priming Indian Fisheries in attaining Sustainable Development Goals”	ICAR-CIFRI, Barrackpore	March 22-24, 2022,
Prof. G Dash	Fish Vaccination: Theory, Innovations and Application Confirmation.	NACA, Asian Fisheries Society	04.08.2021
	Monsoon and Post-monsoon fish diseases	OIC Kolkata Centre	21.08.2021
	Brackish water polyculture as a sustainable livelihood option for small and marginal farmers.	OIC Kolkata Centre	18.09.2021
	Recent Advances in fish and shrimp parasitic diseases and their preventive health management with special emphasis on Zoonosis	Parasitology Department, Jabalpur	18.11.2021
	Regional Capacity Building Programme on ‘Application of Modern Biotechnological Tools for Management of Aquatic Genetic Resources’	NBFGR, Lucknow	04.01.22 – 12.01.22 & 22.01.22
	Webinar on “National Surveillance Programme for Aquatic Animal Diseases: A Step towards Establishing Disease Governance System in India”	Department of Fisheries, Ministry of Fisheries, Animal Husbandry & Dairying, Govt. of India	15.02.2022
	1st Indian Fisheries Outlook, On “Priming Indian Fisheries in Attaining Sustainable Development Goals”	CIFRI, Barrackpore	22.03.22 – 24.03.22
	Molecular Diagnosis of Disease management in freshwater aquaculture	Marsco Aqua Clinics, AQUA ONE CENTRE	25.09.2021
	Meeting of Project Review and Steering Group (PRSG) of “MEAN: Measuring Endocrine Disrupting Chemicals (EDC) and Aquatic diagnostics through Bio-Sensory Network with a special reference to Northeast India”	CIFRI, Barrackpore	02.02.2022
	National Awareness cum Training Programme on “Disease and Health Management for Better production of Fish”	College of Fisheries, Nanaji Deshmukh Veterinary Science University, Jabalpur, Madhya Pradesh	09.02.2022
	Fish Health Management Through Scientific Approach for Higher Production.	Rama Devi Women’s University, Bhubaneswar, Odisha	10.02.2022
Disease and Health Management in Freshwater Aquaculture and Feed Formulation and Management in Freshwater Aquaculture	MANAGE – CIA, Hyderabad	28.03.2022	

8.1.B.3. Department of Fisheries Resource Management

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Prof. Nagesh T. Srinivasan	National Training Course (NTC 2021) on “Recent Advances in Fisheries & Aquaculture Technology for Sustainable Rural Development” by WBUAFS and NADCL; As a Invited speaker	Virtual mode on 22.05.2021	22 May, 2021
	1 st Indian Fisheries Outlook 2022 on “Priming Indian Fisheries in Attaining Sustainable Development Goals”; As a participant and lead speaker	ICAR-CIFRI, Barrackpore	22-24, March 2022
Prof. Sudhir Kumar Das	National Training Course (NTC 2021) on “Recent Advances in Fisheries & Aquaculture Technology for Sustainable Rural Development” by WBUAFS and NADCL; As a Invited speaker	Virtual mode	May 2021
Dr. Golam Ziauddin	National Training Course (NTC 2021) on “Recent Advances in Fisheries & Aquaculture Technology for Sustainable Rural Development” by WBUAFS and NADCL; As a participant	Virtual mode	18th May 2021 to 7 th June 2021
	3-Days National Webinar on “THE ART AND SCIENCE OF BIOFLOC AQUACULTURE”, organized by the College of Fisheries, Central Agricultural University, Tripura under the “National Agricultural Higher Education Project (NAHEP) COLLEGE OF FISHERIES Central Agricultural University, Imphal	Virtual mode	22-24 December, 2021.
	Internationall Workshop on Scopus, WOS UGC care list and IEEE free Jurnal publication and mechanics of thesis drafting	Virtual mode	03 rd December – 12 th December 2021
	1 st Indian Fisheries Outlook 2022 on “Priming Indian Fisheries in Attaining Sustainable Development Goals”; As a participant	ICAR-CIFRI, Barrackpore	22-24, March 2022

8.1.B.4. Department of Fishery Engineering

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Olipriya Biswas Assistant Professor	Participated in the ICAR sponsored Winter School on Advanced Extension & Communication strategies for sustainable Livelihood through Animal husbandry & Allied farming system.	Dept of VAHEE, WBUAFS, Kolkata	15 th February-7 th March-2022

8.1.B.5. Department of Fish Processing Technology

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Dr. Supratim Chowdhury Dr. Swarnadyuti Nath	National Research Prospects in Animal & Fishery Sciences and Biotechnology	WBUAFS	03.04.2021
Mr. Prasanta Murmu	Five Days National webinar on “Advancement in Finfish Seed Production for SMART aquaentrepneurship”	College of Fisheries, Lembucherra, Tripura. CAU (Imphal)	13.07.2021-17.07.2021



8.1.C. FACULTY OF DAIRY TECHNOLOGY

8.1.C.1. Department of Dairy Chemistry

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Dr. C. Chakraborty	Online Faculty Development Programme on “Harnessing the Knowledge of Value Addition Network in Food technology”,	GNIT , Kolkata Online	8-12 June , 2021
Dr. C.Chakraborty Dr. P.R.Ray	National Workshop on “Starter Culture for Fermented Dairy Products”,	Faculty of Dairy Technology WBUAFS, Mohanpur Online	17-22 January, 2022
Dr. C.Chakraborty Dr. P.R.Ray	International Webinar “FERMMINOVATION 2K22”	Faculty of Dairy Technology WBUAFS, Mohanpur Online	10-12 Mrch, 2022

8.1.C.2. Department of Dairy Microbiology

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Dr. T.K. Maity, Professor Dr. Surajit Mandal, Professor Dr. Lopamudra Haldar, Assoc. Professor Mr. Amit Kumar Barman, Asst. Professor	New Age Dairy for Sustainable Future	Faculty of Dairy Technology, WBUAFS, Mohonpur, Nadia	26.03.2022

8.1.C.3. Department of Dairy Technology

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Partha Pratim Debnath Asstt. Prof.	Implementation of NEP 2020 for quality learning and open distance learning education	Online, by National Institute of Technical Teachers Training and Research, Chandigarh	28.04.2021
	International webinar on “Global perspectives of New Horizons in Dairy Industries”	Online by Department of Dairy Science and Food Technology, BHU, Varanasi	01.06.2021
	Student Psychology	Online, by National Institute of Technical Teachers Training and Research, Chennai	14.06.2021-18.06.2021
	Fostering Research and development in Academic Institutions	Online, by National Institute of Technical Teachers Training and Research, Chandigarh	21.06.2021-25.06.2021
	Preparing students for Job Interviews	Online, By National Institute of Technical Teachers Training and Research, Chandigarh	12.07.2021-16.07.2021
	National Webinar on “Valuing the Mental Health”	Online by F/O Dairy Technology, WBUAFS under NAHEP (IG)	20.08.2021
	National Webinar on “Trends in Detection of Adulterants in Milk and ghee”	Online, Organized by DC Div., SMC College of Dairy Science, Kamdhenu University	15.09.2021
	27 th International conference of International Academy of Physical Sciences on “Advances in Food Science and technology”	Online by North Eastern Hill University Tura Campus Meghalaya, India	26.10.2021-28.10.2021
	National Workshop on “Starter Cultures for Fermented Dairy Products”	Online by F/O Dairy Technology, WBUAFS under NAHEP (IG)	17.01.2022-22.01.2022

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
	UGC sponsored Faculty Induction Programme (Guru Dakshata)	Online, by University Grants Commission Human Resource Development Centre (HRDC) Jadavpur University, Kolkata	03.01.2022-09.02.2022
	ICAR sponsored short course on "Attracting Rural youths for Entrepreneurship Development in Dairy Enterprises"	Online by Dairy Business Management Division, WBUAFS, Mohanpur, Nadia	16.02.2022-25.02.2022
	International Webinar on "Innovations in Fermented Dairy Products"	Online by F/O Dairy Technology, WBUAFS, under NAHEP (IG)	10.03.2022 to 12.03.2022
	Seminar on "New Age Dairy for Sustainable Future"	IDA (EZ) with F/O Dairy Technology, WBUAFS	26.03.2022
Anindita Debnath Asstt. Prof.	Internship on "Emerging Trends & Innovative Food Packaging Technologies in Food Industrial Practices"	Online, by Indian Institute of Packaging (IIP), Kolkata	19.06.2021 to 11.07.2021
	International Workshop on "Scientific Writing"	Online, Organized under Institute Development Plan of NAHEP (IDP) at ICAR-NDRI, Karnal, Haryana	23.06.2021-24.06.2021
	National Webinar on "Valuing the Mental Health"	Online by F/O Dairy Technology, WBUAFS under NAHEP (IG)	20.08.2021
	National Webinar on "Trends in detection of adulterants in milk and ghee"	Online Organized by Dairy Chemistry Division, SMC College of Dairy Science, Kamdhenu University	15.09.2021
	4-Week Induction/Orientation Programme for "Faculty in Universities/ Colleges/ Institutes of Higher Education"	Online, Organized by Teaching Learning Centre, Ramanujan College, University of Delhi Under the aegis of Ministry Of Education, Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching	20.12.2021-19.01.2022
	National Workshop on "Starter Cultures for Fermented Dairy Products"	Online by F/O Dairy Technology, WBUAFS under NAHEP (IG)	17.01.2022-22.01.2022
	International Webinar on "INNOVATIONS IN FERMENTED DAIRY PRODUCTS"	Online by F/O Dairy Technology, WBUAFS, under NAHEP (IG)	10.03.2022-12.03.2022
	Seminar on "New Age Dairy for Sustainable Future"	IDA (EZ) with F/O Dairy Technology, WBUAFS	26.03.2022
Kuntal Roy Asstt. Prof.	National Webinar on "Nutraceuticals and Immunity Bosster Foods for Combating COVID-19"	Online by Department of Food Science and Nutrition, ASPEE College of Home Science & Nutrition, S.D. Agricultural University, Sardarkrushinagar	17.05.2021
	National Webinar on "Camel Milk: A Boon to Mankind"	Online by Directorate of Extension Education, Sri Karan Narendra Agriculture University, Jobner	01.06.2021
	International Webinar on "Global Perspective on New Horizons in Dairy Industries"	Online by Department of Dairy Science and Food Technology, BHU, Varanasi	01.06.2021



Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
	National Webinar on “Nutritional Approaches of Dairy Foods for Healthy Life”	Online by Department of Dairy Science and Food Technology, BHU, Varanasi	01.06.2021
	Internship on “Emerging Trends & Innovative Food Packaging Technologies in Food Industrial Practices”	Online by Indian Institute of Packaging (IIP), Kolkata	19.06.2021 to 11.07.2021
	Internship on “Food Testing, Analysis & Quality Evaluation: Opportunities & Challenges”	Online by ALS Testing Services India	18.06.2021 to 24.07.2021
	International Workshop on “Scientific Writing”	Online, Organized under Institute Development Plan of NAHEP (IDP) at ICAR-NDRI, Karnal, Haryana	23.06.2021- 24.06.2021
	National Webinar on “Valuing the Mental Health”	Online by F/O Dairy Technology, WBUAFS, under NAHEP (IG)	20.08.2021
	Faculty Development Programme on “Recent Trends in Nonthermal Processing: Prospects and Challenges”	Online by AICTE Training and Learning (ATAL) Academy	04.10.2021 to 08.10.2021
	4-Week Induction/Orientation Programme for “Faculty in Universities/ Colleges/ Institutes of Higher Education”	Online, Organized by Teaching Learning Centre, Ramanujan College, University of Delhi under the aegis of Ministry Of Education, Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching	20.12.2021- 19.01.2022
	National Workshop on “Starter Cultures for Fermented Dairy Products”	Online by NAHEP- IG, Faculty of dairy Technology, WBUAFS	17.01.2022 to 22.01.2022
	ICAR sponsored short course on “Attracting Rural youths for Entrepreneurship Development in Dairy Enterprises”	Online by D/o DBM, F/O Dairy Technology, WBUAFS	16.02.2022- 25.02.2022
	International Webinar on “Innovations in Fermented Dairy Products”	Online by F/O Dairy Technology, WBUAFS, under NAHEP (IG)	10.03.2022 to 12.03.2022
	Seminar on “New Age Dairy for Sustainable Future”	IDA (EZ) with F/O Dairy Technology, WBUAFS	26.03.2022

8.1.D. DIRECTORATE OF RESEARCH, EXTENSION & FARMS

Name of the faculty member with Designation	Title of Seminar, Symposium, Workshop, Training attended	Venue	Date/s & Duration
Dr Nilufar Haque, Assistant Director of Extension	National Research Prospects in Animal & Fishery Sciences and Biotechnology	Online mode, Scientific seminar	3 rd April, 2021
	Celebration of World Veterinary Day, 2021	Online mode, Scientific seminar	24 th April, 2021
	Awareness program in Lok Sanskriti Utsav, Krishi –O-Hastashilpa Mela, 2022	Purbasthali I Block, Srirampur, Purba Bardhaman	13 th February, 2022

8.2. HONOURS / AWARDS/ FELLOWSHIPS ETC. RECEIVED BY THE TEACHERS/ SCIENTISTS/ OFFICERS OF THE UNIVERSITY

Sl. No.	Name of the recipient	Name of the honour/ award/ fellowship/ scholarship etc.	Offering organization	Field of remarkable activity
1	Dr. Arun Kumar Mandal	Eastern Zone Representative of IAVA State Convenor (Faculty Wing) of IVA Editorial board member	a) Indian Association of Veterinary Anatomists (IAVA) b) Indian Veterinary Association (IVA) c) Exploratory Animal and Medical Research by WBVAA	Zonal Representative of professional organization State Convenor, WB Editorial board member of a professional Journal
2	Prof. Partha Das	a) Editorial board member	a) Indian Journal of Veterinary Anatomists by IAVA	a) Editorial board member of a professional Journal
3	Dr. Indranil Samanta	Member (Elected)	Royal Society of Biology (UK)	Veterinary Microbiology
		Academic Editor (Veterinary Sciences)	PLOS One (ISSN: 1932-6203, IF: 3.24)	Veterinary Microbiology
		Order of Merit award (2021)	SKOCH	Veterinary Microbiology
		'Certified Publons Academy supervisor-2021'	Clarivate Analytics	Supervisor of journal reviewers
4	Prof. S.N. Joardar	Fellow (Elected)	Royal Society of Biology, London (UK)	Biological Sciences
5	Prof. Ujjwal Biswas	Global India Excellence Achievement Award	Bharat Rattan Publishing House	Academic and research
6	W. B. U. A. F. S. through the Deptt. of V.E.P.M., F/VAS	SKOCH Award-2022	SKOCH Group, New Delhi	Development of Vaccine
7	Dr M Mondal	Associate Editor	International Journal of Poultry Science	Poultry Science
		Associate Editor	Asian Journal of Animal Sciences	Animal Science
		Associate Editor	Current Research in Poultry Science	Poultry Science
		Editorial Board Member	Acta Scientific Veterinary Sciences	Veterinary Science
		Member of Scientific Advisory Board,	International Journal of Livestock Research	Veterinary Science
		Reviewer Excellence Award	Agricultural Science Digest	
8	Dr. T Rana	Editorial Board Member: Veterinary Evidence Journal	Royal College of Veterinary Surgeons (UK)	Veterinary Science
		Editorial Board Member: International Journal of Environmental Protection (USA) Journal	International Journal of Environmental Protection (USA) Journal	Environmental Science
		VASREF Award	Veterinary & Animal Science Research Foundation, Orissa, India	Scientific contribution
		Advisory Board Member: Cambridge Scholar Publishing	Cambridge Scholar Publishing, Oxford, UK	Scientific contribution
		Associate Editor: Frontier in Veterinary Science	Frontier in Veterinary Science, USA	Scientific contribution
		Editorial Board Member, BMC-Veterinary Research	BMC-Veterinary Research, UK	Veterinary Science



Sl. No.	Name of the recipient	Name of the honour/ award/ fellowship/ scholarship etc.	Offering organization	Field of remarkable activity
9	Dr Santanu Bera	Acknowledgement of Contribution	Lokmata Rani Rashmoni Mission	Technology Transfer & Capacity Building of Youths of Sundarban for providing alternate livelihood
10	Dr Nimai C Patra	Act as resource person for 21 days advance national training course	National training course on "Quality sampling for Pathology Lab including Forensic Pathology and Processing thereafter" from 10-30 November, 2022 in collaboration with WBUAFS and NADCL, Jammu	
11	Dr. Sukanta Biswas	Associate Member	International Society for Development & Sustainability, Japan	Veterinary Extn Education
12	Prof. Samit Kumar Nandi	Semi-Finals of SKOCH Award 2021	SKOCH Group	For presentation on "Development of Affordable Biomaterial based Strategies for Triggering Wound, Bone and Cartilage Regeneration"
		Fellow	Royal Society of Chemistry, UK	Materials chemistry
13	Prof. S. K. Das	Honoured as an External Expert in the Selection Committee of NASF funded Project on Captive Breeding of Hilsa (<i>T. ilisha</i>)	ICAR-CIFA, Kausalyaganj, Bhubaneswar	
		Felicitated as Session Chairman in the International Seminar on "Integrated Approaches towards Sustainable Management of Environment for Safe Food, Nutrition and Improved Health"	Kalyani University	
		Honoured to be inducted in the DRC, Department of Ecological Studies, Kalyani University	Kalyani University	
		Honoured as Course Reviewer of NAHEP e learning programme.	ICAR	
14	Dr. Supratim Chowdhury	Certificate of Reviewing in recognition of significant and outstanding contribution to the journal and reviewing the article	Indian Journal of Animal Health 37, Kshudiram Bose Sarani, Kolkata 700037, West Bengal, India	Fish Post Harvest Technology
15	TJ Abraham	Fellow, Inland Fisheries Society of India (FIFSI), Kolkata	Inland Fisheries Society of India (FIFSI), Barrackpore, Kolkata	Fisheries Science
16	Dr Keshab Chandra Dhara	Fellow Member	International Society for Development and Sustainability (ISDS), Japan	Rural Development

Sl. No.	Name of the recipient	Name of the honour/ award/ fellowship/ scholarship etc.	Offering organization	Field of remarkable activity
17	Dr Nilufar Haque	Rajbanshi Devi Memorial Award	Pashudhan Praharee	National level essay writing competition
		Certificate of reviewing	Indian Journal of Animal Health	Significant and outstanding contribution to the journal and reviewing articles
		Certificate of excellence in reviewing	International Journal of Environment and Climate Change	In recognition of outstanding contribution to the quality of the journal
		Acted as resource person in Training Programme on “Scientific Animal Husbandry practices”	Through online mode	5 th May to 7 th May, 2021
		Acted as resource person in Training Programme on “Scientific Animal Husbandry practices”	Through online mode	7 th July to 9 th July, 2021

8.3 Other related activities of Faculty members of University

- Prof. S.N. Joardar, Department of Veterinary Microbiology, received Intellectual of the Year 2021 award from Rifacimento International on September, 2021
- Prof. S.N. Joardar, Department of Veterinary Microbiology, received Research Excellence Award 2021 by Institute of Scholars on July, 2021 for the paper ‘Immunoreactive antigens of the outer membrane.....Linn’ in the ‘Fish and Shellfish Immunology’ journal.
- Prof. S.N. Joardar, Department of Veterinary Microbiology, participated several television talk shows & webinars and wrote post editorial columns in Bengali newspapers as an expert to disseminate COVID-19 awareness among general mass.
- Prof. S.N. Joardar, Department of Veterinary Microbiology, being Secretary of a voluntary scientific organization, led the team to organize various science popularization programmes for school/college students and general mass, viz. Corona 2nd wave & vaccination, World Environment Day celebration, National Science Day celebration, Twin-in-one mask making and distribution, free Tele-consultancy service for COVID-19 patients, plantation of saplings etc.
- With the initiatives taken by Dr. Indranil Samanta, Department of Veterinary Microbiology, the MOU was signed between WBUAFS and London School of Hygiene and Tropical Medicine (UK) to conduct the research work.
- The book entitled ‘Veterinary Mycology’ (Springer) written by Dr. Indranil Samanta is recommended for Post-Graduate (M.V.Sc.) / Ph.D. scholars in Agricultural / Veterinary Universities by Education Division, Indian Council of Agriculture Research (ICAR)
- Dr. Indranil Samanta, Department of Veterinary Microbiology, acted as reviewer for Chemical Engineering Journal (IF: 13.27); Frontiers in Pharmacology (IF: 5.81), International Journal of Hygiene and Environmental Health (IF: 5.84), Food Control (IF: 5.55); Scientific Reports (IF: 4.38); Saudi Journal of Biological Sciences (IF: 4.22); Gut Pathogens (IF: 4.18); Journal of Applied Microbiology (IF: 3.77), Frontiers in Veterinary Science (IF: 3.4); Poultry Science (IF: 3.35), PLOS One (IF: 3.24); Letters in Applied Microbiology (IF: 2.86), Animals (IF: 2.75); BMC Veterinary Research (IF: 2.74); Journal of Food Safety (IF: 1.95) during the period
- Dr. Kunal Batabyal, Department of Veterinary Microbiology, is acting as a Co-PI in a DBT, GOI-funded project entitled ‘Establishment of Consortium for One Health to address zoonotic and transboundary diseases in India’, with Prof. T.K. Dutta, P.I., and Head, Dept. of Vety. Microbiology, CVSc&AH, CAU, Aizawl since January 2022.



- Dr. Kunal Batabyal acted as a reviewer of research articles for high-impact factor journals such as Mycopathologia (NAAS: 8.45), Veterinary Medicine and Science (IF: 1.950), Exploratory Animal and Medical Research (NAAS: 5.85), Ruminant Science (NAAS: 5.47), Indian Journal of Animal Health (NAAS: 5.25), Bulletin of the National Research Centre (ISSN: 2522-8307), and Asian Journal of Research in Animal and Veterinary Sciences during this period.
- Mr. Suparna Munsu (Research Fellow, MRC-sponsored project on antibiotic stewardship, PI: Indranil Samanta) selected for presentation of research findings entitled ‘Using photovoice to understand the role of informal providers and para veterinarians in agricultural communities in West Bengal’ in The Global Challenges Research Fund (GCRF)-antimicrobial stewardship workshop held in Makerere University, Kampala, Uganda during 21-25 March, 2022. Mr. Suparna received full funding from GCRF (UK) for travel, accommodation and visa cost (Field-Qualitative research in Veterinary Sciences).
- Prof.S.Biswas, LPT, F/O-VAS acted as Member, Research Advisory Committee, NRC on Meat, Hyderabad, Nominated by ICAR, New Delhi
- Prof.S.Biswas, LPT, F/O-VAS acted as Member, State level Committee of slaughter house, Deptt. Of Urban Development, Govt. Of W.B
- Prof.S.Biswas, LPT, F/O-VAS acted as Member, VCI accreditation committee for establishment of new colleges as nominated by VCI, New Delhi
- Dr. C. Debnath, Dept of VPH, F/O- VAS, acted as guest faculty in the MVPH course of All India Institute of Hygiene and Public Health, Kolkata.
- Dr. C, Debnath, Dept of VPH, F/O- VAS, delivered an invited lecture on “ Epidemiological approaches used to understand the health of animal and human population” in an international Webinar on One Health-Perspectives on Emerging Public Health Threats and the Way Forward on 20th January, 2022 organized by All India Institute of Hygiene and Public Health, Kolkata 73.
- Dr. C, Debnath, Dept of VPH, F/O- VAS, delivered an invited lecture on “ Health, Health Education and Health Extension Practitioners” in an ICAR sponsored Winter School on Advanced Extension and Communication Strategies for sustainable Livelihood Through Animal Husbandry & Allied Farming System on 18th February, 2022 organized by Department of Veterinary and Animal Husbandry Extension Education, WBUAFS, Kolkata-37.
- Dr. Rahul Barua, Dept of VPH, F/O- VAS, delivered a lecture to the animals farmers in the technical training meet of ATMA scheme training programme, Santuri Block, Purulia on 29.07.2021.
- Dr. Rahul Barua delivered a lecture to the goatery farmers on “common bacterial and viral diseases in goats and their prevention, control and treatment” undercapacitybuilding training programme (Advance Training on Goatery-special Emphasis on Black Bengal Goat Farming) at KVK, Ashokenagar, DREF, WBUAFS on 13.01.2021.
- Dr. Ripan Biswas, Dept of VPH, F/O- VAS, delivered a lecture to the farmers through virtual platform on World Rabies Day- facts not fears on 28th September 2021, organized by KVK, Ashokenagar.
- Dr. Ripan Biswas delivered a lecture to the farmers at Lok-O-Sanskrita Utsav, Krishi O Hastashilpa Mela-2022, Purbasthali, Srirampur, Purba Bardhaman on “Self employment Generation among the migrant labour through animal husbandry practices on 14th February, 2022.
- Dr. Ripan Biswas participated as an expert on “ Importance of Veterinary Doctor for Livestock Diseases and Public health” broadcasted by PrasarBharati, Doordarshan on 24th September 2021.
- Dr. Ripan Biswas participated in data collection related field work in a project entitled “A multi-stake holder approach towards operationalising antibiotic stewardship in India’s pluralistic rural health system” for the month of January-February, 2022.



- Dr.Manik Chandra Pakhira acted as a member of the Tender cum Purchase Committee of W.B.Livestock Development Corporation Ltd since 07.12.2020.
- Dr.Manik Chandra Pakhira participated in field visit & farmer’s meeting and goat show at Ajodhya area of Purulia district under IACR-AICRP on Goat Improvement on 16-18th Feb’2022.
- Dr.Manik Chandra Pakhira participated in field visit & farmer’s training at Jhargram cluster of Jhargram district under IACR-AICRP on Goat Improvement on 5-6th Aug’2021.
- Dr.Manik Chandra Pakhira participated in field visit, farmer’s training & field activities at Dhupguri cluster of Jalpaiguri district under IACR-AICRP on Goat Improvement on 31st Aug’2021 to 3rd Sept’2021
- Dr.Manik Chandra Pakhira participated in Awareness program / Animal health camp on 14th Feb’2022 on the occasion of Lok Sanskriti Utsab, Krishi-O-Hasashilpa Mela,2022 held at Purbasthali-I Block, Purba Bardhaman.
- Dr.Manik Chandra Pakhira participated as an expert for evaluation of Internship Training Programme 2021 of the 5th Professional B.V.Sc & A.H on 18th Jan’2022.
- Dr N C Patra, Department of Veterinary Pathology, acted as resource person for 21 days advance national training course from 10-30 November, 2022 with WBUAFS and NADCL, Jammu on “Quality sampling for Pathology Lab including Forensic Pathology and Processing thereafter”.
- Dr. Supratim Chowdhury acted as Resource Person on “Recent advances in fish post harvest technology under IDP-NAHEP (ICAR)” in College of Fisheries (OUAT), Rangeilunda, Odisha
- Dr. Supratim Chowdhury acted as Resource Person on “Cluster Farming: A Concept For Sustainable Aquaculture And Promotion of Seafood Trade” during 21 Days National Training Course (NTC 2021) On “Recent Advances in Fisheries & Aquaculture Technology for Sustainable Rural Development” (May 18 to June 07, 2021) Organized by West Bengal University of Animal & Fishery Sciences (WBUAFS) Kolkata, West Bengal & National Agriculture Development Cooperative Ltd. (NADCL) Baramulla (UT of J & K) on 21.05.2021.
- Mr. Prasanta Murmu acted as Resource Person on “Biofloc Technology Application in Aquaculture to Support Sustainable Development Goals” during 21 Days National Training Course (NTC 2021) On “Recent Advances in Fisheries & Aquaculture Technology for Sustainable Rural Development” (May 18 to June 07, 2021) Organized by West Bengal University of Animal & Fishery Sciences (WBUAFS) Kolkata, West Bengal & National Agriculture Development Cooperative Ltd. (NADCL) Baramulla (UT of J & K) on 29.05.2021.



PUBLICATION UNITS



9

PUBLICATION UNITS

9.1. FACULTY OF VETERINARY & ANIMAL SCIENCES

9.1.1. Department of Animal Biotechnology

Name of book, booklets, Handout, report, manuals etc.	Category of Item published	Author / Co-Author (s)	Date/Year of publication with details
Computational analysis identified mRNA-based therapeutic agents against zoonotic bovine tuberculosis	Abstract	Ayan Mukherjee, Premanshu Dandapat, Molla Zakirul Haque, Sangeeta Mondal, Ujjwal Biswas, Partha Sarathi Jana, Chanchal Guha	Compendium of 90 th Annual meeting of Society of Biological Chemists, India. Page no: 184
SSR marker reveals distinct population structure of nutritionally rich Giant -river catfish <i>Sperataseenghala</i> (Sykes-1839) in Indian major riverine systems	Abstract	Aditya Pratap Acharya, A Pavan Kumar	1 st Indian Fisheries Outlook 22-24 th March 2022 PageNo:214

9.1.2. Department of Avian Science

Name of book, booklets, Handout, report, manuals etc.	Category of Item published	Author / Co-Author (s)	Date/Year of publication with details
Protocols for the Diagnosis of Pig Viral Diseases, Chapter: Production of virus like particles using the baculovirus expression system and their application in vaccines and viral disease diagnosis	Book Chapter	Maity HK, Lyons S, Deb R, Jones IM	Springer ISBN: 1071620428, 9781071620427

9.1.3. Department of Livestock Production Management

Name of book, booklets, Handout, report, manuals etc.	Category of Item published	Author / Co-Author (s)	Date/Year of publication with details
Xenobiotics in Estuarine Flora, Fauna and Human	Book	S Bhattacharya, S K Bandopadhyay, T K Mandal and Nilotpal Ghosh	Agrobios (India) pp.1-204, 2021

9.1.4. Department of Veterinary Anatomy & Histology

Name of book, booklets, Handout, report, manuals etc.	Category of Item published	Author / Co-Author (s)	Date/Year of publication with details
Practical Manuals for Veterinary Anatomy (part -I &II) as per MSVE2016	Practical Manual	Dr. Arun Kumar Mandal, Dr. Partha Das, Dr. Sanjay Ray & Dr. Nirmal Kumar Tudu	Current academic session for BVSc & AH students

9.1.5. Department of Veterinary Clinical Complex

Name of book, booklets, Handout, report, manuals etc.	Category of Item published	Author / Co-Author (s)	Date/Year of publication with details
Ceramic Biomaterials in Advanced Biomedical Applications In: Functional Biomaterials	Book Chapter	Lalzawmliana V, Mukherjee P, Roy S, Roy M, Nandi SK.	30 March 2022, Springer, Singapore

Name of book, booklets, Handout, report, manuals etc.	Category of Item published	Author / Co-Author (s)	Date/Year of publication with details
Bone Morphogenic Proteins and Bioceramic Scaffolds in Orthopedics. Innovative Bioceramics in Translational Medicine II: Surgical Applications	Book Chapter	Begam H, Roy S, Mukherjee P, Chanda A, Kundu B, Nandi SK.	01 January 2022, Springer, Singapore
Biological analysis of an innovative biodegradable antibiotic eluting bioactive glass/gypsum composite bone cement for treating experimental chronic MRSA osteomyelitis	Book Chapter	Surajit Mistry, SubhasishBurman, Subhasis Roy, Nilendu Jyoti Maitra, Rajiv Roy, Abhijit Chanda	2022, Elsevier

9.1.6. Department of Veterinary Microbiology

Name of book, booklets, Handout, report, manuals etc.	Category of Item published	Author / Co-Author (s)	Date/Year of publication with details
Book Chapter entitled 'Knowledge-Intensive Livestock Resource Management in a Changing Environment'	Book Chapter	A.Halder, I. Samanta, A.K. Patra	Edited book 'Sustainable Agriculture Systems and Technologies' (2022), Wiley (ISBN: 9781119808541)

9.1.7. Department of Veterinary Pharmacology & Toxicology

Name of book, booklets, Handout, report, manuals etc.	Category of Item published	Author / Co-Author (s)	Date/Year of publication with details
Poultry o Chagol palone deshio veshajo chikitsa poddhotir proyog Publisher : Expansion of activitis of biotech kisan hub in five aspiretional districts (Nadia, Murshidabad, Birbhum, Malda and South Dinajpur)	Extension literature	Dr.Sourav Chandra Dr. Tapas Kr. Sar	2021-22

9.1.8. Department of Veterinary Public Health

Name of book, booklets, Handout, report, manuals etc.	Category of Item published	Author / Co-Author (s)	Date/Year of publication with details
NIPAH VIRUS	Folder in Bengali	Dr. Chanchal Debnath Dr. Ripan Biswas Dr. Rahul Barua Dr. S. Baidya Dr. Nehal Gurung	2020-21 under OPZD Project (Material received in 2021-2022 due to COVID lock down)
Scrub Typhus	Folder in Bengali	Dr. Chanchal Debnath Dr. Ripan Biswas Dr. Rahul Barua	2020-21 under OPZD Project (Material received in 2021-2022 due to COVID lock down)
Zoonotic Rog: Jana Dorkar	Folder in Bengali	Dr. Chanchal Debnath Dr. Ripan Biswas Dr. Rahul Barua Dr. S. Baibya Dr. Nehal Gurung	2020-21 under OPZD Project (Material received in 2021-2022 due to COVID lock down)
Brucellosis	Folder in Bengali	Dr. Chanchal Debnath Dr. Ripan Biswas Dr. Rahul Barua Dr. Saktipada Pradhan Dr. A.D. Singh	2020-21 under OPZD Project (Material received in 2021-2022 due to COVID lock down)

Name of book, booklets, Handout, report, manuals etc.	Category of Item published	Author / Co-Author (s)	Date/Year of publication with details
Antibiotic resistance: Jonosasthe notun challenge	Folder in Bengali	Dr. Chanchal Debnath Dr. I. Samanta Dr. Ripan Biswas Dr. Rahul Barua	2020-21 under OPZD Project (Material received in 2021-2022 due to COVID lock down)
COVID-19 Pandemic	Folder in Bengali	Dr. Chanchal Debnath Dr. Ripan Biswas Dr. Rahul Barua	2020-21 under OPZD Project (Material received in 2021-2022 due to COVID lock down)
Japanese Encephalitis	Folder in Bengali	Dr. Chanchal Debnath Dr. Ripan Biswas Dr. Rahul Barua Dr. Saktipada Pradhan Dr. A.D. Singh	2020-21 under OPZD Project (Material received in 2021-2022 due to COVID lock down)
Rabies/jolatonko	Folder in Bengali	Dr. Chanchal Debnath Dr. Ripan Biswas Dr. Rahul Barua Dr. N.C. Patra Dr. Y. P. Mevada	2020-21 under OPZD Project (Material received in 2021-2022 due to COVID lock down)

9.1.9. Department of Veterinary Surgery & Radiology

Name of book, booklets, Handout, report, manuals etc.	Category of Item published	Author / Co-Author (s)	Date/Year of publication with details
Bone Morphogenic Proteins and Bioceramic Scaffolds in Orthopedics. In Book Innovative Bioceramics in Translational Medicine II, by Springer Publishing under the series “Springer Series in Biomaterials Science and Engineering	Book Chapter	Howa Begam, Subhasis Roy, Prasenjit Mukherjee, Abhijit Chanda, Biswanath Kundu and Samit Kumar Nandi	2022 Chapter 9 Vol-18, Pp-187-208 ISBN978-981-16-7438-9 Editors: Choi, Andy.
“Mesoporous bioactive glass for bone tissue regeneration and drug delivery” <i>Nanoengineering of Biomaterials: Drug delivery</i>	Book Chapter	Akrity Anand, Biswanath Kundu and Samit Kumar Nandi.	2022 Vol-1:343-370 under Wiley-VCH Verlag GmbH & Co. KGaA, Germany Publisher ISBN: 978-3-527-83209-5
Ceramic biomaterials in Advanced Biomedical Applications In Book “Functional Biomaterials-Drug Delivery and Biomedical Applications”	Book Chapter	V. Lalzawmliana, Prasenjit Mukherjee, Subhasis Roy, Mangal Roy and Samit K. Nandi.	2022 Pp 371-408 published by Springer Nature Singapore Pte Ltd., Singapore. ISBN 978-981-16-7151-7

9.1.9. Department of Veterinary & Animal Husbandry Extension Education

Name of book, booklets, Handout, report, manuals etc.	Category of Item published	Author / Co-Author (s)	Date/Year of publication with details
Personal & Organizational effectiveness by Management Tools & Extension Plus: New dimension in Future Extension	Compendium on Winter School of ICAR, New Delhi (02 Nos.)	Dr. SukantaBiswas & Prof. A. Goswami	07 th March, 2022 Page No:24-30 & 247-252
Economics, Marketing, Accountancy & Entrepreneurship Development In AH& Dairying	Text Book for UG-BVSC & AH with MSVE-2016 Curriculum of VCI, Govt. of India	Prof. A. Goswami & Dr. S. Biswas By NIPA publisher, New Delhi	December, 2021
Care of Livestock & Poultry during Summer Season & Karaknath Poultry: New dimension in Healthy animal Protein	Scientific Articles (02 Nos.)	Dr. SukantaBiswas	Pratidin Patrika; Dated. 07.4.2021 & 26.6.2021

9.2. FACULTY OF FISHERY SCIENCES

9.2.1. Department of Aquaculture

Name of book, booklets, Handout, report, manuals etc.	Category of Item published	Author / Co-Author (s)	Date/Year of publication with details
Diversification in Aquaculture Resources and Practices for Smallholder Farmers in “Agriculture, Livestock Production and Aquaculture” (Springer)	Chapter in a book	S. K. Das, Amit Mandal	2022 pp 263–286
Sustainable Resource Utilization in Aquaculture in “Innovative Approaches for Sustainable Development” (Springer)	Chapter in a book	S. K. Das	2022 pp 211-222
Aquaculture Resources and Practices in a Changing Environment in “Sustainable Agriculture Systems and Technologies” (Wiley)	Chapter in a book	S. K. Das, S.O. Khairnar, Amit Mandal	2022, https://doi.org/10.1002/9781119808565.ch8

9.2.2. Department of Aquatic Animal Health

Name of book, booklets, Handout, report, manuals etc.	Category of Item published	Author / Co-Author (s)	Date/Year of publication with details
Application of Indian pennywort <i>Centella asiatica</i> in carp aquaculture against <i>Flavobacterium columnare</i> infection. In: Gupta S.K., and Giri S.S. (eds) Biotechnological Advances in Aquaculture Health Management. Springer, Singapore.	Chapter in a book	Sarker S., and Abraham T.J.	2021 https://doi.org/10.1007/978-981-16-5195-3_24

9.2.3. Department of Fishery Resources Management

Name of book, booklets, Handout, report, manuals etc.	Category of Item published	Author / Co-Author (s)	Date/Year of publication with details
A Textbook on Fisheries Management: Rules and Regulations	Book	Golam Ziauddin	Jan, 2022 294 p
SUCCESSFUL FARMERS -Tales of KVK Burdwan Published by Sr. Scientist & Head, KVK, Burdwan	Compendium	D. Ghorai, S. Sarkar, S. Garai, C. K. Jana, G. Ziauddin, P. Saikia, M.S. Singh, Sk.Md. Azizur Rahman, M.S.Behera, F.H.Rahaman & Gouranga Kar	April 2021

9.3. FACULTY OF DAIRY TECHNOLOGY

9.3.1. Department of Dairy Chemistry

Name of book, booklets, Handout, report, manuals etc.	Category of Item published	Author / Co-Author (s)	Date/Year of publication with details
Biofunctional properties of traditional indian fermented milk foods for immunity boosting	Book Chapter	M,Bhattacharyya, C.Sen and P.R.Ray	July, 2021 Publisher: Narendra Publishing House, New Delhi P.No.: 177-188 ISBN: 978-93-90611-51-5
Health benefits of Cheddar cheese	Scientific Article	S. Das, C. Sen, M. Bhattacharyya and P.R. Ray	September, 2021 Indian Food Industry Vol.3, No. 4 P.No. 64-73

Name of book, booklets, Handout, report, manuals etc.	Category of Item published	Author / Co-Author (s)	Date/Year of publication with details
Milk and Milk Product Safety and Quality Assurance for Achieving Better Public Health Outcomes	Book Chapter	L.Haldar,H.V.Raghu and P.R.Ray	January 2022 Publisher: Springer Book: Agriculture, Livestock Production and Aquaculture DOI- 10.1107/978-3-030-93258-9_13 P-217-259 ISBN: 978-3-030-93258-9

9.3.2. Department of Dairy Microbiology

Name of book, booklets, Handout, report, manuals etc.	Category of Item published	Author / Co-Author (s)	Date/Year of publication with details
Compendium of National Workshop on “Starter Cultures for Fermented Dairy Products”	e-Compendium	Edited by: Prof. Surajit Mandal and Mr. Kumares Halder	22.01.2022
Compendium of International Webinar entitled “Innovation on Fermented Dairy Products – FERMINNOVATION-2K22	Compendium	Edited by: Prof. Pinaki Ranjan Ray and Dr. Lopamudra Haldar	12.03.2022

9.4.3. Department of Dairy Technology

Name of book, booklets, Handout, report, manuals etc.	Category of Item published	Author / Co-Author (s)	Date/Year of publication with details
Therapeutic attributes of non-bovine milk improving human health	Popular article	Partha Pratim Debnath	Dairy times, Volume 05, Issue 03, Page no. 47-49, June-july, 2021
Carbon foot printing and green technology: An Environmental Friendly Approach in Dairy Sector	Book chapter	Partha Pratim Debnath, Syed Mansha Rafiq and Nandini Dutta	Green perspectives of food processing, ISBN:978-81-94849-51-3, page no.: 203-217,2021
Ghee: A Super Health Food	Popular article	Jui Lodh, Anindita Debnath, D.C. Sen	Dairy times, Volume 05, Issue 06, Page no. 47-49, Dec-Jan, 2022

9.4. DIRECTORATE OF RESEARCH, EXTENSION & FARMS

Name of book, booklets, Handout, report, manuals etc.	Category of Item published	Author / Co-Author (s)	Date/Year of publication with details
Annual Report	Annual Report	Directorate of Research, Extension & Farms	March, 2022
Effect of climate change on vector-borne diseases in “Emerging Issues in Climate Smart Livestock Production”	Book Chapter	Dr. B.K. Biswas	Publisher : Academic Press, Elsevier Published in 2022
Organic farming: its potential, principles and procedures	Book	Nilufar Haque, SK Asraf Hossain, Rajesh Kumar	Publisher: Biotech books, New Delhi Published in 2022
Climate change and livestock farming: challenges, impact and mitigation strategies	Lead paper	Nilufar Haque, SK Asraf Hossain, Rajesh Kumar	VIII Annual Convention of SVSBT (The Society for Veterinary Science & Biotechnology) and National Seminar on “Innovative Biotechnological Approaches for Enhancing Fertility, Health and Productivity of Livestock to Boost the Farmers’ Economy” organized at Kumarganj during December 17-18, 2021

Name of book, booklets, Handout, report, manuals etc.	Category of Item published	Author / Co-Author (s)	Date/Year of publication with details
Progress Report	Report	Dr. Kesab Chandra Dhara, Dr. Paramita Dasgupta(Das), Mr. Asim Kumar Giri, Dr. Sreetama Bhattacharjee, Mr. Biman Sarkar, Mrs. Shilpa Ghosh, Ms. Sayantani Bose, Mr. Suprava Roy	18/07/2021
Empowerment of Women Farmers in Sundarban	Booklet	Dr. Kesab Chandra Dhara, Dr. Paramita Dasgupta(Das), Mr. Asim Kumar Giri, Dr. Sreetama Bhattacharjee, Mr. Biman Sarkar, Mrs. Shilpa Ghosh, Ms. Sayantani Bose, Mr. Suprava Roy	01/06/2021
Success Story	Booklet	Dr. Kesab Chandra Dhara, Dr. Paramita Dasgupta(Das), Mr. Asim Kumar Giri, Dr. Sreetama Bhattacharjee, Mr. Biman Sarkar, Mrs. Shilpa Ghosh, Ms. Sayantani Bose, Mr. Suprava Roy	16/02/2022



CENTRAL INSTRUMENTATION FACILITIES



10

CENTRAL INSTRUMENTATION FACILITIES

West Bengal University of Animal & Fishery Sciences had received a fund from the Indian Council of Agricultural Research (ICAR), New Delhi under 'Establishment of Central Instrumentation Facility' during 11th five year plan. Utilizing that fund the University has strengthened its Central Instrumentation facilities in the three faculties. Several valuable scientific equipments have been procured out of the fund received from several funding agencies such as, Government of India, ICAR, State Government etc. Furthermore, recently infrastructures have strengthened further for facilitating research activities, teaching learning activities and establishment of incubation centre for milk based entrepreneurial activities utilizing the funds of NAHEP (IG) project undergoing in the Faculty of Dairy Technology. The present status of such equipments / instruments are furnished below –

List of Valuable Equipments under the Central Instrumentation Facility :

A) Faculty of Veterinary & Animal Sciences

Sl. No.	Equipments
1	8 TPL Lab Model Torque Twin Screw Centrifuge
2	Electron capture detector
3	Inverted Tissue Culture (Sigma)
4	Inverted Trinocular
5	ECD with Electrometer
6	Low Pressure Chromatography System
7	HP Proliant Server : Web & Mail Server
8	UV – VIS Spectrophotometer
9	Ultra Pure Water Purification System (Animal Nutrition Dept.)
10	ELISA Reader (Vet. Physiology & VEPM)
11	PCR Thermocycler
12	Gel Doc System
13	Electrophoresis System
14	Inverted Microscope, Steriozoom Microscope and Fluorescence Microscope with Photographic attachment
15	Fluorescence Spectrophotometer

Sl. No.	Equipments
16	HPLC Unit (Vety. Biochemistry)
17	Rotary Microtome (Vety. Pathology)
18	Trinocular Research Microscope (Vety. Anatomy)
19	Gradient Microplate Spectrophotometer (VEPM)
20	BOD incubator with Shaker(VEPM)
21	Refrigerator, 2 nos. (VEPM)
22	ESCO Microprocessor Controlled Class II Total Exhaust Biological Safety Cabinet with Exhaust Facility (VEPM)
23	ESCO Ultra Low Temperature, Vertical Laboratory Freezer (-86° C)
24	Real-time PCR
25	Gel doc system
26	Cooling centrifuge
27	Deepfreeze -20C
28	Vortexer

B) Faculty of Fishery Sciences

Sl. No.	Equipments
1	High Performance Liquid Chromatography
2	Analytical Balance
3	Modular Laboratory
4	Atomic Absorption Spectrophotometer
5	Water purification system
6	Carbon di-oxide Incubator
7	Microfuge
8	Thermal cycler
9	Microblock Digestion system
10	U-V Trans-illuminator
11	Air purifier/curtain
12	Gas chromatograph
13	Inverted Microscope
14	Deep freeze
15	Generator
16	Canning Machine
17	Applied Biosystems 7500 Real-time PCR system
18	Refrigerated centrifuge

C) Faculty of Dairy Technology

Sl. No.	Equipments
1	Protein Analyzer
2	Infra red Analyzer
3	Ice Cream Plant
4	Condensing Unit
5	Drying Unit
6	Moisture Analyzer
7	Gel Filtration
8	Rheometer
9	BOD Analyzer
10	PCR
11	Vacuum Milk Concentrator
12	Freeze Dryer
13	Research Microscope
14	Automatic Nitrogen Analyzer
15	Colour meter
16	Water activity meter
17	Viscometer
18	Infra-red moisture analyzer
19	Vacuum Packaging Machine
20	Cone penetrometer
21	Butter churn (Incubation Centre)
22	Cream separator (Incubation Centre)
23	Incubation chamber (Incubation Centre)



VETERINARY CLINICS



11

VETERINARY CLINICS

Veterinary Clinics of WBUAFS deal with all sorts of diagnosis and treatment of domestic and pet animals. In addition to these activities, Critical Care Unit, USG, ECG, X-Ray etc, are also available. Apart from these, scientific Burial of carcasses is one of the major activities of this unit. The Clinics is functional in Belagachia (University Headquarter) as well as in the Mohanpur Campus of the University.

Working hour of the Units :

Amidst the covid19 pandemic, hours of clinical facility has been revised as follows :

Belgachia Unit :

OPD : Monday to Saturday (10 AM – 5 PM)

Mohanpur Unit :

Out patient treatment : Monday to Friday (10 AM – 5 PM)

This unit offers clinical practice courses for 3rd, 4th and 5th year students of BVSc simultaneously. The unit offers ambulatory veterinary clinical practice courses in one Block animal Health Center at Haringhata and ILFC Deptt. for the students of the university. UG classes are arranged every week for 3rd, 4th and 5th year students with the departmental teachers and with other clinical & paramedical teachers of WBUAFS.

Services are arranged for pet and farm animals to the surrounding area and adjacent districts of this state.



Fig 11.1: Outdoor of Veterinary Clinics at Belgachia

Services provided by the Units :

Belgachia Unit :

The most important cardinal services are:-

1. Specialized treatment for Medicine, Surgery and Gynecological cases.
2. Major and Minor Surgery.
3. X-Ray
4. Different Laboratory diagnostic test.
5. Burial of Carcasses.
6. ECG and USG.at CCU unit.
7. Dialysis.

Mohanpur Unit :

1. Routine medical treatment and immunization for pet animals and farm animals.
2. Routine surgeries for animals.
3. Routine gynecological treatment for animals.
4. Various obstetrical surgeries for animals.
5. Artificial Insemination for cattle.
6. Diagnostic facilities such as X-Ray, USG, Endoscopy, ECG for animals.
7. ABC programme for different scientific institutes and NGO.
8. Stem cell transplantation facility to the pet animals both at Belgachia and Mohanpur Clinics. It is done for the first time in India.
9. Routine hematological, biochemical, pathological and microscopical exam facility for animals.
10. Routine blood transfusion facility for canines.

Rate of examinations taken by the Department of VCC:

A) OPD REGISTRATION CHARGES:

Sl.No	Animals	Existing charges
1.	Dog (Mongrel)	15.00
2.	Dog (Non Mongrel)	30.00
3.	Cattle	10.00
4.	Goat & Sheep	05.00
5.	Pig	05.00
6.	Bird	05.00
7.	Cat	10.00
8.	Monkey	15.00

Sl.No	Animals	Existing charges
9.	Rabbit, Guinea pig, Mongoose, Squirrel, Rat	05.00
10.	Horse, Donkey, Mule	25.00
11.	Exotic / game bird	50.00

B) OPERATION CHARGES:

SL No.	Animals		Existing charges
1.	Cat	Major	250.00
		Minor	100.00
2.	Cow/ buffalo	Major	300.00
		Minor	150.00
3.	Goat/ Sheep	Major	50.00
		Minor	25.00
4.	Equine	Major	1,000.00
		Minor	500.00
5.	Rabbit	Major	50.00
		Minor	25.00
6.	Dog (Mongrel)	Major	625.00
		Minor	325.00
7.	Dog(Non Mongrel)	Major	1,000.00
		Minor	500.00

C) DRESSING CHARGES:

Animals	Types	Existing Charges
Exotic /Non mongrel Dog	Major	100.00
	Minor	50.00
Any Species	Major	50.00
	Minor	25.00

D) SOUNDNESS & HEALTH CERTIFICATE:

Animals	Existing Charges (Rs.)
Exotic /Non mongrel Dog	100.00
Any Species	50.00

E) A.I. IN COW:

EXISTING CHARGES (Rs.)
35.00

F) HAEMOPROTOZOAN SCREENING:

Species	Rate (Rs.)	
	Exotic / non-mongrel dog	Other
Dog	100.00	50.00
Other		30.00

G) FAECAL SAMPLE EXAMINATION:

Species	Rate (Rs.)	
	Exotic / non-mongrel dog	Other
Dog	50.00	25.00
Other		15.00

H) CASTRATION BY CLOSED METHOD:

CASTRATION BY CLOSED METHOD	Rate (Rs.)
	10.00

Rate chart of ECG for PET Animals:

SL NO.	Service	Rate (Rs.)
1.	ECG for pet animals	150.00

Rate of service charges for the dept. VCC:

SL NO.	Name of the Test	Rate
1.	Antibiotic Sensitivity Test	Rs. 200.00 clinical sample
2.	Identification of Bacteria (Bio-chemical test)	Rs. 1,000.00 per sampe
3.	Serological Test for diagnosis of Brucella	Rs. 50.00 per sample
4.	Serolical Test for diagnosis of Salmonella	Rs. 50.00 per sample

Rate chart for USG under the Dept VCC:

A	USG	Mohanpur	
		Exotic / nonmongrel dog (Rs.)	Others (Rs.)
1.	Whole abdomen	700.00	350.00
2.	Cranial Abdomen	400.00	200.00
3.	Caudal abdomen	400	200.00

Rate chart for X-Ray under the Dept VCC:

B	X-Ray (only report will be given, Processed film will be retained by the Dept.)	Manual X Ray	Manual X Ray
		Belgachia VCC	Mohanpur VCC
1	Dog (mongrel)	120.00	60.00
2	Dog (non mongrel)	120.00	120.00
3	Cattle	120.00	60.00
4	Goat & sheep	120.00	60.00
5	Pig	120.00	60.00
6	Bird	120.00	60.00
7	Cat	120.00	60.00
8	Monkey	120.00	60.00
9	Rabbit, guinea pig, Mongoose, squirrel, rat	120.00	60.00
10	Horse, donkey, mule	120.00	60.00
11	Exotic /game Bird	120.00	120.00

RATE CHART (Diagnostic):

SL NO.	HAEMATOBIOCHEMICAL TEST	EXOTIC ON MONGREL DOG	OTHER
1.	CBC (Hb, TLC, DLC, TPC, PCV)	500.00	250.00
2.	Complete Haemogram (Hb, TEC, TLC, DLC, PCV, ESR, TPC, MCV, MC, HC)	600.00	300.00
3.	Hb, TLC, DLC	250.00	125.00
4.	Hb, TLC, DLC, ESR	300.00	150.00
5.	Hemoglobin	100.00	50.00
6.	TLC	100.00	50.00
7.	TEC	100.00	50.00
8.	DLC	100.00	50.00
9.	PCV	100.00	50.00
10.	ESR	100.00	50.00
11.	Platelet Count	100.00	50.00
12.	MCV	100.00	50.00
13.	MCH	100.00	50.00
14.	MCHC	100.00	50.00
15.	LFT (Total Bill, Direct Bill, TP, ALB, AST, ALT, ALP)	700.00	350.00
16.	TP	100.00	50.00
17.	ALB	100.00	50.00
18.	Bill (T+D)	200.00	100.00
19.	AST	150.00	75.00
20.	ALT	150.00	75.00
21.	ALP	150.00	75.00
22.	KFT	400.00	200.00
23.	URIC ACID	100.00	50.00
24.	PLASMA GLUCOSE	100.00	50.00
25.	CREATININE	100.00	50.00
26.	BUN	100.00	50.00
27.	LIPID PROFILE	700.00	350.00
28.	TOTAL CHOLESTEROL	200.00	100.00
29.	TRIGLYCERIDE	300.00	150.00
30.	HDL CHOL.	200.00	100.00
31.	LDL CHOL.	400.00	200.00
32.	VLDL CHOL	200.00	100.00
33.	CHOL HDL	400.00	200.00
34.	TOTAL ELECTRO (Na ⁺ , K ⁺ , Cl ⁻)	400.00	200.00
35.	Na	150.00	75.00
36.	K	150.00	75.00
37.	Cl	150.00	75.00
38.	Ca	200.00	75.00
39.	Mg	300.00	150.00
40.	PO ₄	200.00	100.00
41.	LDH	300.00	150.00
42.	Haemo Protozoa	100.00 / 50.00	30.00
43.	Faecal	50.00 / 25.00	15.00

Belgachia Unit :

Species wise number of cases treated during the reporting period (2021-2022) :

Sl. No.	Name of Species	Surgical	Medicinal	Gynecology	Total
1.	Dog	2623	9478	806	12907
2.	Cat	628	2267	193	3088
3.	Rabbit	186	670	57	913
4.	Bird	128	463	40	631
5.	Cow	15	53	04	72
6.	Goat	150	540	46	736
7.	Others	24	86	07	117
	Total	3754	13557	1153	18464

Number of Pathological sample examined during the reporting period (2021-2022) :

Name of the Examination	No. of Cases
Stool	-
Blood	702
Urine	-
Anti biotic sensitivity test	-
Skin	-

Other Examinations done during the reporting period (2021-2022) :

Name of the Examination	No. of Cases
USG	43
Dialysis	46
ECG	04
X-Ray	1423

No. of Vaccination done during the reporting period (2021-2022) :

ARV	1385
Canine Distemper (DHPPiL)	1441
Felocel	53
Puppy DP	19
Vaccine Card	465

No. of postmortem done during the reporting period (2021-2022) : **Nil**

No. of carcasses buried in the University Burial Ground : **464 Nos.**

Revenue generated during the reporting period (2021-2022) : **Rs. 46,21,355.00**

Mohanpur Unit :

Species wise number of cases treated during the reporting period (2021-2022) :

Name of Species	Surgical	Medicine	Gynecology	Remarks
Dog	150	1274	175	Grand Total - 2812
Cat	35	217	32	
Goat	40	472	176	
Cow	02	36	05	
Rabbit	06	20	04	
Bird	02	20	01	
Others	04	138	03	
Total	239	2177	396	

Number of Pathological sample examined during the reporting period (2021-2022) :

		Remarks
Stool	15	
Blood	310	
Urine	02	
Haemoprotozoa	39	
Skin Scrapping	03	

Other Examinations done during the reporting period (2021-2022) :

		Remarks
USG	11	
X-Ray	318	
Endoscopy	04	

No. of Vaccination done during the reporting period (2021-2022) :

		Remarks
ARV	376	
Canine distemper	322	

No. of postmortem done during the reporting period (2021-2022) : **Nil**

No. of carcasses buried in the University Burial Ground : **Nil**

Revenue generated during the reporting period (2021-2022) :

Month	Amount
April 2021	16,965.00
May 2021	--
June 2021	--
July 2021	4,475.00
August 2021	6,955.00
September 2021	3,365.00
October 2021	4,725.00
November 2021	--
December 2021	15,865.00
January 2022	--
February 2022	34,945.00
March 2022	56,765.00
TOTAL	1,44,060.00

(Rupees One Lakh Forty Four Thousand and Sixty) only



**CENTRAL LIBRARY AND
INFORMATION NETWORK
SERVICES (CLINS – WBUAFS)**



12

CENTRAL LIBRARY AND INFORMATION NETWORK SERVICES (CLINS – WBUAFS)

University library is an integral part of an institution of higher education. The prime necessity for a university library is a good library with a balanced and adequate collection which can satisfy the needs of the university faculties, research scholars & students and help to promote advanced study and research programme. A well stocked university library serves as an invaluable aid in the conservation of knowledge & ideas and also performs as an active force in the teaching, research and extension programmes of the university through direct assistance to the faculty members, research scholars & students at the right time, pin-pointedly, exhaustively and expeditiously. It is characterized by the abundance of both print & digital information sources and it ensures potential learning environment that functions at the university.



Fig. 12.1 : Infrastructure and resources available under CLINS

12.1 Location:

Central Library, Kolkata:

At present, the library is functioning in a total floor space of about 15,000 sq. ft. in two storied building at University Headquarters, Belgachia.

Ground Floor: The lending section, book stack room, separate stack room for PhD Theses and Printed Journals, reading room for students and Faculties & Research Scholars

First Floor: Internet Server room, Information hub for library users, Meeting Room and Deputy Librarian's Chamber

The Central Library is also maintaining three setups in the other campuses for the faculties :

1. Central Library Unit at Mohanpur, Faculty of Veterinary and Animal Sciences.
2. Central Library Unit at Mohanpur, Faculty of Dairy Technology.
3. Central Library Unit at Chakgaria, Faculty of Fishery Sciences.

12.2 Library timings and usages

Library Hours:

On working days the services of the following sections of the Libraries at the different campuses remains open, as follows:

	Central Library, Belgachia	Library, F/VAS, Mohanpur	Library, F/DT, Mohanpur	Library, F/FSc, Chakgaria
Working hours	10.30 am- 5.30 pm (Server room 24X7)	10.30 am – 5.30 pm	10.30 am – 5.30 pm	10.30 am – 5.30 pm

12.3 Information on Books/Periodicals/ Serials/Journals :

Printed Books : 24545 nos.

Printed Indian Journals : 05 nos.

e-books : 235 nos.

e-Journals (foreign) : 10 nos.

e-Journals (Indian) : 05 nos.

List of new arrivals (journals/ Books/Periodicals etc.) during 2021-2022 : NIL (no fund received during this period)

12.4 Summary of Facilities Available in the Libraries in the different campuses of WBUAFS:

Facilities	Central Library, Belgachia	Library, F/VAS, Mohanpur	Library, F/DT, Mohanpur	Library, F/FSc, Chakgaria
Reference Service	Yes	Yes	Yes	Yes
Online Public Access Cataloguing (OPAC)	Yes (Through KOHA)	Yes (Through KOHA)	Yes (Through KOHA)	Yes (Through KOHA)
Printing Facilities to the library users	Yes	Yes	Yes	-

Facilities	Central Library, Belgachia	Library, F/VAS, Mohanpur	Library, F/DT, Mohanpur	Library, F/FSc, Chakgaria
Resource sharing through Document Delivery Service (DDR)	Yes	Yes	Yes	Yes
e-books (EBSCO) and e-journals access	Yes	Yes (Through RemoteXS)	Yes (Through RemoteXS)	Yes (Through RemoteXS)
Access to Consortium for e-Resources in Agriculture(CeRA) by ICAR.	Yes	Yes (Through RemoteXS)	Yes (Through RemoteXS)	Yes (Through RemoteXS)
Book Bank	-	Yes	-	-
Internet facility	Yes (1 GBPS bandwidth, from NKN)	Yes (Alliance Broadband)	Yes (Alliance Broadband)	Yes (Alliance Broadband)
Wi-Fi facility	Yes	Yes	Yes	Yes
Photocopy facility	-	Yes	Yes	Yes
Electronic ID card for Library users and University staff also.	Yes	Yes	Yes	Yes

12.5 Information on Library Automation:

- The resources of the Library in terms of printed accessioned books have been entered, catalogued and classified into the Library Management Software.
- Digitization of all PG and Ph.D Theses, these are accessible through **KrishiKosh**.
- Information hub has been introduced in four libraries.
- Wi-fi Facilities are provided in all the four libraries.
- Electronic circulation control system.
- Bar coding of all library document.
- Electronic ID cards for library users and University's staff.
- University library has subscribed several e-books and e-journal -
 - ❖ EBSCO- e-books database
 - ❖ CeRA Journals
 - ❖ E-Journals (Foreign)
 - ❖ J-Gate Online Portal
 - ❖ Willey – Online Journals
 - ❖ **Krishi kosh**: Full text access to Theses, and other documents of all SAUs.
 - ❖ Remote XS for accessing the University e-resources from anywhere.



IMPORTANT CONTACTS



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IMPORTANT CONTACTS

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