
WEST BENGAL UNIVERSITY OF ANIMAL AND FISHERY SCIENCES

ANNUAL REPORT

(2008 – 2010)



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Kolkata – 700 037
West Bengal
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FOREWORD

It gives me immense pleasure to present the Annual Report of the West Bengal University of Animal & Fishery Sciences which highlights the principal and important activities of the varsity and various achievements made during the period from 2008-2009 to 2009-2010.

Animal Husbandry, Dairying and Fisheries sectors play an important role in the national economy and in the socio-economic development of the country. These sectors also play a significant role in supplementing family incomes and generating gaintul employment in the rural sector, particularly, among the landless labourers, small and marginal farmers and women, besides providing cheap nutritional food to millions of people. Livestock are the best insurance against the vagaries of nature like drought, famine and other natural calamities.



The livestock and fisheries sector contributed over 4.07 per cent of the total GDP during 2008-09 and about 26.84 per cent value of output from total agriculture and allied activities. The Eleventh Five Year Plan envisages an overall growth 6-7 per cent per annum for the sector. In 2008-09, this sector contributed 108.5 million tones of milk, 55.6 billion eggs, 42.7 million kg wool and 3.8 million tones of meat. With a large human population and about 300 million economically empowered potential consumers, the domestic demand for these animal based food products are increasing rapidly, often exceeding the supply. Commercial aspects of livestock production are gaining interest due to changes in land utilization pattern, agriculture and socio-economic conditions.

It is now crystal clear that the livestock and fishery sectors play a pivotal role in sustainable agricultural production system for the small and marginal farmers and landless labourers of the country. The well-developed poultry and dairy farming are paving the way for women empowerment for poverty alleviation and rural upliftment. The West Bengal University of Animal & Fishery Sciences is recognized as one of the leading institutions in the eastern region of the country, shouldering the responsibilities of education, research and extension activities in veterinary, dairy and fishery sciences.

A large number of small and marginal farmers as well as landless labourers are engaged in backyard poultry keeping, goat, sheep and pig rearing. Besides these, they also maintain cattle and buffaloes in their houses. Mostly the women folk are involved in these activities. The growing concern on the widening of gap between demand and supply of quality feeds like concentrates, and to certain extent green forages as the livestock production system in India are slowly but surely undergoing a transformation with greater emphasis on propagating dairy animals with higher production potential. Focused strategies and concerted efforts are needed to face this challenge. Modification and fortification of conventional feeds should continue for improved nutrition, better digestibility and voluntary feed intake, which in turn, would result in better health, enhanced productivity and reproductive efficiency.

The role of animal nutrition for health and production has an important place for sustainable livestock production systems. Feed accounts for 60-70 per cent of total input in livestock and poultry. With endemic shortage of animal feeds, research should explore technologies to augment feed resources, including genetic modification of microorganisms to utilize high lignin forage grasses. Our focus has been to improve availability of nutrients and reduce cost of feed and other inputs. Many non-

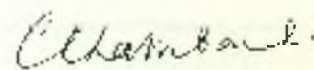
conventional feeds have been developed to feed the livestock. With emphasis on rising per animal productivity for milk and meat, traditional animal feeds are to be supplemented with critical deficient nutrients like proteins, energy and minerals through quality feeds. In livestock, there is an urgent need to reorient research and assess the genetic potential of indigenous breeds. Intensive research work needs to be undertaken for genetic identification of traits of excellence in Indian breeds, such as Black Bengal, goat, Garole sheep, Ghongroo pig, etc., and identify the functional genomics associated with their traits of excellence. Our rural economy greatly depends upon these activities. West Bengal is famous for its Black Bengal goat, Garole sheep and also for our indigenous fowl and duck population. Scientists of our university have established the importance of Bonapala sheep and Ghongroo pigs. West Bengal possess many kinds of big and small water bodies. A total farming system of integrating crop cultivation with horticulture, livestock and fish farming can transform the economic scenario of the State. Motto of our University is to create knowledgeable man power by imparting modern education and to undertake research. University is regularly imparting trainings on the relevant areas for upgradation of knowledge of the farming communities. The teachers and the scientists of the University are engaged in research work for conservation of germplasm of vulnerable livestock varieties of West Bengal.

Three Krishi Vigyan Kendras of the University presently run at Ramsahi, Dist. Jalpaiguri, Digha, Dist. Murshidabad and Ashokenagar, Dist. North 24-Parganas. The process of dissemination of knowledge and techniques has been significantly undertaken by those Krishi Vigyan Kendras. The Directorate of Research, Extension & Farms has conducted various training programmes on livestock, poultry and fishery aspects for the State Govt. officials and also for the farmers.

The implications of climate change on agriculture including animal husbandry and vice versa need to be studied and dedicated research programmes should be initiated to combat global warming. The changing climate has become an important research subject in agriculture and allied sectors today, and we look forward for a concerted action for meaningful interventions to minimize the impending impact of the global warming phenomenon. A major research thrust is warranted in areas of various biotic and abiotic stresses for improvement in production, productivity, and quality of produce of our agri-horticulture, fishery and livestock assets.

Quantity of teaching and research activities have received due importance during these years. Our University could never attain the success it has achieved without the active support and patronage of the Government of West Bengal, I.C.A.R. and other agencies.

I 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 suggestions and comments on the information contained in this publication, which would prove to be very much valuable for future activities.



(Prof. C. S. Chakrabarti)
Vice Chancellor

PROLOGUE

The Annual Report of the University is prepared in terms of section VI, Clause 24 (h) of West Bengal Act VI of 1995 and First statute of W.B.U.A.F.S., 1998.

The present Annual Report for the year 2008-10 contains the salient achievements of various activities carried out by the University in the fulfillment of its aim and objectives concerning teaching, research and extension education in Veterinary Sciences, Fishery Sciences and Dairy technology.



The compilation and publication of Annual Report is a collective efforts of all the units of the University. It is not possible for any committee to compile and present this report without the active cooperation of all the Statutory officers, Head of the Departments, Scientists, Teachers, other Officers, Employees of the University for which I am highly grateful.

I express my deep sense of gratitude to the Honourable Vice Chancellor, Prof. Chandra Sekhar Chakrabarti for his valuable suggestions and guidance in bringing out this Annual report of this University.

The efforts put in by the members of Annual Report Editorial Committee comprising Prof. N. R. Pradhan, Dr. S. Chandra and others in compiling and editing of the report in the present shape are highly commendable. I place on record my appreciation to all of them.

I wish that the University blossoms further and achieves greater highest of academic excellence.

A handwritten signature in blue ink, appearing to read 'D. K. Dey', written in a cursive style.

(Prof. D. K. Dey)
Registrar

PREFACE

West Bengal University of Animal and Fishery Science is the second of its kind in India and was established in the state of West Bengal for extending much more emphasis on Teaching, Research and Extension activities in Animal Sciences, Dairy Technology & Fishery Sciences.

Since the Animal & Fishery Science sector is contributing a significant share in the agricultural income of the country, establishment of WBUAFS in the year 1995 has manifold importance.

During last fifteen years, this university has played an excellent role in imparting education by producing good number of Veterinary, Fishery & Dairy Technology graduates from the respective faculties of Veterinary & Animal Science, Fishery Science & Dairy Technology. Many of them have undergone higher studies also from this University and attained achievements in the professional fields.

This University has also contributed a commendable role in the fundamental & applied research activities both in the Animal and Fishery Sciences sectors. Some projects have been completed successfully with excellent achievements and many others are in progress. Some of those have been aimed for the livelihood development and economic upliftment of the poor farmers of state.

Besides these, there are three Krishi Vigyan Kendras under aegis of the University situated in the districts of Jalpaiguri, Murshidabad and North 24 Parganas and are actively engaged in different extension programmes like theoretical and practical trainings in the field and in farms and are helping in disseminating the latest technologies evolved for improvement of production in Agricultural, Animal Husbandry and Fishery Sciences Sectors.

This Annual Report of the University will provide the latest information of the different manifold activities of the University for the period of 2008-2010 and will be very much useful for the Faculty members, Administrators, Researchers, Students & Staff members of the University.

I appreciate and acknowledge the endeavor of the officers and staff members of the Directorate of Research and Farms of this University for their sincere efforts in bringing out this instant publication.



A handwritten signature in black ink, appearing to read 'N.R. Pradhan'.

Prof. N.R. Pradhan

Director of Research, Extension & Farms
and Controller of Examinations & Editor

ACKNOWLEDGEMENTS



I convey my deepest sense of gratitude to Prof. C. S. Chakrabarti, honourable Vice Chancellor of the University for his valuable advice and constant inspiration for the publication of present Annual Report for the period of 2008-09 and also 2009-10.

I gratefully acknowledge the active support rendered by Prof. N.R. Pradhan, Director of Research, Extension and Farms and Editor for preparation of the Annual Report.

Sincere thanks also to acknowledge more than one can help received from Prof. D. K. De, Registrar and Dean, Faculty of Veterinary & Animal Sciences. It is my pleasure to record the gratitude in favour of Prof. R. K. Ghosh, former Registrar; Sri Debabrata Kundu, Finance Officer; Prof. A. K. Misra, Dean of Dairy Technology Faculty; Prof. K. C. Dora, Dean of Fishery Sciences Faculty; Sri Anuj Chakraborty, Secretary Faculty Council; Sri A. K. Bhattacharya, Asstt. Finance Officer and other Faculty members for their cooperation in preparing this Annual Report.

The help received from all the Officers and staff of Directorate of Research, Extension and Farms is certainly to recognize with glad.

I am also especially grateful to all the members of the Editorial and Publication Board of this Annual Report for sharing the shoulder in bringing out the most desired reporting about our reputed University.

I hope this Report will be meaningful, which has highlighted the events and activities of the University in a fascinating manner. Presto publication and printing might elicit some unwilling errors, which are regretfully admitted to pardon. Comments and suggestions are cordially invited to improve the quality of report publication in future.

A handwritten signature in black ink, appearing to read 'Sourav Chandra'.

(SOURAV CHANDRA)
Assistant Director (Extension)
&
Associate Editor

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EXECUTIVE SUMMARY

The livestock and fisheries sectors are fast developing in the Country for which the pressure on land is massive in inclined state all over the India. During, 2008-2010, the livestock and fisheries sectors contributed approximately 5% of the total Gross Domestic Product (GDP) and about 27% value of the output from agriculture, animal husbandry and allied ventures. Livestock production has been growing faster than any agricultural sub-sector and it is foreseen by 2020, the livestock will account for more than half of total global agricultural output in economic terms. To reach the growth rate of 4% in the agriculture sector as envisaged in the XI plan, the growth in livestock and other allied sectors becomes much essential. To attain this, varieties of technological interventions were introduced in these sectors in the country, which paved the way for significant improvement in productivity and production and also per capita availability of livestock products.

The State of West Bengal has the potential to enhance the livestock productivity with accelerated application of innovative technologies. The state is producing 4 million tones of milk per annum besides having 61 million poultry, 18.8 million goats and 1.3 million pigs. Also, West Bengal has emerged as the highest fish producing (1.5 million tones) state in the country including the production of 1.26 metric tones inland fishes. As most of the state farmers are small and marginal in their activities and reasonably, it is the livestock and fish, which could surely help the farming population for improvement of their livelihood. The efforts of Animal Husbandry and Fisheries are well known by their contribution to the general economy of West Bengal in terms of production. Growth in human population, increase in urbanization, rising domestic incomes and changing lifestyles have led to increased demand for products of animal origin. The West Bengal University of Animal and Fishery Sciences has already set the goal in this direction and doing its best through its educational programmes and research activities and its subsequent dissemination of package of practices to rural farming community.

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. The highlights of various activities of the University during the period 2008-2010 are depicted below :

Institutional :

The 6th convocation was organized to confer degrees to 55 Under-graduate, 63 Post-graduate and 12 Ph.D. students under the three Faculties of the University. The dignitaries of Indian Council of Agricultural Research (ICAR), Ministry of Agriculture, Govt. of India and Veterinary Council of India (VCI) have visited the University to assess the academic activities of Under-graduate course adopted in the University. Semester system of ICAR is also adopted in

other two faculties. The University has conducted six National Conferences / Seminars during the reporting period. The Central Library with Information Network services is in full action towards fulfilling the objectives of the University.

Academic :

Keeping in view of the globalization in future challenges and relevance to changing needs and aspirations in the field of animal sciences and fishery, the University has fashioned its academic system in very dynamic way. The educational activities in the University are regularly put under evaluation and accordingly modification of course curricula and teaching methodologies are made.

The University offers undergraduate studies in Veterinary and Animal Sciences, Dairy Technology and Fishery Sciences under its three faculties. All the faculties are facilitated with Masters degree courses. The doctorate studies are undertaken in the Veterinary and Animal Sciences and Dairy Technology faculties. Since 2009, the admission for the undergraduate course in faculty of Veterinary and Animal Sciences is undertaken through a separate examination by West Bengal Joint Entrance Board for B.V.Sc. & A.H. students, which is also followed in the Dairy Technology faculty through a combined Joint Entrance Examination for engineering students in the State. In undergraduate and postgraduate studies 15% students are selected by the VCI / ICAR through All India Entrance Examinations. Besides keeping such 15% quota, in the Fishery faculty, the admission to undergraduate course is carried out through the merit list prepared on the basis of marks obtained in the 10 + 2 Examinations. The admission of students for three faculties during 2009-2010 was 233. During the period, a total of 168 students comprising 77 in Under-graduate, 75 in Post-graduate and 16 in Ph.D. programmes have successfully completed their courses. Best students were awarded with different kinds of medal namely, Mira Mallick Gold Medal, Dr. S.N. Roy Gold medal, Prof. D.B. Mukherjee Gold medal, Dr. P. Bhattacharya Gold medal and Dr. D.K. Biswas Gold medal etc..

Research :

Considering the ever-changing scenario in the agricultural, animal husbandry and fishery sectors in the nation, the University is taking up newer research programmes for the greater interest of the farming community. Since inception the University has completed 65 research projects with fund allocation of Rs. 3366.21 lakhs, received from various funding agencies. The University has already evolved 54 technologies, which inturn, would help to enhance the income and livelihood security of the farming community. Currently there exists 36 numbers of on-going research projects with fund allocation of Rs. 2378.29 lakhs. In addition, there exists Collaborative research projects with other Institutions. Further, this University has been implementing 2 (two) National Agricultural Innovative Projects (NAIP) under component 3 relating to livelihood security as the Supporting Institute in collaboration with Bidhan Chandra Krishi Viswavidyalaya (BCKV), ICAR Research complex for NEH Region (Tripura) and IVRI (UP). Besides, the Govt. of India has sanctioned a mega project, Rashtriya Krishi Vikash Yojana (RKVY) on development of a model for sustainable backyard poultry farming is in rapid progress

under the umbrella of the University. Mentionable, the Govt. of India has approved the name of our University as a collaborative Institution with Vietnam Universities for research work in the field of aquaculture, which is under process of observation of the Govt. of Vietnam.

Extension :

One of the prime features of the University is to accepting the philosophy of service to farmers and rural community. The University has been undertaking different sorts of outreach activities in the State. In its regular course of action, the University has been organized various training programmes, mass contact camps, farm and home visits, workshops, seminars, kishan mela, farm produce exhibitions, consultancy and advisory services, on-farm trial, frontline demonstrations, field days, disease investigation with health camps and other extension activities benefiting 30335 farmers during the period under report. The University also offers training for Master trainers' of State level Extension Officers, Resource Persons of SHGs, Fisher folk of Sundarbans and also periodically organizes National level training programmes for Extension Officers of different States. Six documentary films were produced to disseminate knowledge on latest technologies evolved by the University in livestock and fishery sectors.

During the period, nearly 600 research papers were published in different national and international journals. Apart from this, University has 188 number of publications of different books, monographs, manuals, compendiums and activity highlights.

Krishi Vigyan Kendras :

The University has 3 (three) Krishi Vigyan Kendras (KVKs) in Jalpaiguri, North 24 Parganas and Murshidabad districts. All the KVKs have been functioning based on the mandates formulated by the Indian Council of Agricultural Research (ICAR) and the University through mutual understanding. Three centrally sponsored research projects have been implemented at Jalpaiguri KVK. In addition, six projects sponsored by Central and State Govt. Departments have been implemented at the Krishi Vigyan Kendras.

A. ADMINISTRATION

A.1. MANDATE OF THE UNIVERSITY

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

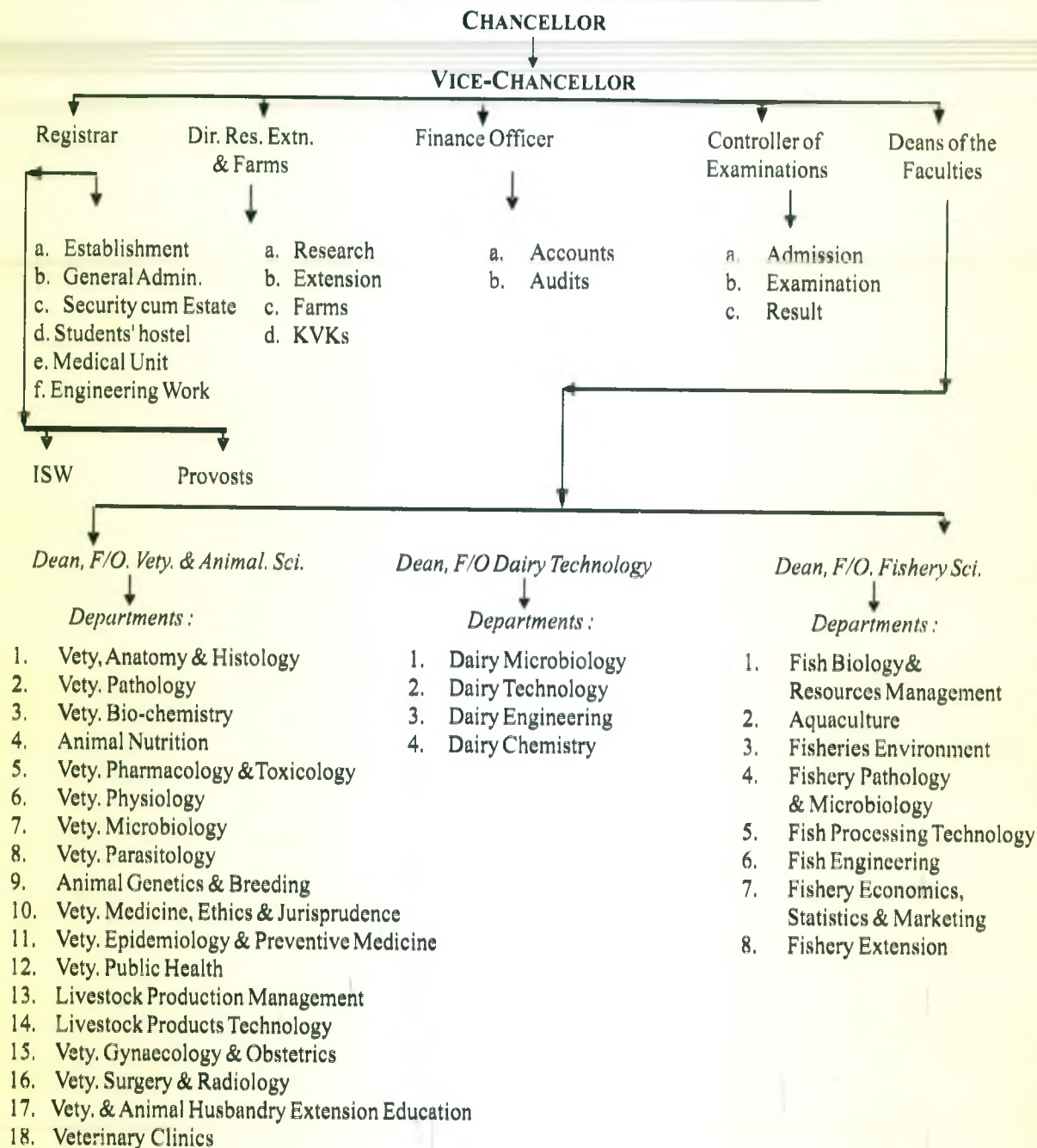
- A. To impart education in the branches of Veterinary and Animal Sciences, Fishery Sciences, Dairy Technology and allied sciences.
- B. To conduct basic and applied research in the field of Veterinary and Animal Sciences, Fishery Sciences, Dairy Technology for advancement of knowledge and enhancement 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.

A.2. AUTHORITATIVE STRUCTURE

The authoritative structure under the organisational set-up of the West Bengal University of Animal and Fishery Sciences follows the State Agricultural University (SAU) structure. The University operates through following authorities, which are responsible for policy matters and decision making in the field of Academic, Research, Extension, Farm activities and Administration :

- ☆ Executive Council
- ☆ Faculty Council
- ☆ Academic Council
- ☆ Research and Extension Education Council
- ☆ Finance Committee
- ☆ Board of Examinations
- ☆ Board of Studies

A.3. ORGANOGRAM OF WBUAFS



A.4. NAME OF STATUTORY OFFICERS IN THE UNIVERSITY

Prof. C. S. Chakrabarti	Vice-Chancellor
Prof. D. K. De	Registrar (Actg.) and Dean, F/O. Vety. & Animal Sciences
Sri D. Kundu	Finance Officer
Prof. N. R. Pradhan	Director of Research, Extension & Farms (Actg.) and Controller of Examinations
Vacant	Librarian
Prof. A. K. Misra	Dean, F/O Dairy Technology
Prof. K. C. Dora	Dean, F/O Fishery Sciences

A.5. DIFFERENT STATUTORY BODIES

A.5.1. EXECUTIVE COUNCIL

Name & Designation	Position in EC
Prof. C. S. Chakrabarti Vice-Chancellor	<i>Chairman</i>
Dr. K. K. Saha Director of Animal Husbandry & Vety. Services, Govt. of West Bengal	<i>Member</i>
Sri S. K. Bhattacharya Director of Fisheries Govt. of West Bengal	-do-
Sri B. Roy Milk Commissioner Govt. of West Bengal	-do-
Prof. A. K. Misra Dean, Faculty of Dairy Technology WBUAFS	-do-
Prof. N. R. Pradhan Director of Research, Extension & Farms WBUAFS	-do-

Prof. K. C. Dora

Dean, Faculty of Fishery Sciences
WBUAFS

-do-

Prof. S. Biswas

Professor, Deptt. of Livestock Products Technology
(Teachers' Representative, Faculty
of Vety. & Anim. Sci., WBUAFS)

Elected Member

Prof. S. P. Sarkar

Professor, Deptt. of Dairy Chemistry
(Teachers' Representative, Faculty of Dairy
Technology, WBUAFS)

-do-

Prof. S. S. Dana

Professor Deptt. of Fishery Extension
(Teacher's Representative, Faculty of Fishery
Sci, WBUAFS)

-do-

Sri M. Ahmed

Junior Superintendent (Non-Teaching Staff
Representative, WBUAFS)

-do-

Sri Krishnendu Mondal

(Students' Representative, WBUAFS)

-do-

Sri Biplab Mazumder

(M.L.A. Representative, nominated by
West Bengal Legislative Assembly)

Nominated Member

Dr. (Mrs.) K. G. Suma

Additional Director, Animal Husbandry
Directorate of Animal Husbandary, Govt. of Kerala
(Representative from VCI)

-do-

Sri Sanjoy Putatundu

(Representative from Farmers or Producers,
nominated by Govt. of West Bengal)

-do-

Sri Lakshmi Kanta Roy

(Representative from Farmers or Producers,
nominated by Govt. of West Bengal)

-do-

Sri Anil Patra

(Representative from Farmers or Producers,
nominated by Govt. of West Bengal)

-do-

Dr. K. K. Vass

Director, Central Inland Fisheries Research Institute
I.C.A.R. (Representative of I.C.A.R., New Delhi)

-do-

Prof. D. K. De

Registrar, WBUAFS and Dean, F/VAS

Non-Member Secretary

ADMINISTRATION

A.5.2. FACULTY COUNCILS

Vice Chancellor	<i>Chairman</i>
Registrar	<i>Member</i>
Director of Research, Extension & Farms	-do-
Librarian	-do-
Controller of Examinations	<i>Invitee member</i>
Dean of the respective Faculty	<i>Member</i>
All Heads of the Deptt. of respective Faculty	-do-
Professor from respective Faculty	<i>Elected Member</i>
Reader from respective Faculty	-do-
Lecturer from respective Faculty	-do-
U. G. student from respective Faculty	-do-
P.G. student from respective Faculty	-do-
Secretary, Faculty Council	<i>Ex-officio Secretary</i>

A.5.3. BOARD OF STUDIES IN THE TEACHING DEPARTMENTS

Head of the Department	<i>Chairman & Convener</i>
All the whole time teachers of the Department	<i>Members</i>

A.5.4. FINANCE COMMITTEE

Vice-Chancellor	<i>Ex-officio Chairman</i>
Sri Biplab Majumder, MLA Representative	<i>Nominated Member of EC</i>
Secretary, Finance Deptt., Govt. of West Bengal	<i>Member or his representative</i>
Secretary, Animal Resource Development Deptt., or his representative	<i>Member, Govt. of West Bengal</i>
Secretary, Fisheries Deptt., Govt. of West Bengal	<i>Member or his representative</i>
Director of Research, Extension & Farms	<i>Member</i>
Secretary, Faculty Council	<i>Member Secretary</i>

A.5.5. ACADEMIC COUNCIL

1. Vice Chancellor-*Chairman*
2. Director of Research, Extension and Farms - *Member*
3. Deans of Faculties - *Member*
4. Registrar-Non-Member Secretary - *Member*
5. Controller of Examinations - *Member*
6. Librarian - *Member*
7. All Heads of the Departments of all the Faculties – *Member*
8. One Lecturer, one Reader and one Professor from each Faculty – *Member*
9. One undergraduate student from each Faculty and one Post-graduate student from the University elected by the regular students in a manner as shall be prescribed – *Member*
Two eminent academicians from the field of Veterinary/Dairy/Fishery Sciences nominated by the Vice-Chancellor - *Member*

A.5.6. RESEARCH AND EXTENSION EDUCATION COUNCIL

1. Vice-Chancellor-*Chairman*
2. Director of Research, Extension and Farms-*Member Secretary*
3. Director of Veterinary Services and Animal Husbandry, Govt. of West Bengal-*Member*
4. Deans of Faculties - *Member*
5. Director of Fisheries, Govt. of West Bengal - *Member*
6. Head of all Research Stations and Project Coordinators of State/ICAR/other agencies, research schemes – *Member*
7. Three Scientists of eminence to be nominated by the Vice-Chancellor for their specialized knowledge, one for each faculty for a period of two years – *Member*
8. Three progressive farmers associated with Veterinary, Animal Husbandry/Fisheries/Dairy Technology practices to be nominated by the Vice-Chancellor – *Member*

A.5.7. BOARD OF EXAMINATIONS

1. One of the Dean from three Faculties –*Chairman (by rotation)*
2. Registrar – *Member*
3. Deans of Faculties – *Member*
4. Controller of Examinations – Member Secretary

A.6. ORGANIZATION OF MEETINGS OF THE EXECUTIVE COUNCIL DURING 2008 TO 2010

<i>Sl. No. of the meeting</i>	<i>Date of organization</i>
38 TH	25.03.2008
39 TH	17.04.2008
40 TH	09.05.2008
41 ST	29.08.2008
42 ND	19.09.2008
43 RD	26.12.2008
44 TH	24.02.2009
45 TH	07.04.2009
46 TH	16.04.2009
47 TH	25.05.2009
48 TH	24.06.2009
49 TH	22.09.2009
50 TH	27.11.2009
51 ST	28.01.2010
52 ND	26.03.2010
53 RD	12.04.2010
54 TH	23.04.2010
55 TH	29.06.2010

A7. STAFF IN POSITION

Sl. No.	Category	Year and Number	
		2008-09	2009-10
I. OFFICERS			
1.	Vice Chancellor	01	01
2.	Registrar	01	01
3.	Dean of the Faculties	03	03
4.	Director (Research, Extension & Farms)	01	01
5.	Finance Officer	01	01
6.	University Librarian	Vacant	Vacant
7.	Controller of Examinations	01	01
I. TEACHERS			
1.	Lecturer/ Assistant Professor	52	52
2.	Reader/ Associate Professor	11	13
3.	Professor	28	28
II. OFFICERS (POSTS SANCTIONED BY THE STATE GOVERNMENT)			
1.	Secretary (Faculty Councils)	01	01
2.	Deputy Registrar	02	1 Vacant
3.	Deputy Director (Research, Extension & Farms)	01	01
4.	Deputy Librarian	01	01
5.	Assistant Librarian	Vacant	Vacant
6.	Assistant Finance Officer	01	01
7.	Assistant Director (Research)	01	01
8.	Assistant Director (Extension)	01	01
9.	Assistant Director (Farms)	01	01
10.	Farm Manager	01	01
11.	Security-cum-Estate Officer	01	01
III. NON-TEACHING (Administrative, Technical & Supporting) EMPLOYEES IN 2009 - 2010			
Senior Superintendent, Senior Assistant, Junior Assistant, Technical Assistant-I, Technical Assistant-II, Junior Superintendent, Technical Superintendent, Office Attendant-II/ Equivalent, Office Attendant-I, Record Supplier, Record Keeper & others		182	186

B. ACADEMIC

B.1. ACADEMIC PROGRAMMES

The West Bengal University of Animal and Fishery Sciences University follows the syllabus of Veterinary Council of India (VCI) for Veterinary and Animal Sciences Faculty, syllabus of Indian Council of Agricultural Research (ICAR) for Fishery Sciences Faculty and AICTE, New Delhi approved syllabus for Dairy Technology Faculty.

Faculty of Veterinary and Animal Sciences :

- | | | |
|------|------------------|--|
| i) | B. V. Sc. & A.H. | 5 years Bachelors' degree course (60 capacity) |
| ii) | M.V. Sc | 2 years Masters' degree course (102 capacity) |
| iii) | Ph. D. | 3 years Doctoral degree course (48 capacity) |

Faculty of Dairy Technology :

- | | | |
|------|------------------|--|
| i) | B. Tech. (DT) | 4 years Bachelors' degree course (30 capacity) |
| ii) | M. Tech./ M. Sc. | 2 years Masters' degree course (24 capacity) |
| iii) | Ph. D. | 3 years Doctoral degree course (12 capacity) |

Faculty of Fishery Sciences :

- | | | |
|-----|-----------|--|
| i) | B.F. Sc. | 4 years Bachelors' degree course (30 capacity) |
| ii) | M. F. Sc. | 2 years Masters' degree course |

B.2. ADMISSION

B.2.1. ADMISSION SCHEDULE

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

B.2.2. ADMISSION REQUIREMENTS / PROCEDURE FOR UNDERGRADUATE STUDIES

In B. V. Sc. & A. H. studies the candidates must qualify in the West Bengal Joint Entrance examination conducted for entrance into the B. V. Sc. & A. H. course. The candidates qualified in the West Bengal Joint Entrance examination conducted for entrance into the Engineering/Technology course are considered for studies on B. Tech. (D.T.) course. For B. F. Sc. course application forms are 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 at Belgachia (Kolkata).

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.

B.2.3. 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 strictly 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.

B.2.4. ADMISSION REQUIREMENTS FOR DOCTORATE (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.

B.2.5. INTAKE OF STUDENTS

All the three faculties are running educational activities as per capacity. The residential accommodations for the total strength of the students are being arranged in the three campuses of the University.

Academic year - 2008-2009

Courses offered	Level	No. of seats	No. of applications received	Final intake by location & sex wise			
				Rural		Urban	
				Male	Female	Male	Female
B. V. Sc. & A. H.	UG	43	236	24	02	13	04
M. V. Sc.	PG	79	176	58	10	09	02
Ph.D. in Vety. & Animal Sciences	PhD	29	57	18	07	02	02
B. Tech. (DI)	UG	27	67	13	04	08	02
M. Tech. (DT)	PG	06	08	04	01	01	00
Ph.D. in Dairy Technology	PhD	00	00	00	00	00	00
B. F. Sc.	UG	32	128	14	08	08	02
M. F. Sc.	PG	25	37	12	04	06	03

Academic year - 2009-10

Courses offered	Level	No. of seats	No. of applications received	Final intake by location and sex wise			
				Rural		Urban	
				Male	Female	Male	Female
B. V. Sc. & A. H.	UG	65	2017	14	08	33	10
M. V. Sc.	PG	47	215	20	02	21	04
Ph.D. in Vety. & Animal Sciences	PhD	27	44	06	02	16	03
B. Tech. (DT)	UG	30	97	08	00	22	00
M. Tech. (DT)	PG	06	16	04	01	03	02
Ph.D. in Dairy Technology	PhD	00	00	00	00	00	00
B. F. Sc.	UG	39	132	20	07	09	03
M. F. Sc.	PG	19	26	08	05	03	03

B.3. OUT-TURN OF STUDENTS

The number of students passed out from the three faculties during the period under consideration and their detailed status as per available records are furnished hereunder : -

Academic year 2008-2009

Discipline	Level	Number of students passed out		Status of the passed out students			
		Total	Females	No. of students joined higher studies	No. of students joined employment	No. of students went abroad	Others*
Veterinary & Animal Sciences	UG	75	12	35	28	06	6 self-employed
	PG	70	18	26	32	06	6 self-employed
	PhD	09	03	03	12	01	
Fishery Sciences	UG	16	04	20	02	00	1 self-employed
	PG	23	01	06	10	01	6 self-employed
Dairy Technology/ Sciences	UG	17	04	08	05	03	1 self-employed
	PG	04	00	01	03	00	
	PhD	02	01	00	02	00	

Academic Year 2009-2010

Discipline	Level	Number of students passed out		Status of the passed out students			
		Total	Females	No. of students joined higher studies	No. of students joined employment	No. of students went abroad	Others ^a
Veterinary & Animal Sciences	UG	29	03	26	02	00	1 self-employed
	PG	37	04	30	04	02	1 self-employed
	PhD	11	02	00	10	01	
Fishery Sciences	UG	05	01	05	00	00	
	PG	22	08	21	00	00	1 self-employed
Dairy Technology Sciences	UG	21	02	20	01	00	
	PG	04	00	00	04	00	
	PhD	01	00	00	01	00	

B.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:

- ☆ **Smt. Mira Mallick Gold Medal**
[Highest marks in B. V. Sc. & A. H. final semester]
- ☆ **Prof. D. B. Mukherjee Gold Medal**
[Highest marks in Veterinary Surgery and Radiology in B. V. Sc. & A. H.]
- ☆ **Dr. S. N. Roy Gold Medal**
[Highest marks in Livestock Farm Management under Livestock Production Management in B. V. Sc. & A. H.]
- ☆ **First Batch (1953) B. V. Sc. Students' Gold Medal**
[Highest marks in 5th & 6th semester in B. V. Sc. & A. H.]
- ☆ **Dr. P. Bhattacharya Gold Medal**
[Highest OGPA in Animal Production and Management in M. V. Sc.]
- ☆ **Prof. Sukumar Dc Gold Medal**
[Highest marks in B. Tech. (Dairy Technology) final semester]
- ☆ **Smt. Tirthamayee Ganguli Gold Medal**
[First position in M. Tech. (Dairy Technology) final semester]
- ☆ **Prof. G. Ganguly Scholarship**
[Highest marks in B. Tech. (Dairy Technology), 3rd Year]
- ☆ **Mrs. P. Ganguly Scholarship**
[Highest marks in B. Tech. (Dairy Technology) 3rd Year]

- ☆ **Dr. B. N. Dey Memorial Endowment Gold Medal**
[Highest Marks in Veterinary Gynaecology & Obstetrics in B. V. Sc. & A.H.]
- ☆ **Dr. B. N. Mukherjee Gold Medal**
[Highest marks in Vety. Epidemiology & Preventive Medicine in B. V. Sc. & A. H.]
- ☆ **Charu Chandra Kolwy Gold Medal**
[Highest marks in Animal Genetics & Breeding in B. V. Sc. & A. H.]
- ☆ **Smt. Lakshmi Das and Sri Kasi Nath Das Gold Medal**
[Highest marks in B. F. Sc.]
- ☆ **Prof. Rathindra Kr. Ghosh Gold Medal**
[Highest Marks in Veterinary Pharmacology & Toxicology in M. V. Sc.]
- ☆ **Dinesh Ch De and Sova De Memorial Gold Medal**
[Highest Marks in composite Final year Annual Examination in B. V.Sc.&A.H.]
- ☆ **Dr. Subir Kr. Sinha Memorial Gold Medal**
[Highest Marks in Veterinary Medicine, Ethics & Jurisprudence in B. V. Sc. & A. H.]
- ☆ **Dr. D. K. Biswas Gold Medal**
[Highest marks in Poultry Production & Management in B. V. Sc. & A. H.]
- ☆ **Dr. G. L. Sharma Endowment Gold Medal**
[Highest marks in Veterinary Public Health in B. V. Sc. & A. H.]
- ☆ **Smt. Manju Biswas and Dr. K. P. Biswas Gold Medal**
[Highest marks in Fishery Engineering in B. F. Sc.]

In the academic year of 2008-2009, **9** (nine) students were awarded with **14** Gold Medals and during the academic year of 2009-2010, **10** (ten) passed-out students received **17** different Gold Medals offered by the University.

B.5. SCHOLARSHIPS

Merit Scholarships are being granted to a few meritorious students for studies in Undergraduate courses as per approval and guidelines issued by the State Government.

B.6.1. DETAILS ABOUT THE FIFTH CONVOCATION

The vainglorious Fifth convocation of the University was held on 16th April, 2009 at Mahajati Sadan, Kolkata. His Excellency, the Governor of West Bengal and Chancellor of the University Hon'ble Sri Gopal Krishna Gandhi inaugurated the convocation and presided over the ceremony. The convocation address was delivered by the Chief Guest of the fifth convocation, Dr. A. L. Chaudhury, President, Veterinary Council of India, New Delhi and former Vice Chancellor, Haryana Agricultural University and also the former Chairman, Agricultural Scientists' Recruitment Board, ICAR. Prof. H. P. C. Shetty, the renowned fishery scientist was conferred with D.Sc. (Honoris Causa). Prof. C.S. Chakrabarti, Vice Chancellor of University served oath to the recipients of degree and awards.

Hon'ble Chancellor, in his speech, emphasized upon undertaking need based research programmes in the global warming scenario by the University. Chief Guest expressed his optative views in studies on Veterinary and Animal Sciences during coming days. Hon'ble Vice-Chancellor elaborated the importance of integrated farming in the State. All the dignitaries expressed their satisfaction about the performances of the University all together.

Faculty wise following degrees were awarded to the students –

<i>Degree in the Faculties</i>	<i>No. of students</i>
<u>Faculty of Veterinary & Animal Sciences</u>	
B.V.Sc. & A.H.	75
M.V.Sc.	70
Ph.D.	9
<u>Faculty of Dairy Technology</u>	
B.Tech. (DT)	17
M.Sc. (Dairying)	3
M. Tech. (DT)	1
Ph.D.	2
<u>Faculty of Fishery Sciences</u>	
B.F.Sc.	16
M.F.Sc.	23

Altogether 9 students were awarded with 14 different Gold Medals for their excellence in different disciplines of study in the three faculties of the University.

B.6.2. DETAILS ABOUT THE SIXTH CONVOCATION

The highly prestigious and vainglorious Sixth Convocation of West Bengal University of Animal and Fishery Sciences was organized at the Science City Hall, Kolkata on 12th April, 2010. Hon'ble Chancellor His Excellency the Governor of West Bengal Sri K. R. Narayanan inaugurated the aphrodisiac convocation and presided over the ceremony. He exhorted the degree recipients to contribute immensely towards realizing the dreams of shining India and prosperous West Bengal. Dr. S. Ayappan, Secretary, Department of Agricultural Research and Education, Ministry of Agriculture, Govt. of India and Director General, Indian Council of Agricultural Research, New Delhi as Chief Guest delivered the convocation address on the occasion. Prof. C.S. Chakrabarti, Vice Chancellor of University served oath to the recipients of degree and awards to the following students -

<i>Degree in the Faculties</i>	<i>No. of students</i>
<u>Faculty of Veterinary & Animal Sciences</u>	
B.V.Sc. & A.H.	29
M.V.Sc.	37
Ph.D.	11
<u>Faculty of Dairy Technology</u>	
B.Tech. (DT)	21
M.Sc. (Dairying)	1
M. Tech. (DT)	3
Ph.D.	1
<u>Faculty of Fishery Sciences</u>	
B.F.Sc.	5
M.F.Sc.	22

Besides, 10 students were awarded with 17 Gold Medals for their success in different branches of studies under the University.

B.7. EMPLOYMENT OF THE STUDENTS'

All the Faculty members alongwith the University Officials are always cohesively attached with the out-turned students for their counseling and better placement in job or employment.

The alumni of the passed students, those going in for employment are being absorbed in different developmental sectors in the State, Country and abroad as well.

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

B.7.1. Faculty of Veterinary & Animal Sciences:

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

B.7.2. Faculty of Dairy Technology:

- National and Multi-national milk & dairy product producing, Govt., Semi Govt. and Private Companies like,
- (i) Glaxo Smithkline, (ii) Nestle India Ltd., (iii) Perfetti Van-Melle, (iv) Amul,
 - (v) Hindustan Lever, (vi) ITC (Food Division), (vii) Almarai, Riyadh,
 - (viii) Fonterra New Zealand Corporation, (ix) National Food Corporation Ltd., Jeddah,
 - (x) Dynamix Dairy Industries Ltd., (xi) NDDDB, (xii) IBM, (xiii) TCS, (xiv) ITC Infotech,
 - (xv) Mother Dairy, Kolkata, (xvi) Sudha, (xvii) WCMPPF Ltd., (xviii) Paras Foods,
 - (xix) Metro Dairy, Kolkata, (xx) Verka etc.

B.7.3. Faculty of Fishery Sciences:

- (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.

B.8. PLACEMENT CELL

The University has established its Placement Cell during February, 2006. In the State of West Bengal, the majority of the passed out students are employed through different Competitive examinations in the Govt., Semi-Govt. or Private sectors. However, the detailed about the number of passed out students placed for employment in the last three years is as follows :-

Level	Discipline	No. of passed out students placed in 2008-09	Industries in which placed	Average time taken to place after completion of course (months)
UG	Veterinary & Animal Sciences	5	NGO, Animal & fish feed company, Broiler poultry production, Dairy processing concern, Marketing agency, Quality control sector	Fresh passed outs within 2-6 months
UG	Dairy Technology	3		
UG	Fishery Sciences	2		

C.7. RESEARCH

C.1. RATIONALE OF RESEARCH ACTIVITIES

Science and Technology are the drivers of change in livestock, poultry, fishery and dairy development to obtain the desired output. Research should be tailored according to the need of development in technologies, which can help to add economic value to the time and labour of the farmers. Researches on Veterinary, Fishery and Dairy sector should be stepped up under the umbrella of National Agricultural Research System (NARS), which comprises ICAR Institutes and SAUs. In the wake of globalization and WHO, the West Bengal University of Animal and Fishery Sciences has set up its research strategies by identifying priority research areas emphasizing eco-friendly and small farming based technologies.

C.2. PROJECTS AT A GLANCE

	<i>No. of Projects</i>	<i>Funds received</i>
1. Completed projects	65	Rs. 3366.21 lakhs
2. On-going projects	36	Rs. 2378.29 lakhs
3. Submitted projects	10	Rs. 484.83 lakhs

C.3. RESEARCH COLLABORATION

During 2008 - 2010, a total of 36 externally funded projects were in operation under Veterinary and Animal Sciences, Dairy Science and Technologies, Fishery Sciences faculties and also the Directorate of Research, Extension and Farms. The scientific competence and excellence of previous performance in completing various research projects led to fiscal and physical assistance from different National and International agencies. The Directorate of Research, Extension and Farms of the University monitors the successful undertaking and implementation of different sorts of research projects. Teachers and scientists are given flexible opportunities to invite and propose for conducting research projects in the University. The University maintains close linkage with various organizations/agencies to exchange information and acquired current and advanced knowledge in Veterinary, animal sciences, dairy and fishery sectors for multiway benefits.

The University is conducting various research projects/schemes sponsored by different external agencies as well as by the State Govt. departments, which encompasses Public, Private and their partnerships.

C.4. TYPE OF ON-GOING PROJECTS AND FUNDING AGENCIES

<i>Sl. No.</i>	<i>Type of Project</i>	<i>Funding Agency</i>	<i>Numbers</i>
1	All India Coordinated Research Project (AICRP)	ICAR	3
3	All India Network Project (AINP)	ICAR	1
2	National Agricultural Innovation Project (NAIP)	ICAR	2
4	Ministry of Agriculture, Govt. of India	Ministry of Agril., GOI	3
5	Ministry of Environment and Forest, Govt. of India	Govt. of India	2
6	Department of Biotechnology (DBT)	Govt. of India	5
7	Department of Science and Technology (DST)	Govt. of India	2
8	Department of Science and Technology (DST)	Govt. of W.B	1
9	Rastrya Krishi Vikash Yojana (RKVY), NADP	Ministry of Agril., GOI	1
10	Council of Scientific and Industrial Research (CSIR)	Govt. of India	1
11	Directorate of Seed Research (DSR), New Delhi	ICAR	1
12	Project Directorate on Poultry, Hyderabad	ICAR	1
13	National Fund for Basic and Strategic Research (NFBSR)	ICAR	1
14	Outreach programme	ICAR	2
15	ICAR project	ICAR	2
16	Food and Agricultural Organization	FAO	1
17	Industry	Private	4
Total			36

C.5. FACULTY-WISE DISTRIBUTION OF RESEARCH PROJECTS

<i>Sl.No.</i>	<i>Faculty</i>	<i>No. of projects</i>	<i>Fund allocation</i>
1	Veterinary and Animal Sciences	29	2040.00 lakhs
2	Fishery Sciences	5	193.65 lakhs
3	Dairy Technology	1	143.50 lakhs
4	DREF	1	1.08 lakhs
Total		36	2378.29 lakhs

C.6. BRIEF LISTING ABOUT ON-GOING PROJECTS

C.6.1. FACULTY OF VETERINARY AND ANIMAL SCIENCES

<i>Title of the Project</i>	<i>Funding Agency</i>	<i>Principal Investigator and Department</i>	<i>Fund Sanctioned</i>	<i>Year of initiation</i>
AICRP on Improvement of feed resources and nutrient utilization in raising animal production	ICAR	Prof. P. Biswas, Animal Nutrition	141.62 lakhs	1997
All India Network Programme on Gastro-intestinal parasitism	ICAR	Prof. J. D. Ghosh, Vety. Parasitology	44.43 lakhs	2000
AICRP on Goat improvement, Black Bengal (Field unit)	ICAR	Prof. A. K. Samanta, LPM	129.63 lakhs	2000
All India Network Programme on Bluetongue disease	ICAR	Dr. S. N. Joardar, Vety. Microbiology	38.46 lakhs	2001
Conservation of Threatened Breed (Ghoongroo Pig)	Ministry of Agril., GOI	Prof. S. Pan, LPM	63.5 lakhs	2004
Conservation of Threatened Breed (Bonpala Sheep)	Ministry of Agril., GOI	Prof. S. Pan, LPM	57.65 lakhs	2005
Impact assessment of environmental hazards caused by slaughterhouse wastes and control of pollution by recycling the wastes as animal feed	Ministry of Environment and Forests, GOI	Prof. T. K. Ghosh, Animal Nutrition	15.53 lakhs	2006
Development of ceramic-based implantable delivery system for sustained released of the drugs for the treatment of Osteomyelitis in the human patients	DST, New Delhi	Dr. S.K. Nandi, Vety. Surgery and Radiology	15.02 lakhs	2007
Endocrine profiles and characterization of candidate genes influencing prolificacy in Black Bengal goat	NFBSR, ICAR	Prof. S. Pan, LPM	10.29 lakhs	2007
Arsenic in food chain: cause, effect and mitigation	NAIP, ICAR	Prof. S. Sarkar and Prof. T. K. Mandal, Pharma. and Toxicol.	53.00 lakhs	2007
Characterization of immune-effector cells and cytokines of Indian major and minor carps	DBT, MST, New Delhi	Dr. S. N. Joardar, Vety. Microbiology	15.15 lakhs	2008
Surgical and Pharmacological prevention of posterior Capsular Opacification following cataract surgery	CSIR, New Delhi	Dr. (Mrs.) S. Hazra, Vety. Surgery and Radiology	16.00 lakhs	2008

Sustainable farming system to enhance and ensure livelihood security of poor in Purulia, Bankura and West Midnapur district	NAIP, Component- III, ICAR	Prof. P. Biswas, Animal Nutrition
Conservation and improvement of local white ducks to support shuttle cock feather industry	DBT, New Delhi	Prof. G. Samanta, Animal Nutrition
Development of a model for sustainable backyard poultry farming system in West Bengal	RKVY, NADP, Ministry of Agril, GOI	Dr. P. K. Das, Vety. Physiology
South-Asian pro-poor livestock policy programme	FAO, (SAPPLP)	Prof. S. Pan, LPM
Poultry seed project	PDP, ICAR	Prof. S. Pan, LPM
Adaptation of livestock to impending climatic change through shelter management	Network, ICAR	Prof. S. Pan, LPM
The effects of Stinging (<i>Urtica dioica</i>) on performance of broiler chickens	Creswell Nutrition, Australia	Prof. T. K. Ghosh, Animal Nutrition
Effects of supplementation of emulsifiers in broiler chickens	Nukamel, Belgium	Prof. T. K. Ghosh, Animal Nutrition
Livestock related environmental pollutants, contaminants and toxicants (Monitoring of drug residues and environmental pollutant)	Outreach, ICAR	Prof. T. K. Mandal, Vety. Pharmacology and Toxicology
Zoonotic Diseases	Outreach, ICAR	Dr. C. Debnath, Vety. Public Health
Enteric methane emissions from livestock and mitigation strategies	ICAR ad-hoc project	Dr. A. K. Patra, Animal Nutrition
Production of conjugated linoleic acid rich goat meat through dietary supplementation of vegetable oil and plant extract	DBT	Dr. G. P. Mandal, Animal Nutrition
Development of marine biomaterials alone and in combination with conventional and unconventional growth factors in bone tissue engineering	DBT, Ministry of Sci. and Technicol., GOI	Dr S. K. Nandi, Vety. Surgery and Radiology
Conservation of Threatened Breed (Haringhata Black Fowl)	Ministry of Agril., GOI	Prof. S. Pan, LPM
Application of Bacteriophage (CJ Phage) as a prophylactic against <i>Salmonella</i> infection in broilers	Cheiljedang Corporation, Korea	Prof. T. K. Ghosh, Animal Nutrition
Effects of yeast products on broiler performance	Associated British Vista, U.K.	Prof. T. K. Ghosh, Animal Nutrition

C.6.2. FACULTY OF DAIRY TECHNOLOGY

<i>Title of the Project</i>	<i>Funding Agency</i>	<i>Principal Investigator and Department</i>	<i>Fund Sanctioned</i>	<i>Year of initiation</i>
Network programmes on R and D support for process upgradation of indigenous milk products for industrial application	ICAR	Prof. M.K. Sanyal, Dairy Technology	143.50 lakhs	1997

C.6.3. FACULTY OF FISHERY SCIENCES

<i>Title of the Project</i>	<i>Funding Agency</i>	<i>Principal Investigator and Department</i>	<i>Fund Sanctioned</i>	<i>Year of initiation</i>
AICRP on Establishment of post-harvest technology in Fisheries	ICAR	Dr. Sreeckanta Sarkar, Fish Processing and Tech.	136.00 lakhs	2004
Seed production in Agricultural crops and Fisheries	ICAR	Dr. T. K. Ghosh, Aquaculture	23.00 lakhs	2006
Survey and inventorisation of the by-catch loss in selected coastal zones of West Bengal and its impact on biodiversity	Ministry of Environ. and Forests, GOI	Prof. N. R. Chattapadhyay, Aquaculture.	15.73 lakhs	2009
Technology transfer cum demonstration farm on Integrated duck cum fish farming for imparting training and farm advisory services to SC, ST and weaker section of West Bengal	DST, Govt. of WB	Prof. S.S. Dana, Dept. of Fishery Extension	2.92 lakhs	2009
Research and Development of EWMBN for sustainable fisheries of Hooghly-Matlah estuary in West Bengal	DST (SERC-Div), GOI	Dr. N. A. Talwar, Fishery Engineering.	16.09 lakhs	2010

RESEARCH

C.6.4. DIRECTORATE OF RESEARCH, EXTENSION AND FARMS

<i>Title of the Project</i>	<i>Funding Agency</i>	<i>Principal Investigator and Department</i>	<i>Fund Sanctioned</i>	<i>Date of initiation</i>
National Information System on Agriculture Education network in India (NISAGENET)	ICAR	Dr. (Mrs.) S. Das, DREF section	1.08 lakhs	2005

C.7. SALIENT ACHIEVEMENTS OF ON-GOING PROJECTS

C.7.1. HIGHLIGHT OF THE PROJECTS CONDUCTED IN THE FACULTY OF VETERINARY AND ANIMAL SCIENCES

1. NAIP on 'Sustainable farming system to enhance and ensure livelihood security of poor in Purulia, Bankura and West Midnapur districts in West Bengal'

The University has started the implementation of livestock intervention activities to improve livelihood of farmers under NAIP on 'Sustainable farming system to enhance and ensure livelihood security of poor in Purulia, Bankura and West Midnapore districts of West Bengal' at Lodhasuli cluster under Jhargram, West Midnapore district as a consortium partner with BCKV during 2008-2009.

A target of 500 women Self-Help Groups (SHGs) from 12 villages of five Gram samsad of Patasimul Gram Panchayet under Jhargram block of West Midnapore district was selected and trained for scientific rearing of livestock and poultry. During last two years, 341 farmers were given various inputs like Black Bengal goats, Garole sheep, Ghoongroo and T&D pigs and Vanraja fowl alongwith required feed. Rest of the farmers will be covered by the end of the year 2010.

Veterinary services including medicines, vaccination against major diseases, deworming with mineral supplemented feed are regularly being provided to the beneficiaries. Moreover, Animal health camps and Immunization camps have also been organized covering all species of animals in the project area.

As a result of such activities, the project personnel were able to establish a very congenial and effective liaison with the habitant of the project villages. Even under the presently prevalent aggression and political violence in the area, the project work is progressing at a satisfactory level with full cooperation receiving from the local people.

It is revealed from the implementation of the project that the social composition of people in the NAIP Gram samsads includes 43.35% SC, 15.37% ST and 41.28% of other categories. In study area under the 5 Gram samsads namely, Dhangri, Pathra, Patasimul, Gobindapur and Mohanpur majority of the farmers are keeping poultry, then goats, sheep, pigs and fishes as per existing population density. During the reporting period a total of 20 animal health and vaccination camps have been organized in the project villages. A total of 10 capacity building training programmes have been conducted with undertaking of 4 number of exposure visit of the farmers at Kalyani, Nadia district.

As critical input, 64 farmers were provided with Black Bengal goats (5 does per farmer with one buck for common use), 30 farmers were given Garole sheep (5 ewes per farmer with one ram for common use), 39 farmers were given Ghoongroo pigs (1 sow and 1 gilt per farmer), 39 farmers were offered Vanraja poultry (21 chicks per farmer), 40 farmers received goat and poultry (5 does and 10 chicks per farmer), 7 farmers got sheep and poultry (5 ewes and 14 chicks per farmer), 9 farmers were provided pig and poultry (1 sow, 1 gilt and 20 chicks per farmer), 5 does and 1 sow were given to one farmer and 50 farmers were given 246 kgs of fish fingerlings in the study area. The beneficiaries are also provided with the required animal feed supplements, treatment and vaccinations alongwith capacity building trainings.

The major innovations are being utilized as technology interventions in the project area are as follows –

- Genetic improvement,
- Nutritional manipulation,
- Immunization,
- Health care management,
- Capacity building of the farmers.

2. NAIP on 'Arsenic in food chain: cause, effect and mitigation'

Survey work was conducted on two villages (Mitrapur and Dakshin Panchpota) of Chakdaha block under Nadia district was conducted and 30 samples of each straw, drinking water, urine, faeces, milk and hair of cattle and egg of poultry from the villages were collected for analysis of arsenic. Arsenic content in straw samples range from 1.107 to 6.315 ppm and 0.675 to 3.56 ppm at Mitrapur and Dakshin panchpota. Arsenic content in milk samples range from 0.03 to 0.08 ppm at Mitrapur, and 0.27 to 0.11 ppm at Dakshin panchpota. On the other hand Arsenic content in hair samples range from 0.78 to 10.948 and 0.588 to 6.42 ppm at Mitrapur and Dakshin panchpota. Arsenic level was above permissible limit at the above substrates.

3. AICRP on 'Improvement of feed resources and nutrient utilization in raising animal production'

The project has achieved a tremendous outcome of practical deliverables as discussed bellow –

A. Effect of Supplementation of Area Specific Mineral Mixture

1. Major and trace mineral concentration in blood was improved in all categories of animals.
2. 68.75% heifer, 68.75% dry and 63.13% lactating cows showed estrous (within 2 months).
3. Per rectal examination revealed 66.88%, 64.38% and 45.63% positive pregnancy in heifer, dry cow and lactating cows respectively.
4. Overall 56.88% increase and 43.12% sustained milk production was observed.

B. Strategic supplementation of limiting nutrients through low cost feed to low yielding livestock in two districts of West Bengal

1. General health condition of experimental animals were improved.
2. Milk production was increased in 76% of experimental cows and in late lactating animals production was sustained in 24% cows.
3. Average 66.66% of experimental cows showed onset of estrous.
4. More than Rs. 2.00 was gained daily through cost of milk.

C. Study on Chelated minerals in Poultry

1. Overall laying performance was better in 50% Chelated Mn supplemented group. Where as 75% chelated Mn group & 100% inorganic Mn groups showed comparable result.
2. 75% Organic Mn (60 ppm chelated Mn) supplemented group attained less days to lay 1st egg.
3. Dry matter intake per dozen or per kg egg production was better in 50% (40 ppm) chelated Mn group.

Organic Mn was better utilized by laying chicken as compared to inorganic & best result was noted in 50% chelated (40 ppm) Mn group. Other minerals viz. Ca, P, Cu, Zn & Fe utilization was not affected by dietary supplementation of Mn.

4. AICRP on 'Goat improvement, Black Bengal (Field unit)'

Data pertaining to growth and reproduction of goats with socio-economic improvement of the beneficiaries were recorded and analyzed every year.

Birth weight of the studied goats was highest during the year 2002-2003 followed by 2008-09 and was lowest in 2005-06. The 3-month weight was highest in 2008-09 and lowest in 2005-06; whereas from 2004-05 to 2008-09 there was no significant difference in 3 months weight. Birth weight has increased 4.71% over the previous year and 3 month weight has shown highest ever value. Sex of kids has significant effect on body growth. Males are significantly heavier for all the ages than females.

The heritability of birth weight, estimated from Sire component, was low but increases with increase of age and is highest in 6-month body weight.

The correlations of body weight at different ages were estimated by Pearson correlation method and showed very less correlation with 3-month, 6-month and 9-month age. However, correlation value increases with the increment of age and is significantly positive for 3, 6 and 9 month weight.

In 2009, nineteen selected sires have been used for breeding of which Sire No. 2101 of Hatikanda - Doluipur produced offspring with highest birth weight and the average litter size is highest for Sire No. LA2 of Panchpota – Ayeshpur.

The summary of reproductive performances has been studied in the population; single production varies from 13.97% (in 2005-06) to 22.81% (2009). Twin production percentage has an increasing trend since the initiation of the project. In 2009, the twin production percentage (60.14%) was increased around 4% over the previous year (2008) (56.45%). This might be due to positive selection pressure on their breeding preferences. Quadruplet and Quintuplet are though not very uncommon but scanty in nature.

Health Care in the form of prophylactic and curative measures was provided to the goat in the adopted villages. The mortality was 5.92% during 2009. The mortality was also compared for different years and ranged from 4.98 to 10.72%.

The socio economic status of the goat farmers in the adopted four villages have been studied for different factors and has been observed that the Hatikanda - Doluipur village was leading in goat holding number with an average value of 6.02 goats per farmers, while the overall average was above 4.71, which signifies their interest on goat rearing. The incomes of the farmers were analyzed in respect of different sources (viz. from agriculture, goat rearing, animal husbandry except goat and others). The goat husbandry alone generated around 32% of total annual income (Rs.4617.00 out of Rs.14567.00), and was approximately double to the agriculture income share (13% of overall annual income). The caste patterns of the different villages were observed that, General caste is very less (20%) in Rangabelia – Jatirampur villages. In Panchpota - Ayeshpur, Schedule caste is higher (55.48%), whereas in Hatikanda - Doluipur, 52% were general caste, 6% OBC, 16% ST and 25.5% were SC population.

However, Goat rearing in the four villages under the All India Coordinated Research Project involved mainly the rural Women. The income originated from the goat rearing directly goes to the women's hand enabling them solving many family financial problems with social worthiness.

So far the salient achievements obtained through the implementation of the project may be summarized as follows –

- a) A new growth centre at Rangabelia - Jatirampur of Gosaba Block in Coastal Sunderban area of South 24 Parganas has been started.
- b) The total goat population of the registered farmers at the start of the project was 779 in 2001-02, which is increased gradually and reached to 1911 at the end of 2008-09 with a population growth over 70%.
- c) The average flock strength of the farmers in the three adopted village units was also increased consistently. The initial average flock strength of 2.67 in 2001-02 has increased to 4.71 in 2008-09.
- d) Animals sold by the farmers have also been increased substantially from 14.46% in 2002-03 to 29.67% in 2008-09, although it was highest (39.82%) in 2006-07.

The reproductive performances were recorded on regular basis, which revealed that, in the population, singlet production varies from 13.97% (in 2005-06) to 22.81% (2008-09). Twin production percentage has also shown increasing trend since the initiation of the project. Quadruplet and Quintuplet not very uncommon.

- a) After adoption of selective breeding almost 99% of total kids born are pure black and few kids are born black with small patches of brown or white.
- b) Due to selective breeding the birth weight and three-month body weight has been increased. In 2008-09 birth weight has increased 4.71% over the previous year and 3 month weight has shown highest ever value (5.323 ± 0.12 Kg).
- c) The heritability of body weight at different ages has revealed that birth weight is least heritable and has lowest correlation value with body weight at subsequent different ages.
- d) An effort has been made to evaluate sire by their kids' growth performances and mated dams' ability of producing multiple births.
- e) It was evidenced that in Black Bengal Goat the milk production of first two-week was higher than the remaining periods. Doe provides milk to their kids almost two months with an average production of total 6.28 Kg milk.
- f) The survey analysis pointed out that income from goat farming is higher for farmers having less than one acre of land. In the project area, goat husbandry serves about 2.5 times more in annual income than the agriculture share.
- g) Model goat house in each of the three villages (those who have more than 15 goats) were constructed to encourage and educate the farmers about scientific housing management.

5. RKVY on 'Development of a model for sustainable backyard poultry farming system in West Bengal'

The area of the research work is Jalpaiguri district (Mal, Meteali and Nagrakata blocks), South 24 Parganas district (Mograhat-I, Mograhat-II and Diamondharbour-I blocks) and Paschim Medenipur district (Midnapur Sadar, Kharagpur-I and Keshiary blocks) in West Bengal.

To develop a model for sustainable backyard poultry farming 3 districts were selected three zones of West Bengal viz. Jalpaiguri district for Dooars and Terai zone, South 24 Parganas District for Gangatic zone and Paschim Medenipur district for Red and laterite zone. Three adjacent blocks of each district were selected considering the backyard poultry population, scope of self-employment and other socio-economic condition. Every Gram Panchayet of each block was selected to reduce the error in sampling. One village / mouza was selected in each gram Panchayet by the block / district level committee of the project. One Surveyor was engaged after training for household survey to identify the present status of scientific backyard poultry farming. Two women Self Help Groups (SHG) were selected in each village i.e. 160 SHGs were selected considering the survey report and the research design. Thirty six research designs were selected for a district considering the run space, additional concentrate feed supplement and initial age of bird for rearing to identify the best economic rearing management practice

So far the salient achievements obtained through the implementation of the project may be summarized as follows –

One unique Backyard Poultry Farming Booklet, Calendar for the backyard poultry farmers, Daily Record Register, Monitoring schedule, Website is already developed. Flex, sticker and leaflet for proper awareness about the project was already circulated within the project area.

Age of laying of RIR at backyard farming was recoded at 4.6 months. The average body weight of male at 5 month was 1700 grams and of female was 1500 grams. Farmers sold the male birds to their neighbors.

The technologies transferred or success stories achieved out of the project implementation might be endorsed by stating the case of Firoza Begum aged 54 years; a caring mother of three residing at Mal block of Jalpaiguri district. Firoza Begum is the head at home front of eleven members of a joint family and struggles for the early edition of Darwinian existence along with her family. They own an acre of land

with a small pond and two indigenous cows in her thatched little home at Dooars region of Tesimla Gram Panchayet at Mal Block of Jalpaiguri district, West Bengal. The scarcity for even a full meal for all the family members had been horrendously satiated. The education for her children was a night mare. The growing despair was interwoven with piping of first ray of sun in each day. To earn some extra, she joined 11 women of her class being with same fate in a Self Help Group (SHG) and formed the 'Sahara group'.

Out of the relentless urge to do some thing, one day they find a direction when an RKVY sponsored project included their name to train them up for poultry rearing at their courtyard in scientific way. First it sounded a hoax as she and every member of her family is doing the age old practice since long time. Fastening in the tangles between the faith and inquisitiveness she attended the meeting. She traveled a long with a bitter hope and spent merely 4 hours and then a total rejuvenation and clamored with a new ray of hope. The other members were also beamed. Earlier she used to keep 5 – 6 indigenous birds of different colour and sizes. She kept them in the corner of her premises under bamboo bins. She took training and got confidence while attending the various training programme and some minor tips acquired from the project personnel, which totally changed her view regarding the conventional age old practice. The RKVY under WBUAFS provided them a low cost housing designed specifically for poultry of indigenous origin using local resources, 22 nos. of improved varieties Rhode Island Red (RIR) chicks with separate modern feeder and drinker along with light arrangement. Poultry Feeds were also given as per schedule of the project through feed card from the concerned BLDO. Everyone of her family was charged and took care of the chicks. The total work at the local level is an excellent example of technology dissemination amongst the coordination of University – Govt. Department – Panchayet – Farmer under the dynamic supervision of BLDO and monitoring of project personnel comprising of all involving sectors. The SHG members were so excited that they started to rear the poultry in a semi intensive system leaving their earlier free ranged system to save the bird from predators. They started the plantation of creepers like cucumbers, gourds etc in their backyard in a raising bamboo made platform under which the birds were roaming within a net covered captive areas as prescribed by the project. Like this way the spreading of Avian Influenza can be protected. Hence, a new dimension in the life of Firoza along with the other women of SHG has been pepped in to continue the backyard poultry farming in a new tune with great hope and confidence. Even Firoza tried for extra feed. She prepared herself using crushed maize, grams, broken rice, dried fish and muster cake as per the knowledge she gained during training programme of the project. The chicks grew upto 600 gram in 12 weeks period compared to 210 gram at 6 weeks of age – unbelievable experience which no one in her locality even seen in indigenous poultry. The other unique experience is the support of her door steps. The local level monitor termed as Key Communicator (KC) are engaged for every two SHG by the project with the help of three tier Panchayet System. The KC regularly visits her house, taking weight using balance and helps her by regular deworming and vaccination to the chicks as per project developed schedules. Even, they were communicating problems to the BLDO and Veterinary Officer of ARD Department of her block who prescribed solutions time to time.

As a result, even in the biting cold of winter all her chicks as well as other members of SHG survived from the day old condition.

Similar experiences also shared by Rina Naskar, belongs to Schedule Caste and as well as Below Poverty Line housewife living in a small village at Mograhat east gram Panchayet of Mograhat-II block, South 24 Parganas district, who have got 22 number of RIR chicks and similar support system. She has been successful to keep her flock intact instead of other household works. Out of the 22 chicks 10 were cocks and the average weight reached 1200 gms on 4 months of age, she kept 2 in her home for breeding purpose and rest eight were sold and earned Rs. 1000 to the neighbors for the same purpose. She is keen to earn Rs. 7.00 per egg rather than Rs. 3.00 by producing hatchable eggs and will be sold to the project made Hatchery near her residence. She along with the other members of the group incited the other

villagers to follow the specific rearing system of backyard poultry. The transformation of Sumana Chetri living in a picturesque village of tea garden areas of Dooars under Looksan Gram Panchayet to an instructor is far exciting. She along with the 9 members of Shayapatri SHG got 22 chicks each and got the requisite training and supported the project. She also developed some greenery mainly with creepers in the unutilized area of her premises and encircled the area with mosquitoes net to defend her flocks for the predators. The chicks were merely running around the area. She was so keen to do the backyard poultry farming and trained herself to give vaccination to her flock and that of the neighbors.

These are the small pieces of the enormous real life stories about 760 women members scattered in 80 SHGs throughout West Bengal. In brief, the success stories of the project are beyond quantification, rather the qualitative changes of their thinking, knowledge, perception and confidence with determined view to overcome the challenges, one the basic notations of human resources development.

Farmers developed themselves acquiring the knowledge from 'Muktanganee Murgi Palan', a unique book for the rural households for economic use of backyard poultry written by the teachers, scientist and officers involved with this project with their life long experience. The farmers developed themselves to write the record every day happenings in the 'Daily Record Register' supplied by the project in Bengali and Hindi language.

In conclusion, the present RKVY is an innovative and coordinated approach of the University, ARD Department of the State Govt. and three tiers Panchayet System who have joined their hands and successful running the project – but the real players of the success stories of the project is the poverty stricken women of rural Bengal and there changed mindset. So the real objectives for development of a model for sustainable backyard poultry farming are brightening each day.

6. All India Network Programme on 'Gastrointestinal parasitism'

A. Epizootiology of gastrointestinal parasitism of ruminant livestock

1. Gastrointestinal parasites were of common occurrence in cattle, buffalo, sheep and goat (overall prevalence was 61.89%) in West Bengal, with much higher prevalence (74.20 – 74.46%) in small ruminants (sheep and goat) than in large ruminants (cattle and buffalo; 48.23 - 46.50%).
2. Prevalence rate of gastrointestinal parasitic infections in livestock species was not significantly different between the two geo-climatic zones, e.g. New Alluvial zone and the Coastal zone.
3. Overall prevalence of gastrointestinal parasitism in the four livestock species was highest in the monsoon (70.24%), followed by winter (62.71%) and the lowest was in summer (52.24%).
4. Strongyle species constituted the major nematode, of which *Haemonchus* was the predominant species in all the livestock species surveyed.
5. The intensity of infection (mean faecal egg count) was highest in monsoon (Cattle – 286, Buffalo – 294.3, Sheep – 1072.8, Goat – 1097.1) and lowest in summer (Cattle – 178.1, Buffalo – 184.3, Sheep – 500, Goat – 490) with overall mean EPG in cattle, buffalo, sheep and goat were 219.9, 224.3, 712.9 and 711, respectively.
6. Mean worm load in small ruminants was maximum during the monsoon (sheep- 69.50, goat- 70.75) and minimum during the summer season (sheep-46, goat-41.25).

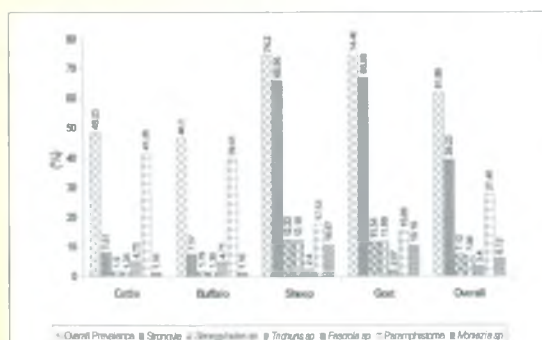


Fig.1. Overall prevalence of GIP in ruminant livestock of West Bengal

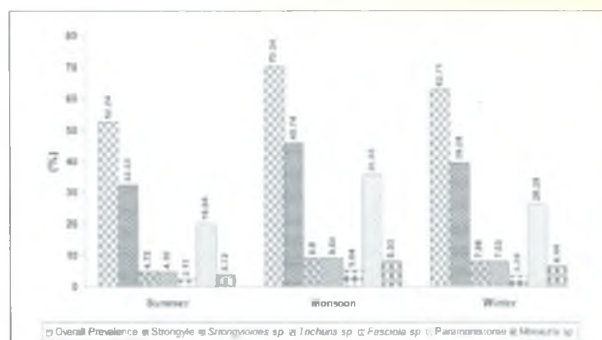


Fig.2. Overall seasonal prevalence of GIP in ruminant livestock of West Bengal

1. For predicting the months of maximum prevalence and intensity of *Haemonchus contortus* **bioclimatographs** were prepared taking into account the meteorological data (Maximum Temperature, Minimum Temperature, Total rainfall and Relative Humidity) of six years (2003 – 2008) of two agro-climatic zones of West Bengal. No marked difference between New Alluvial and Coastal zones in predicting the probable months was observed. The predictions very well correlated with the actual observed data in this regard.

B. Surveillance for anthelmintic efficacy/resistance in small ruminants

Commonly used anthelmintics (Albendazole, Fenbendazole, Levamisole and Ivermectin) continue to give the desired efficacy against naturally occurring gastrointestinal nematodes in small ruminants under unorganized farming system and no evidence of anthelmintic resistance was observed.

C. Parasite resistance in Garole sheep

Susceptibility of Garole and Sahabadi sheep to experimentally induced haemonchosis was compared with a view to elucidating the resistance in Garole sheep, if any, against *Haemonchus contortus* infection.

- a) The pre-patent period of infection was longer ($p > 0.05$) in Garole sheep (17.2 ± 0.37 days) compared to Sahabadi sheep (16.6 ± 0.4 days). The EPG in Garole sheep was significantly ($p < 0.05$; 0.01) lower than in Sahabadi sheep. No worms were recovered from Garole sheep on 49 DPI. However, in Sahabadi sheep the mean worm burden on 49 DPI was 262.
- a) In comparison to Sahabadi sheep, Garole sheep revealed significant degree of resilience to *H. contortus* infection in respect of haematological (Hb, PCV, TEC), serum biochemical (TSP, SA, SG, Ca, P, Fe, Zn, ALP, ALT, AST) and performance (body weight) parameters.
- b) Serum IgG level in terms of OD values was significantly ($p < 0.01$) elevated due to *H. contortus* infection in both Garole and Sahabadi sheep compared to the control. The IgG titre during the early stage of the infection was higher in Garole sheep. Garole sheep revealed stronger IgG response to *H. contortus* infection.

The study revealed that the Garole sheep was resistant/resilient to *H. contortus* infection as evidenced by the milder negative impact of the infection on parasitological indicators, body weight, serum biochemical parameters and the serum IgG response.

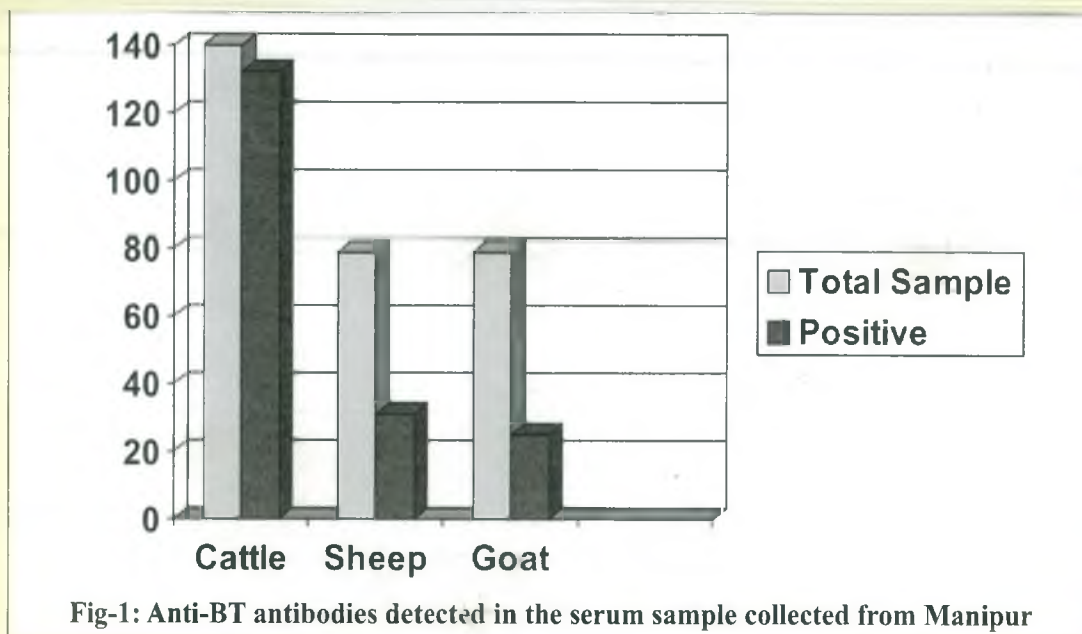
- a) Under natural conditions, the mean faecal egg count (EPG) in Garole sheep (60.18) was significantly ($P < 0.05$) lower compared to Sahabadi sheep (836.07) during the entire study period.
- b) Haemoglobin and total erythrocyte count of Garole sheep was significantly ($P < 0.05$) higher compared to Sahabadi sheep naturally infected with gastrointestinal nematodes.

7. All India Network Programme on 'Bluetongue Disease'

A. Present Epidemiological Status:

In the last year 763 animal sera samples (417 no. from sheep and 346 no. from other animals viz. goat-213, cattle-133) were collected to detect antibodies against Bluetongue disease. A total of 344 (45.09%) samples found to be positive to anti-BT antibodies including 165 sera collected from sheep (39.56%), 136 from goats (63.84%) and 43 from cattle (32.33%) samples.

A comparative study of serum samples from cattle, sheep and goat collected from Manipur State were tested by iELISA and cELISA. Out of the 140 cattle sera, 132 found positive (90.71%) to the presence of Bluetongue disease. The sheep and goat sera showed moderate positivity (31-39%). A total of 31 serum samples out of the 79 sheep sera and 25 out of 79 goat sera were found to be positive.



B. Vector collection and identification:

Suspected midges (*Culicoides spp.*) were collected from different agro-climatic zones of West Bengal and sent to the Zoological Survey of India, Kolkata for identification of species. The following species of *Culicoides* were identified-

- i. *Culicoides schultzei* from Sandeshkhali, North 24 Parganas (New Alluvial), Ramshai, Jalpaiguri (Terai) and Mohanpur, Nadia (New Alluvial)
- ii. *Culicoides kamrupi* from Ramshai, Jalpaiguri (Terai)

C. Awareness programme:

Till to date eight (8) number of mass awareness camps on occurrence and pathogenesis of Bluetongue disease were organised in the different districts of West Bengal. A total of more than 500 farmers along with their animals were participated in these awareness camps.

D. Development of user-friendly diagnostic kit to detect bluetongue in sheep:

To develop a user-friendly diagnostic kit for detection of Bluetongue disease in sheep, Dot-ELISA was standardized using anti-sheep (Garole sheep) HRPO conjugate, bluetongue soluble whole viral antigen (as used for c-ELISA), positive and negative sera. Dot-ELISA is preferred compared to micro-well ELISA test because it is simple to perform, needs less test time, is adaptable for field testing, needs least laboratory facilities and is more specific. Validation of the kit with field sera is under process.

8. Centrally sponsored scheme on 'Conservation of Threatened Breed (Ghoongroo Pig)'

- An indigenous breed of pig (landrace) belongs to Dooars' valley of West Bengal. The breed was unknown to scientists, planners and developers before launching of the scheme. Scientists of West Bengal University of Animal and Fishery Sciences first identified and reported about the breed. High prolificacy, faster growth, consumers' preference and adaptability to low management input are some of the outstanding characteristics of the breed. The unique germ plasm is under constant threat due to indiscriminate breeding with scrap variety. Most significantly, the breed has the potential to replace the exotic breed from temperate zone used for improved pig production programme. The breed might have some genetic link with the Cantonese breed of South China.
- Ghoongroo pig is most prevalent in Dooar's valley of eastern Sub-Himalayan region of West Bengal between 88° to 90° E longitude and 26.3° to 27.3° N latitude. The area belongs to the civil districts of Darjeeling, Jalpaiguri and Northern part of Cochbehar. The breed is also available in the eastern part of Nepal adjoining Darjeeling district.
- The animal is black in colour with compact body, thick coarse and long hair coat, long tail reaching below hock. The face is broad and flattened with upwardly curved snout, which is unsuitable for rooting. But the breed is a good grazer. The ears are large and heart shaped resembling those of elephant. Hindquarters are heavier and rumps are drooping. Scrotum loosely hangs from body. The breed is highly docile and amenable to any form of management. Their docility is evident from their adaptation to tethered grazing. Sows show strong mothering ability. Stampede death of piglet during nursing is negligible as sows always lie down very carefully with loud grunting. Intra- and inter-sex agonistic interactions are minimum. This makes group management much easier. Production performance of Ghoongroo pig is of special interest. Average litter size at birth is 11.92 ± 0.06 and litter size up to eighteen is very common. Body weights at birth, 5 months and 1 year of age are 1.08 ± 0.22 , 58.91 ± 1.49 and 116.3 ± 0.31 Kg respectively irrespective of sex. The breed attains puberty at 6 months of age. Gestation length, farrowing interval and service period are found to be 109.1 ± 0.04 , 175.73 ± 1.12 and 68.4 ± 0.31 days respectively.
- Most interestingly the breed has adapted very well to south Bengal climate. It has become very popular among the pig farmers of south Bengal because of its high growth rate at the farmers' house, very low health problem, excellent prolificacy, low mortality at pre-weaning stage, high quality pork and consequently high consumer demand. A male or female animal at the age of marketing (10 months) fetches a market price of Rs. 8000.00 (Rupees eight thousand) thus generating a huge profit margin. The situation has created a promising pig production zone in North 24 Parganas and Nadia districts of south Bengal. There is always a very high demand for weaned piglets, which is increasing every day.

9. Centrally sponsored scheme on 'Conservation of Threatened Breed (Bonpala Sheep)'

Bonpala, a sheep of Teesta - Torsa river valley is a highly threatened breed as has been identified by the National Bureau of Animal Genetic Resources, Karnal and Department of Animal Husbandry and Dairying, Ministry of Agriculture, Government of India. The breed is fast loosing its popularity due to growing scarcity of pasture in the valley as a result of expansion of crop production and restriction on grazing in forest areas. The tribal and the landless resettlers from Bangladesh now mostly own the animals in the breeding tract. The breed is popularly known as Bonpala (Bengali). In some places they are also colloquially called *Gharpala*. These sheep derive their name from mode of rearing. In Bengali, *Bon* means forest, *Ghar* means home and *Pala* means mode of rearing. With gradual disappearance of forest and restriction on grazing in existing forest areas in Teesta - Torsa river valley (Dooars and Terai of Sub-Himalayan West Bengal), they are allowed either free or tethered grazing in close vicinity of farmers' residence.

It is a meat type sheep with small body size. The breed is prolific. Twinning is a regular phenomenon. Most interestingly the breed is now producing triplets under the scheme after genetic selection for one generation and with optimum plane of nutrition. They lamb thrice in two years. The fleece is hairy with 95 % medullae fiber and open. Fleece colour ranges from completely white to completely black with a number of intermediary tones. Belly and legs are devoid of wool. Ears are small and tubular. Tail is thin and short.

10. Centrally sponsored scheme on 'Conservation of Threatened Breed (Haringhata Black Fowl)'

Haringhata Black, an indigenous fowl genetic resource came to the notice of scientists, planners and developers 25 years back by virtue of its superb adaptability to back yard system, productivity and disease tolerance. The breed has been listed by Acharya and Bhat (1984), NBAGR (2004) and World Watch List (FAO, 2009). However, the indigenous breed, like others lost truck in face of vigorous market competition with commercial layer and broiler of synthetic strain (Singh and Singh, 2004). Fortunately, resource poor farmers observing best in the breed maintain them in few (Pan, 2007). The breed is constantly loosing genetic identity (purity) due to unregulated breeding with other breeds in the back yard. Farmers' ignorance coupled with lack of attention of other stakeholders (scientists, planners and developers) has eventually led to the near extinction of the breed. The breed may be lost for ever if vigorous effort is not made immediately to salvage the breed. The activities to this effect would include door-to-door search in the breeding tract for procurement of whatever number of true-to-the breed male and female birds available, breeding and selection in the nucleus breeding farm for further genetic purification, determination of breed descriptors, multiplication in sufficient number and propagation to the breeding tract adopting a participatory approach. With the re-emergence of the back yard poultry production system as one of the versatile tools for livelihood and nutritional security, the breed will find its pride-place back among the farmers. Rehabilitation measures are to be supported by awareness generation through farmers' training and developing skill-pool of Government officials, academicians, scientist and non-government officials. The whole gamut of activities will be able to bring out the breed from its present 'critical' status. The nucleus breed farm with elite population and farmers renewed interest in this versatile breed will be main driving force towards conservation of this breed after lapse of the project period. The breed is constantly loosing genetic identity (purity) due to unregulated breeding with other scrub and introduced breeds in the back yard. Farmers' ignorance coupled with lack of attention of other stakeholders (scientists, planners and developers) has eventually led to the near extinction of the breed. The breed has developed several defects, viz., loss of body conformation (originally ideal layer type), reduction in body size and loss of egg production due to genetic dilution. The population of near-ideal and true-to-the breed birds is appears to be 400-500 in the core area of the breeding tract (Haringhata block of Nadia district).

11. DST, GOI sponsored project on 'Development of ceramic-based implantable delivery system for sustained release of the drugs for the treatment of osteomyelitis in human patients'

The Osteomyelitis model was developed successfully in rabbit and proved as an effective experimental model toward therapeutic approach of osteomyelitis. *In vivo* drug elution study showed optimum concentration of the drugs under study in both bone and serum to combat and cure the prevailing infection compared to the non-treated and parenterally treated group with no or delayed healing as revealed by the different effective and useful parameters like radiographic, histological and microbiological examination. The addition of antibiotic (ceftriaxone-sulbactam) with different bio-ceramics proved its efficacy in controlling osteomyelitis in animal model, as it released high levels of antibiotics over a prolonged period. Further, bi-phasic calcium phosphates with predominately β -TCP content was found to be an efficient carrier material for antibiotic compounds even in refractory infections caused by *S. aureus*. The said treatment modalities can be used for treatment osteomyelitis patients in human being, which is now under clinical trial in human patients in R. G. Kar Medical College, Kolkata.

12. Development of a potent thermostable/ attenuated/ inactivated Newcastle disease vaccine with local isolates (C-4)

Newcastle disease (Ranikhet Disease) is a global problem since 2004. Through the project activities some efforts have been made to alleviate the problem by developing an effective vaccine against Newcastle disease in poultry birds. The salient features/achievements of the said research project are as follows :-

- 1) Isolated different patho-types (i.e. velogenic, mesogenic, and lentogenic) of Ranikhet Disease (R. D.) virus (PMV-1) from naturally infected cases.
- 2) The isolated pathotypes were characterized in the departmental laboratory and for further confirmation the isolates were sent to the International laboratory i.e. OIE, FAO and National Reference Laboratory for Newcastle Disease and Avian Influenza in Italy
- 3) Attempt was made to prepare attenuated vaccines from the isolated patho-types i.e. lentogenic and mesogenic for broiler and layer birds.
- 4) The said two vaccines were tried on Ranikhet Disease antibody free broiler and layer birds and were challenged subsequently with the highly pathogenic field isolates (i.e. Velogenic pathotype) and were found effective.
- 5) Same type of study was made on pigeons, PMV – 1 (homologues), pigeon isolate, Lentogenic and Mesogenic (two) strains were also attenuated in SPF Eggs and with the Lentogenic strain a modified life attenuated vaccine was prepared while inactivated adjuvanated vaccine was prepared from mesogenic strain. Both the vaccine performed extremely satisfactory in respect of sterility, safety and potency test. In experimental trial when challenged with the virulent homologues (velogenic PMV – 1) It afforded 100% protection.
- 6) The future programme is to work on the intensive trial of the said developed vaccines in poultry and pigeons to evaluate the efficacy of the said vaccines.
- 7) The future programme on this project will consist of large scale field trial as well as attempt will also be made to protect the pigeons by administering the vaccine in drinking water (oral).

13. DBT, GOI sponsored project on 'Conservation and improvement of local white ducks to support shuttle cock feather industry'

The project started its functioning from 20th October 2008. A white duck farm was established where hatching and brooding is in progress and second generation of duck was produced. The average egg

production is 96 eggs/year/duck of the local white variety and average weight of egg is 60.18 gm. The feather produced /duck/year is 32 nos. out of which 27 nos. of feather are suitable for shuttle cock preparation. Again out of this 27 nos., 12 feathers are of very good quality and 15 nos. of feathers are of medium quality. Linkage was established with Baniban Panchayet, Howrah district, West Bengal Govt. for conducting field trials. Two training programmes on 'Duck rearing in rural Bengal' and 'Maintaining white ducks and different meat products' were conducted successfully with 50 women farmers in each batch. Selections of two duck farmers have been made after thorough survey of their farming situation and they were provided with white ducklings from the Institutional farm.

14. DBT, GOI sponsored project on 'Characterization of immune-effector cells and cytokines of indian major and minor carps'

The salient achievements availed through the project in general are characterization of non-specific immune-effector mechanism of carps (rohu, catla and bata) and specific immune-effector mechanism in *Aeromonas hydrophila* sensitized Indian major carps. Moreover, the parameters to assess T-cell blotting of Indian major carps were standardized through the project. Secondary immunoconjugate against fish was developed and indirect ELISA was done to assess the antibody titre against *Aeromonas* infection in carps.

15. Bovine lameness with special reference to pathogenesis and pain perception

Very recently the project has been completed with some valuable outcomes. The research was conducted in selected organized dairy farms of six districts of West Bengal of six different agro-climatic zones during 2005 to 2008 and following recommendations are made:

- Advised to take special attention during the age as described previously for developing lameness in the corresponding agro-climatic zones to reduce the lameness.
- Advised to change the floor type from abrasive rough surface to minimize the occurrence of lameness.
- Advised to provide feeding before calving during rainy and winter season to decrease the lameness and hence milk yield reduction.
- Foot bath is specially advised in rainy and winter seasons to decrease the lameness and hence milk yield reduction
- Different managerial practices like locomotion scoring, hoof trimming methods, control of infectious diseases through health recording is beneficial and recommended as better husbandry practice.
- Advised to provide balanced nutrition.

16. ICAR sponsored project on 'Endocrine profiles and characterization of candidate genes influencing prolificacy in Black Bengal goat'

Black Bengal, a meat-type goat is famous for its quality meat and prolificacy. Its prolificacy is highest (65%) than all other Indian prolific goat breeds. Black Bengal goat is raised mostly in small flocks for subsistence purpose. Their genetic change is more depended on natural selection than through deliberate intervention by man and thus no serious consideration has been given for their genetic improvement and bringing about consistency in litter size. So far there are no critical research and development support to ensure the farmers getting the benefits of prolificacy trait from Black Bengal goat.

The phenotypic characterization for observed variation in kidding size in Black Bengal goat will help to design the specific characteristic features for single, twin and triplet or more bearing foetus(s). The research work will also elucidate the endocrinological basis for the observed variation in kidding size in Black Bengal goat. The application of ultrasound imaging technology will enable to know whether Black Bengal goat is basically a multiple ovular or not and thus explore the relationship between hormone profile and ovulation rate. Characterization of candidate gene(s) for multiple births will help to develop DNA marker test for marker-assisted selection. Once the endocrinological and / or genetic marker with phenotypic characteristics for prolificacy is established, it will be of potential interest to be introduced as powerful tool(s) in breeding programme for progeny testing and selection from which the genetic improvement can be widely disseminated. Thus the findings of the project may find a revolutionary field application. These tools will help farm management to ensure optimum fertility, maximum survival of offspring and desired weight gain. The research findings will open some clues for improving the consistency in litter size in multi-ovular goat breeds or increasing litter size in mono-ovular goat breeds by genetic and/ or hormonal manipulation. Benefits from the small ruminant genetic resource improvement would achieve sustainable development and would reach a wider proportion of the poor and needy in the country.

17. ICAR, Outreach project on 'Livestock related environmental pollutants, contaminants and toxicants (Monitoring of drug residues & environmental pollutant'

Monitoring of drug residues and pesticide residue in edible tissues of livestock and evaluation of their safety is the major areas of work under the project. The project is with the objective to determine marker residues and to prepare data based monograph of pesticides and drugs in animal products with special reference to metabolism study of pesticides in farm animals. Selection of sites for collection of samples has been done. Standardization of analytical methods of drugs and pesticides from animal substrates is going on under the outreach project.

18. Network programme on 'Adaptation and facilitation of livestock to impending climatic changes through shelter management'

The Network Project is likely to provide important information on impact of climate change and global warming on livestock production and health. The out come from the project will provide valuable basic scientific information about behavior of different livestock species and production system in different agro-climatic conditions and would help in drawing strategies for reducing heat stress on livestock and poultry.

The information will be extremely valuable and would serve as basis for policy planning for optimization of production from livestock under Indian conditions. It is now visualized that in the changing global environmental and market context when India is gearing up to be a major player in the International Dairy Trade new dimensions need to be added to the existing production system. It is therefore necessary that the project on "climate change" must be initiated to fulfill gaps in knowledge on environmentally sustainable livestock production system.

During Xth plan one of the major activities was related to assessment of Physiological responses to temperature and humidity changes. During the period Temperature Humidity Index (T-HI) maps of India were developed. The T-HI, T-max and T min were related to productivity of cattle and buffaloes at temporal and spatial levels. Algorithms were developed for animal productivity and functions. Temperature coefficients and the Van't Hoff Arrhenius Effect on physiological functions were determined. Animal growth gradients and growth constants of Zebu, crossbred cattle and buffaloes were analyzed for changes in growth due to temperature and or humidity change. The results indicate that growth of livestock is negatively impacted by rise in temperature or humidity. Animal reproductive functions of Zebu, CB and buffaloes were also analyzed for temperature effects and algorithms were developed. Results suggested sensitivity of livestock reproductive functions to high temperatures and sensitivity to changes in temperature (T-max). Buffalo was observed to be more sensitive than crossbred or Zebu. Voluntary feed intake function of cattle and buffaloes were also related to T-HI, T-max and T-min. The dry matter intake declined with increase in T-max or T-avg. or THI during summer. DMI increased with rise in T-min during winter. Methane emission coefficients for cattle and buffaloes were developed and validated by Open circuit methane measurement system. Enteric methane emissions from livestock have been calculated as per IPCC methodology using emission factors for Indian livestock and body weights to reduce uncertainties in estimates.

19. ICAR sponsored 'Poultry seed project'

The Indian Council of Agricultural Research (under Project Directorate on Poultry, Hyderabad Central Avian Research Institute, Bareilly) and several State Agricultural and Veterinary Universities developed improved chicken varieties (*Vanaraja*, *Giriraja*, *Gramapriya*, *CARI Shyam*, *Rajarshi*, *Swarnadhara*, *Nandanam*, *Krishna-J*, *Gramalakshmi*, *CARI Gold* etc.), suitable for rural poultry farming. Majority of these varieties resemble the native chicken, grow fast and produce more number of eggs, require low input (like feed, housing, management, health care, etc.) and sustain different vagaries of the climatic and environmental changes. With these broader objectives, the Project Directorate on Poultry has developed three promising chicken varieties which can sustain and perform better than the native (*deshi*) chicken varieties available in the country. The improved rural chicken varieties developed by PDP are Gramapriya, Vanaraja and Krishibro which are popular for their egg production, dual purpose and meat yield respectively. All these birds gained wider acceptability across the country with the limited extension and commercial propagation facilities available with the Directorate.

To overcome the limitation and to meet the growing demand for these chicken varieties and also to avoid difficulties involved in transportation of these delicate and perishable eggs and chicks throughout the country, it was felt to establish rural chicken germplasm units across the country. These would facilitate the Directorate to concentrate on further improvement of the germplasm and also to develop new chicken varieties for the same purpose. This will also minimize transit losses besides making the germplasm available for much needy population in the furthest remote areas.

The following technical programme under the project is going on –

- Each Centre will construct a parent rearing unit, a hatchery unit and a chick brooding cum growing unit (Nursery) with all required facilities for the purpose with a specific target set for supplying chicks.
- All centres will purchase parents of improved chicken germplasm (*Vanaraja* and *Gramapriya*) from the PD on Poultry. Day old chicks will be reared as guided by the Breeder's Guide supplied by the Directorate at the respective centre in the facilities created for the purpose.
- Adult male and female birds will be reared to produce fertile hatching eggs. Day old chicks of the improved germplasm will be hatched out of the hatchery unit, and will be reared in the nursery unit up to six weeks of age. All the inputs will be provided during the nursery phase. After the nursery phase, the chicks will be distributed to the individual farmers on cost basis. Where ever possible, the day old chicks of improved chicken may be distributed to the individual farmers/ extension agency/ NGO/ KVK, who has the facility to grow the birds up to six weeks of age in the nursery unit. These birds may be further distributed to the individual farmers at the rate of 10-15 birds per farmer.
- Recording of body weight at 4 weeks interval during growing (7-20 weeks), and egg production and egg weight at every 14 day interval during egg laying period (21-72 weeks) is required.

20. ICAR Adhoc project on 'Enteric methane emissions from livestock and mitigation strategies'

Following technical programme is going on under the project -

- a) In vivo assessment of methane production from commonly used feeds and fodders.
- b) Prediction model for estimating methane production in ruminants
- c) Methane mitigation strategies by developing alternate hydrogen sinks (acetogens) using nutritional and biotechnological approaches.

21. ICAR Outreach project on 'Zoonotic diseases (Dermatophytosis and Cryptococcosis in animals and their public health significance)'

The project is being undertaken to fulfill its manifold important objectives, which are very much relevant in the present day scenario. Primary objective of the present study is to isolate and identify the commonly occurring dermatophytes from different domesticated and pet animals as well as from their owners or handlers. Studies on incidents of these dermatozoonotic diseases in relation to age, sex, species, breed, site of lesion, occupational exposure, seasonal distribution, area distribution, etc will also be considered in this study.

22. FAO funded project on 'South-Asian pro-poor livestock policy programme'

Normally Backyard poultry farming (BYP) with native fowl / duck is popular in rural areas. Women and children mostly practice BYP as a source of additional income. Government is strengthening and multiplying the system through distribution of RiR, chicks and KC ducklings, vaccination and training. BYP provides an excellent opportunity for gainful employment to unemployed members of rural families bringing about the socio-economic uplift of the weaker section of the society. Farmers start BYP simply procuring chicks from neighbouring farmers. Recently outbreak of bird flu has inflicted havoc damage to BYP. Millions of birds have been culled to control the disease. Thousands of families have been rendered jobless.

The model could be scaled excellent by all measures of 'Good Practice' and a typical representation of 'Small Holder Poultry Production'. It is capable of generating sustainable benefits. More interestingly, once started, farmers need not to depend on other for any critical input particularly chicks. Unfortunately recent outbreak of bird flu has inflicted huge damage to the system. Besides, death of bird due to bird flu the control measure adopted by culling of birds and moping up operation have eliminated millions of birds. There is an urgent need to learn procedure to save BYP in face of bird flu thread.

23. DBT project on 'Production of conjugated linoleic acid rich goat meat through dietary supplementation of vegetable oil and plant extract'

The goal of the project is the improvement of meat quality through dietary intervention. To achieve this goal, the project is being undertaken with the following objectives -

1. *In vitro* screening of vegetable oils and plant extracts for their possible role in regulating rumen biohydrogenation.
2. Investigate the effects of addition of graded levels of vegetable oil in the diet of goat on animal performance and fatty acids especially CLA content of muscle and adipose tissue, and carcass characteristics.
3. Explore the effects of supplementation of different plant extracts in diet containing the vegetable oil on animal performance and fatty acids especially CLA content of muscle and adipose tissue, and carcass characteristics in goat.

So far, the project has progressed to establish a well furnished laboratory. The purchase process of equipments is completed. Recruitment of SRF and contractual labour are also completed. Different feed plants have been selected for preparation of plant extract. Standardization of *In vitro* method is going on.

24. Ministry of Environment & Forests, GOI sponsored project on 'Impact assessment of environmental hazards caused by slaughter house wastes and control of pollution by recycling the wastes as animal feed'

The project is aimed to assess environmental hazards caused by accumulated rumen contents of livestock species around the municipal abattoir and surrounding area of Kolkata Corporation areas.

The out come of the project during the report period revealed that a substantial quantity of biomass present in the undigested rumen contents go wasted in abattoirs causing environmental pollution. The biomass is rich in nutrients and hence may be recycled as animal feed without affecting animal performance and posing any threat to the normal physiology of the animals as it was revealed from serum metabolites and hematological assays.

25. Cheiljedang Corporation, Korea sponsored project on 'Application of Bacteriophage (CJ Phage) as a prophylactic against *Salmonella* infection in broilers'

The project was undertaken to assess efficacy of bacteriophage as a prophylactic agent against poultry salmonella infection. The primary focus of the experiment is to study the efficacy of bacteriophage (BP) as a prophylactic against *Salmonella* (SG and SP) in broiler chickens. During the course of the project implementation Bacteriophage was fed to broiler chickens, which were challenged with *Salmonella gallinerum* and *Salmonella pullorum*. Supplementation of bacteriophage was found to have reduced incidence of salmonella in the experimental broilers.

26. Associated British Vista, U.K. sponsored project on 'Effects of yeast products on broiler performance'

The major area of study is to assess the efficacy of different yeast products as an alternative to antibiotic growth promoter in broiler chickens. The project is undergoing to study the effects of different yeast cell wall products on live performance and carcass traits of broiler chickens.

Different yeast products including baker's yeast, crude yeast, hydrolyzed yeast and hydrolyzed pellet were tested against an antibiotic growth promoter (bacitracin methylene disalicylate). Removal of cell metabolites and nucleotides from whole yeast was found to have improved the performance of experimental broiler chickens. Hydrolyzed yeast and hydrolyzed yeast pellets were found to be a potent tool for enhancing broiler performance and it was concluded from the study that in absence of any severe stress hydrolyzed yeast and hydrolyzed yeast pellets may be a better option than antibiotic growth promoters in broiler chickens.

27. Nukamel, Belgium sponsored project on 'Effect of supplementation of emulsifiers in broiler chickens'

In this project, application of dietary emulsifiers is tested on broiler chickens. Different types of conventional and nutritional emulsifiers are being tested under the project. With the objective to test the efficiency of dietary supplementation of emulsifier on performance of broiler chickens and to evaluate the comparative efficacy of different conventional and nutritional emulsifiers, the project work is going on.

So far the findings of the project indicated that supplementation of emulsifier can improve the digestibility of high-energy broiler diets.

28. Creswell Nutrition, Australia sponsored project on 'The effect of stinging Nettle (*Urtica dioica*) on performance of broiler chickens'

The effect of stinging Nettle (*Urtica dioica*) as a dietary adjunct in broiler chicken was ascertained in this project. Stinging Nettle leaves were included in broiler diets after neutralizing the toxic principles through drying. The inclusion level was in ascending order and dose response was evaluated. One of the objectives of the study was to evaluate stinging Nettle as a replacement of antibiotic growth promoter in broiler chickens. The primary findings of the project indicate that dried *Urtica* leaves may have some beneficial effects on broiler performance. However more studies are warranted to reach to conclusive decision on this aspect.

29. CSIR project on 'Surgical and pharmacological prevention of posterior capsular opacification following cataract surgery'

The project was aimed at Ophthalmological surgery for prevention of cataract. Surgical and pharmacological prevention of posterior capsular opacification following cataract surgery was studied under the project.

So far following achievements were obtained -

1. Standardization of anesthetic protocol for conducting ocular surgery in rabbits
2. Conducted trial with four different designs of lens for prevention of posterior capsular opacification.
3. Conducted trials with six different drugs by various routes for assessment of efficacy towards prevention of PCO, the study included pharmacokinetic of the drugs, proof of prevention included gross pathology, histology, immunohistochemistry, and molecular diagnosis.

30. DBT, GOI sponsored project on 'Bioavailability of nanocurcumin in extra cameral portion of eye using Rabbit model'

The project on Ophthalmology was primarily aimed at prevention of cataract cases and their remedies in animals. The project with the objective of studying the effect of native VS nano particle based curcumin for prevention of posterior capsular cataract is going on.

During the reporting period following achievements were obtained through implementation of the project -

1. Conducted trial with nanoformulation of drugs for prevention of posterior capsular opacification using three different routes.
2. Pharmacokinetics for the drugs were studied by HPLC.
3. Clinical and histological studies done to establish effect of the drug.

C.7.2. HIGHLIGHT OF THE PROJECTS CONDUCTED IN THE FACULTY OF DAIRY TECHNOLOGY

1. ICAR project on 'Collection, characterization and preservation of lactic starter culture for the manufacture of Misti Dahi'

Microbiological quality of Misti Dahi from different sweet meat shops located in Kolkata and its surroundings are evaluated. There is wide variation in total count. 64% market Misti Dahi showed yeast & mold count within prescribed limit of BIS. 26% market Misti Dahi showed higher acidity & 11.11% showed low acidity from the prescribed standard of Misti Dahi. 61.41% market Misti Dahi exhibited firm smooth, 25.98% showed firm, 9.44% showed loose and 3.14% found weak body & texture.

On characterization of lactic acid bacteria up to species level of market Misti Dahi, *Str. thermophilus* is pre-dominant. Some strains of *Lactococcus lactis* sub-species *lactis* are also found to be present.

Market Misti Dahi are contaminated with bacteria like *Staphylococcus aureus*, *Escherichia coli*, *Streptococcus faecalis*, *Clostridium perfringens*, *Bacillus cereus* & yeast like *Saccharomyces cerevisiae*, *Sachoromyces delbrueckii*, *Torulopsis globosa*, *Torulopsis sphaerica*, *Torulopsis lactis condensi*, *Candida lipolytica* & *Candidida pseudotropicalis* and mold like *Aspergillus flavus*, *Aspergillus parasiticus* and *Geotrichum candidum*.

2. All India Network programme on 'R & D Support for process up-gradation of indigenous milk products for industrial applications'

Concentrations of heavy metals such as arsenic, lead, zinc, copper, manganese and cadmium in traditional Indian dairy products namely rasogolla, sandesh, gulabjamun, peda and kalakand collected from the districts of Hooghly and Howrah in West Bengal; Patna, Muzaffarpur and Samastipur in Bihar, Ranchi and Dhanbad in Jharkhand respectively were estimated using Atomic Absorption Spectrophotometer (AAS) machine. The contents of all the metals in the milk products were below the Maximum Residual Level (MxRL) prescribed by the Prevention of Food Adulteration Act, 1954 (as amended upto 03.07.2007), except for the lead contents in some samples of peda and kalakand collected from Bihar.

The shelf life of laboratory made control samples of pantooa as well as those dipped in sugar syrup containing 750 ppm of mixed preservatives of sodium benzoate and potassium sorbate (1:1) and both types of pantooa packaged in low density polyethylene (LDPE) and laminated pouches was ascertained during storage at ambient and refrigeration temperature. Control samples of pantooa (without preservatives) packaged in LDPE and laminated pouches kept well for 6 days only during storage at $30\pm 2^{\circ}\text{C}$ while the treated samples of pantooa packaged in LDPE and laminated pouches had a shelf life of 6 and 9 days, respectively during storage at $7\pm 1^{\circ}\text{C}$.

C.7.3. HIGHLIGHT OF THE PROJECTS CONDUCTED IN THE FACULTY OF FISHERY SCIENCES

1. AICRP on 'Establishment of post-harvest technology in fisheries'

- a. Skill up-gradation of fisher folk on processing of fish and fishery products through training and field demonstration has been completed which was held in three places Marishabari-Sagardwip, South 24 Parganas from 23.03.2009 to 25.03.2009; Tajpur-Ramnagar, Midnapore East district of West Bengal from 27.03.2009 to 29.03.2009 and in Faculty of Fishery Sciences, Chakgaria from 27.07.2009 to 02.08.2009
- b. Standardization of brine concentration for treatment of fish prior to drying was done. The fish samples were immersed in 15%, 20% and 25% brine concentration for about 24 hours and moisture content was analyzed for every 6 hours interval and 15% brine was standardized as it gave the lowest moisture content and showed lower bacterial load with good organoleptic quality.
- c. Different drying methods were evaluated like sun drying (pressed and un-pressed) and solar drier (pressed and un-pressed) to standardize the best method. The moisture content was analyzed along the 3 days period of drying. Although, sun dried, pressed showed a good decrease in moisture content during the first three days, solar dried samples had better acceptability after 90 days of storage.
- d. Attempts were being made to recover chitosan from shrimp waste generated from fish processing plants. Trials were conducted to evaluate the effect of chitosan in preserving peeled shrimps under refrigerated condition.

2. DST, Sate Govt. sponsored project on 'Technology transfer cum demonstration farm on integrated duck cum fish farming for imparting training and farm advisory services to scheduled caste, scheduled tribe and weaker section of West Bengal'

An intensive survey was carried out among randomly selected villages of Sonarpur block of South 24 Parganas district in West Bengal to know the present status of Integrated duck-cum-fish farming in the study area. In addition to that a constraint analysis was carried out to know the problems faced by the farmer in adoption of integrated duck cum fish farming. Low cost duck house is designed and constructed for demonstration to the selected farmer. A workshop was carried out on 14th May.2010 where farmers were exposed to latest information about diseases of duck and their control, economics of duck cum fish farming. An interactive session was arranged where farmers asked questions about the problems which they faced in adoption of integrated duck cum fish farming and experts gave reply. This was a very interactive and interesting session.

3. ICAR project on 'Seed production in agricultural crops and fisheries'

- The present project was undertaken with the following objectives-
- i) Production of quality fish seed (IMC, ornamental & other fish seed,
 - ii) To enhance replacement with high yielding new variety fish seed,
 - iii) Production of breeder seed and foundation seed,
 - iv) Education training on seed production.

So far, the progress of achievements through the project implementation during reporting period may be briefed in tabular form as depicted bellow -

Table 1 - Fish seed production for the year April 2008 – March 2009

Particular	Target	Fish seed production	
		2008-09	2009-10 (up to June 09)
a) Indian major carps	100.00 lakh		
i) <i>Catla catla</i>		Nil*	-
ii) <i>Labeo rohita</i>		Do	-
iii) <i>Chirrhinus mrigala</i>		Do	2.00 lakh
b. Exotic carps	100.00 lakh		
i) <i>Cyprinus carpio</i>		3.00 lakh	1.00 lakh
ii) <i>Ctenopharyngodon idella</i>		-	1.00 lakh
c) Other Varieties			
i) <i>Puntius sarana</i>	20.00 lakh	Nil*	-
ii) <i>Puntius gonio</i>	40.00 lakh	Do	-
iii) <i>Labeo bata</i>	20.00 lakh	Do	-
iv) <i>Amblypharyngodon mola</i>	10.00 lakh	0.20 lakh	-
d) Ornamental fish			
i) <i>Colisa</i>	05.00 lakh	0.02 lakh	-
ii) <i>Labeo bicolor</i>	00.50 lakh	0.05 lakh	-
iii) <i>Carrasius auratus</i>	10.00 lakh	Nil*	0.015 lakh

Table 2 - Fish seed production for the year April 2008 – March 2010

Particular	Target	Fish seed production	
		2008-09	2009-10 (up to March '10)
a) Indian major carps	100.00 lakh		
i) <i>Catla catla</i>		Nil*	-
ii) <i>Labeo rohita</i>		Do	-
iii) <i>Chirrhinus mrigala</i>		Do	2.00 lakh
b. Exotic carps	100.00 lakh		
i) <i>Cyprinus carpio</i>		3.00 lakh	18.00 lakh
ii) <i>Ctenopharyngodon idella</i>		-	1.00 lakh
c) Other Varieties			
i) <i>Puntius sarana</i>	20.00 lakh	Nil*	-
ii) <i>Puntius gonio</i>	40.00 lakh	Do	-
iii) <i>Labeo bata</i>	20.00 lakh	Do	-
iv) <i>Amblypharyngodon mola</i>	10.00 lakh	0.20 lakh	-
d) Ornamental fish			
i) <i>Colisa</i>	05.00 lakh	0.02 lakh	-
ii) <i>Labeo bicolor</i>	00.50 lakh	0.05 lakh	-
iii) <i>Carrasius auratus</i>	10.00 lakh	Nil*	0.017 lakh

*: Hatchery construction was not completed.

4. DST, GOI sponsored project on 'Research & Development of EWMBN for sustainable fisheries of Hooghly-Matlah estuary in West Bengal'

The project is being undertaken with the following objectives –

- a. Technological documentation of the existing *WMBN* fishery in the Hooghly-Matlah estuary, West Bengal.
- b. Development of *EWMBN* for sustainable commercially important fish resources of Hooghly-Matlah estuary with known catch ability and responsibility.

5. Ministry of Environment & Forests, GOI sponsored project on 'Survey and inventorisation of the by-catch loss in certain coastal districts of West Bengal and its impact on biodiversity'

The project work is going on at Kakdwip, Namkhana, Diamond harbour of South 24 Parganas district and Digha, Sankarpur of Purba Medinipur districts of West Bengal.

The project is progressing to fulfill the following objectives -

- a) Initial survey to identify and assess the activities through which by-catch are lost.
- b) To estimate the magnitude of the loss (year wise) both in lean and peak seasons.
- c) Inventorisation of the species(fin fish and shell fish) lost at their various life stages.
- d) Impact of loss on the coastal biodiversity.
- e) Conservation methods to be adopted to reduce by catch loss and protect the aquatics biodiversity.

C.8. REMARKABLE TECHNOLOGIES GENERATED / REFINED THROUGH THE RESEARCH PROJECTS

The West Bengal University of Animal and Fishery Sciences has remained engaged in conducting various research programmes since its inception in 1995 monitored by the Directorate of Research, Extension and Farms. This Directorate has identified fewer remarkable technologies, which have been generated or evolved through the research projects / schemes by the untiring efforts of the learned faculty members and scientists of the University in its three faculties. Such evolvement of remarkable technologies are definitely to be considered for further development and refinement keeping in view on the availability of physical and financial facilities in the hand of the researchers.

Some of the remarkable technologies evolved or refined in the three faculties of the University are listed as hereunder as per availability of records :-

C.8.1. FACULTY OF VETERINARY AND ANIMAL SCIENCES

SI No	Name of the Technology	Technology Developer / Deptt.
1	DNA barcodes in Royal Bengal tiger and Indian domestic cat	Ghosh, S. K.; Chetry, A.J.; Senapati, P.K.; De, D. K.; Mahadani, P.; Trivedi, S. and Chakrabarti, U. S. (Dept. AGD)
2	Standardization of Immuno biochemical techniques for isolation purification and immune biochemical characterization of parasitic and bacterial antigens	Deptt. of Veterinary Biochemistry
3	Development of a new method to preserve caprine cauda epididymal spermatozoa <i>in-situ</i> at -10 °C.	Datta, U. (Deptt. of Veterinary Gynaecology and Obstetrics)
4	PCR based diagnosis of animal Trypanosomosis	Deptt. of Veterinary Parasitology
5	Cryopreservation of few protozoan parasites like <i>Trypanosoma evansi</i> and <i>Toxoplasma gondii</i>	
6	ELISA based technique for early detection of fasciolosis and gastrointestinal nematode infections	
7	Tactical anthelmintic used as a tool for improving the profitability of goat rearing	
8	Aluminium circular external skeletal fixator in goats	Maji, A. K. (Deptt. of Vety. Surgery)
9	Nano technology based drug Delivery system to Ocular tissues	Hazra, S. and other members of the Deptt. of Veterinary Surgery
10	Isolation of paramyxovirus (PMV-1) from pigeon and broiler birds from local outbreak	Deptt. of Veterinary Epidemiology and Preventive Medicine
11	Development of a live attenuated and inactivated vaccine from locally isolated pigeon and broiler paramyxovirus (PMV-1)	
12	HPLC determination of residual antibiotics and pesticides from meat, milk and foods	Deptt. of Veterinary Public Health
13	Water Bacteriology techniques to study on water borne pathogens	
14	Formulation and marketing of region-specific mineral supplementation for livestock	Biswas, P. and other members of the Deptt. of Animal Nutrition
15	Low fat meat production through supplementation of chromium	Ghosh, T.K. and other members of the Deptt. of Animal Nutrition
16	Recycling of slaughter house wastes as animal feed for reduction of environmental pollution	Deptt. of Animal Nutrition
17	Immuno-histochemical status of mammary gland of different breeds of cows	Ghosh, R. K. (Deptt. of Veterinary Anatomy and Histology)
18	Developing a new teaching method: e-courses for B.V.Sc. and A.H degree programme	Biswas, S. (Deptt. of Livestock Products Technology and Marketing)
19	Food processing technologies originated from pork, broiler and eggs	Biswas, S. (Deptt. of Livestock Products Technology and Marketing)
20	Cellular blotting techniques in fish (carps) adapted and standardized	Joardar, S. N. and other members of the Deptt. of Veterinary Microbiology

C.8.2. FACULTY OF DAIRY TECHNOLOGY

SI.No.	Name of the Technology	Technology Developer / Deptt.
1	Making of different dairy products like instant gulabjamun mix, kheer sandesh, steamed sandesh, herbal kulfi, chhana spread, whey based soups, various soy-analogues	Deptt. of Dairy Technology

C.8.3. FACULTY OF FISHERY SCIENCES

SI.No.	Name of the Technology	Technology Developer / Deptt.
1	Development of seafood analogs products	Deptt. of Fish Processing Technology

D. TRANSFERABLE TECHNOLOGIES

Through various research programmes undertaken in the three faculties and the Directorate of Research, Extension & Farms of the University have generated / evolved certain useful technologies, which in turn, would help to enhance the income and livelihood of the State farmers. Such technologies through proper refinement would also be applicable to the other regions of the country benefiting the vast farming community of the nation. The technologies developed through researches are as follows :

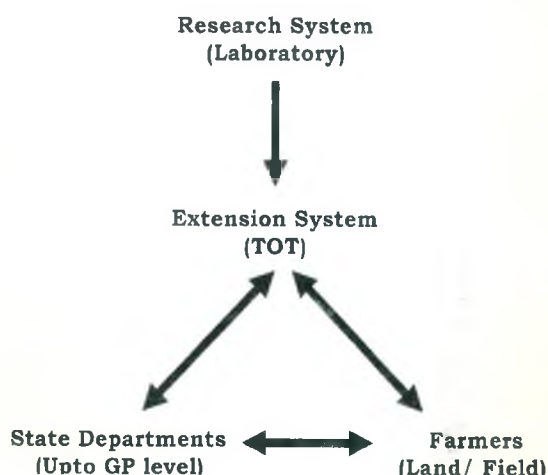
1. Through the researches on animal biotechnology the DNA barcodes for the Royal Bengal tiger and also of domestic cats have been developed.
2. In view of importance of parasitic diseases affecting the productivity of livestock, technologies have been generated for spot and immediate diagnosis of the diseases causing both morbidity and mortality losses.
3. Immuno-biochemical techniques have also been standardized for characterization of parasitic and bacterial antigens.
4. Sandwich ELISA- a new sero-diagnostic tool has been first evolved for pre-patent, low level of infection and clinical Fasciolosis and other gastro-intestinal nematodes in cattle and buffaloes of the State. The evolved test might contribute to the control programme of animal nematodes especially *Fasciolosis* in the Country.
5. Technology has been generated to optimize micronutrient nutrition of livestock and region specific mineral supplement has been developed by AICRP on improvement of feed resources and nutrient utilization in raising Animal Production. Feeding of this supplement to the livestock at field level has revealed excellent result in improving the productive and reproductive performance of livestock of the state as well as initiated action to minimize the production of methane, a green house gas responsible for global warming.
6. The technology of developing value added products from ducks have been evolved. The products included the duck sausage, meat balls, duck hams, duck prickles and duck tandoori, which were compared with the similar types of products from chicken meat and found the same in terms of physiochemical and sensory parameters. This could be transferred to the small scale processing units for production of such products having market values and would provide better prices for the ducks and the consumers can also get a taste of duck products, which are unique in character.
7. Production of low fat health meat from goat and broiler chicken by supplementation of a mineral mixture enriched with chromium.
8. Technology for conversion of undigested rumen contents dumped at the slaughter house into valuable livestock feed are evolved.
9. The addition of antibiotic (ceftriaxone-sulbactam) with different bio-ceramics proved its efficacy in controlling osteomyelitis in animal model, as it released high levels of antibiotics over a prolonged period. Further, bi-phasic calcium phosphates with predominately β -TCP content was found to be an efficient carrier material for antibiotic compounds even in refractory infections.
10. The epidemiological mapping of devastating Bird flu pandemic has been developed by finding out the main causes of spread of infection in the State. The possible general and specific recommendations have been formulated for effective control and containment measures of Bird flu occurrence in West Bengal.
11. Specific- and non-specific immune-effector mechanisms have been characterized in Indian major and minor carps.
12. While studying the autecology's of hog deer (*Axis percinus*), an action plan to conserve this threatened wildlife in the protected areas of West Bengal has been formulated and submitted to the State Government for implementation.
13. Calcium chloride has been established as a new chemosterilizing agent for the mass sterilization programme of street dogs to control rabies, a zoonotic disease of human and animals.

14. A technology based on tactical use of anthelmintic has been devised for enhancing the profitability of goat rearing. A method based on EIISA has been developed for the diagnosis and /or differentiation of naturally occurring gastro intestinal nematode infection in goats has been developed.
15. Technology has been generated for formulation of economically viable balanced complete feed for cattle and buffaloes at different level of milk yield. Attempt has been made for development of easily accessible software for "least cost complete formulation" with available resources.
16. Garole sheep, a highly prolific breed of Sundarban delta has been recognized as the prolific most breed of the world. The genetic material has been utilized to develop many prolific sheep breed of the world, including famous Booroola Merino of Australia. This University has characterized the breed and has been actively engaged in conservation of this valuable genetic material.
17. Bonpala sheep is a threatened breed of sheep to the Duar's valley of North Bengal and Southern Sikkim. The breed is also prolific producing twins in 40% lambing. This University has been constantly engaged in characterization of this breed and also conservation through propagation among farmers.
18. Bengal goat, a prolific breed was characterized in details. It is also prolific breed producing chevon having low cholesterol and good quality of leather.
19. Ghongroo pig is the most outstanding amongst the recognized indigenous pig breed of the country. It is highly prolific producing litter size at birth 12, occasionally 18 litters at birth has been noticed. The breed can attain a body weight of 70 kg. at puberty at 7 months of age. This University was first identified the breed on its characteristic. As a threatened breed, this University has also engaged in conservation of the breed through its propagation. Though the breeding tract is Dooars valley of West Bengal but it is doing fine in South Bengal too.
20. Since Khaki Campbell ducks depend heavily on supplementary feed, farmers found rearing of Khaki Campbell ducks very expensive. Up gradation of local breed of duck by crossing deshi females with khaki Campbell male was found to give best result. Recommended number of ducks per ha. water spread area is 200-400. However, during the course of study, the duck density of 250 nos. per ha. water spread area is found to be most suitable.
21. Recommended stock density for Indian Major Carp seed is 5000-10000/ha. However, stocking density of 8000/ha. was found to give best production.
22. Recently developed herbicides (Isoproturon, Napropamide, Bifenox, Chlorprofam, phenpyroximate, ACP ester) on animal experimentation reveal that these molecules are almost non toxic to animals.
Polyherbal drugs like Livina® and Livsee® are hepatoprotective in animals.
Polyherbal drugs Fibrosin® facilitates the absorption of antibiotics in mammary gland of cow with mastitis.
Aspirin® is highly effective analgesic and antipyretic in ruminant with least side effect.
Livodin®, a Polyherbal drug is non toxic to rats at the dose of 10mg/kg body weight.
23. Use of some low cost eco-friendly herbal drugs to enhance milk production and immunity has been evaluated.
24. Green fodder production technology in unfavourable districts is available.
25. Adequate livestock & poultry health care support system to prevent both morbidity and mortality losses.
26. Fodder development through integration of food, horticulture and fodder crops.
27. The utilization of Sal seed & Mahua meal seed in livestock feed, which are available in plenty in the district of Purulia and Bankura in West Bengal for economic milk production.
28. Model for development & regeneration of common property resources for use by the poor livestock farmers.
29. The merits and demerits of the use of probiotics in fresh water aquaculture have been derived.
30. Computer based programme to determine the nutritional status of livestock has been evolved.
31. Stocking of 6-12 month old stunted Carp (100-150 g size) instead of fry or fingerling in the pond for higher fish production. Average fish yield was 3560 kg/ ha/year. Income: Expenses ratio was 2.68 with net-profit of 1,10,595 ha/year.

32. Inclusion of high value species freshwater prawn in carp fishery farming. Average fish yield of fish and prawn were 2184 kg and 122 kg respectively per ha. Carp of 9 month. Income: Expenses ratio was 2.16 with net-profit of Rs. 68,400/- per ha per crop.
33. Integration of duck rearing with fish farming has been found more profit through integrated farming system.
34. Collection of miscellaneous fish juveniles from paddy fields during monsoon & culturing them in seasonal ponds for 4-6 months. Income: Expenses ratio was 3.14 with net profit of Rs. 26,000/- per ha per crop.
35. Livelihood improvement of fishermen through culture of fish in village canal. After 6 months of culture period, the average production of fish was 520 gm. Income: Expenses ratio was 3.1.
36. Endangered and threatened fish varieties of the State have been identified.
37. Technologies for proper utilization of low cost unutilized marine fishes by value addition have been established.
38. Low cost technology on value addition to dairy and meat products.
39. Technologies for hygienic preparation of certain milk products instantly like golap jamun, rasogolla, sandesh, khir and khoa etc. have been formulated.
40. Trypanosomiasis, an economically important disease of cattle and buffaloes was found highly prevalent in hot and highly humid months of the year in the State of West Bengal. Isometamidium chloride / hydrochloride at the dose level of 0.5 mg/kg I.M. at 1% solution in distilled water was established highly effective to control the disease within 24 hours.
41. Modified DNA isolation and Polymerase Chain Reaction (PCR) technology.
42. HPLC determination of residual antibiotics and pesticides from meat, milk and foods was made.
43. Water Bacteriology techniques were determined to study on water borne pathogens.
44. Standardization of Microscopical Agglutination Test (MAT) was made for Serodiagnosis of Leptospirosis, both in man and animals.
45. Established and standardized Ultrasonography studies on canine for different urogenital and hepatic disorder.
46. Surgical procedure has been standardized for cataract surgery in dogs by highly sophisticated phacoemulsification technique.
47. Standardization made on anaesthetic regimen for anaesthetization of ruminants by sub arachnoid anaesthesia.
48. Developed the technique of operation for Urolithiasis of dog in field condition.
49. Use of ceramic bone grafts and bioceramic based drug delivery system has been established for treatment of osteomyelitis in animal.
50. A six-seam semi-pelagic trawl net with a head-rope length of 30.3 m was designed for pomfret fishery.
51. Developed a new Economic Growth Model for the sustainable upliftment of the socio-economic condition of the fisher folk at Purba Medinipur district of West Bengal.
52. Processing technologies of different food and fish products and its preservation have been evolved
53. A model has been established for sustainable rearing of backyard poultry in different climatic corners of the State.
54. A life attenuated and inactivated vaccine from locally isolated pigeon and broiler paramyxovirus (PMV-1) has been developed for saving the vast poultry resources in the State.

E. EXTENSION ACTIVITIES

Extension system in animal and fishery sector is concerned with the successful transfer of technologies to the farming community to increase productivity, employment and income generation. On the other side, it provides need based feed back to influence the research, education and training module set up. Such education also forces the act of transferring innovation through proper education of the concerned personnel so that they are properly trained and the skills are acquired for conviction, action and adoption. Since the inception of organized extension programmes in the country, farmers' participation has been given prime emphasis. This system operates as a farmers' programme with the presence of scientists and extension educationists, alongwith the support and initiative of the Government and non-government organisations. The system has to deal with socio-economically weak farming community, which is large in size, with either small or no landholdings and thus, massive in demand.



E.1. EXTENSION EDUCATION

Directorate of Research, Extension & Farms through its Extension wing is functioning with the objective of planning and execution of all the extension activities of the University in close consultation and cooperation of the Deans of the three faculties. It collaborates and coordinates the research findings and outreach programmes with the State Govt. Deptt. of Animal Resource Development, Fishery Development and other Governmental and Non-Governmental agencies. The Directorate at regular schedule organizes various sorts of training programmes and refresher courses. To create awareness amongst the farmers on latest improvements in the field of Veterinary, Dairy and Fishery Sciences, it publishes periodicals, newsletters, research highlights, leaflet, booklets etc. With the aim of effective dissemination of technologies evolved in the University to the rural mass, the Directorate organizes awareness camps, produces documentary films, technology demonstration fairs and exhibitions, radio and TV shows at frequent intervals. The Directorate also guides and supervises the different KVKs in conducting their activities. Moreover, it monitors the extension of knowledge and information about the activities of the University through the use of print media and web media.

E.2. VARIOUS TRAINING PROGRAMMES ORGANISED UNDER THE DIRECTORATE OF RESEARCH, EXTENSION AND FARMS

Training programmes conducted during 2008

Sl.NO	Period	Title of the Training Course	Sponsoring agency	Details about trainees (participants)						
				SC	ST	OBC	Gen.	Male	Female	Total
1	Jan. 8-17	Skill development of fisherfolks involved in fish handling and processing	NFDB, Hyderabad	6	3	0	23	32	0	32
2	June, 23-27	Composite fish farming	DRDC, N. 24 Pgs	24	0	1	3	19	8	28
3	July, 14-18	Poultry & duck farming	DRDC, N. 24 Pgs	27	0	0	9	1	35	30
4	July, 21-25	Nursery rearing of fish	DRDC, N. 24 Pgs	10	13	0	4	0	27	27
5	Aug., 4-8	Poultry & duck rearing	DRDC, N. 24 Pgs	7	0	0	23	5	25	30
6	Aug., 18-22	Clean milk production & production of indigenous dairy products	DRDC, N. 24 Pgs	13	0	4	21	0	38	38
7	Aug., 25-29	Nursery rearing of fish	DRDC, N. 24 Pgs	27	0	0	2	24	5	29
8	Sept., 1-5	Composite fish farming	DRDC, N. 24 Pgs	20	0	1	11	14	18	32
9	Oct., 20-24	Poultry & duck rearing	DRDC, N. 24 Pgs	7	2	4	24	6	31	37
10	Nov., 3-11	Pig rearing	DRDC, N. 24 Pgs	25	9	0	4	10	28	38
11	Nov., 17-21	Poultry & duck rearing	DRDC, N. 24 Pgs	5	0	0	28	10	23	33
12	Nov., 22-30	Master trainers' training on Goat, Poultry & Fish farming	Sabuj Sangha (NGO)	5	0	1	14	20	0	20
13	Dec., 1-5	Goat farming	DRDC, N. 24 Pgs	17	3	0	6	12	14	26
14	Dec., 8-15	Value added products of foods from animal origin- its processing & marketing	Ministry of Agriculture, GOI	1	0	0	11	10	2	12
TOTAL										418

Training programmes conducted during 2009

Sl.No	Period	Title of the Training Course	Sponsoring agency	Details about trainees (participants)						
				SC	ST	OBC	Gen.	Male	Female	Total
1	Jan., 14-23	Master trainers' training on Livestock farming	Bandhan (NGO)	9	0	2	9	20	0	20
2	Feb., 9-13	Poultry & Duck rearing	DRDC, N. 24 Pgs	9	0	0	21	0	30	30
3	Feb., 23-27	Composite fish farming	DRDC, N. 24 Pgs	6	21	0	30	8	49	57
4	March, 16-20	Poultry & Duck rearing	DRDC, N. 24 Pgs	19	0	1	7	0	27	27
5	July, 6-10	Pig farming	DRDC, N. 24 Pgs	20	29	2	1	5	47	52
6	July, 27-31	Poultry & Duck rearing	DRDC, N. 24 Pgs	30	17	0	8	5	50	55
7	Aug., 3-7	Pig farming	DRDC, N. 24 Pgs	15	28	0	0	0	28	43
8	Aug., 24-28	Goat farming	DRDC, N. 24 Pgs (1 self)	34	0	0	7	3	38	41
9	Nov., 9-13	Clean milk production & Production of Indigenous Dairy Products	DRDC, N. 24 Pgs	19	0	8	2	0	29	29
10	Nov30-Dec4	Pig rearing	DRDC, N. 24 Pgs	15	6	0	6	0	27	27
TOTAL										381

Training programmes conducted during 2010

Sl.No	Period	Title of the Training Course	Sponsoring agency	Details about trainees (participants)						
				SC	ST	OBC	Gen.	Male	Female	Total
1	Jan., 4-0	Poultry & duck rearing	DRDC, N. 24 Pgs	5	0	0	40	0	45	45
2	Jan., 11-15	Fish & Prawn farming	DRDC, N. 24 Pgs	16	4	0	33	18	35	53
3	Jan., 18-22	Fishery	DRDC, N. 24 Pgs (2 self)	17	0	0	46	7	53	63
4	Feb., 1-5	Fishery	DRDC, N. 24 Pgs	20	12	5	6	0	43	43
5	Feb., 8-12	Poultry & Duck rearing	DRDC, N. 24 Pgs (2 self)	0	0	0	33	6	27	33
6	Feb., 15-19	Piggery	DRDC, N. 24 Pgs	17	22	0	1	0	40	40
7	Feb., 22-26	Poultry & Duck rearing	DRDC, N. 24 Pgs (1 self)	15	0	0	9	1	23	24
8	March, 1-5	Fish farming	DRDC, N. 24 Pgs	10	0	0	0	0	10	10
9	March, 8-12	Poultry & Duck rearing	DRDC, N. 24 Pgs	12	4	1	30	0	47	47
10	March, 15-19	Fisheries	DRDC, N. 24 Pgs	14	0	0	19	6	27	33
11	March, 22-26	Poultry & Duck rearing	DRDC, N. 24 Pgs	14	17	0	28	2	57	59
12	April, 26-30	Poultry & Duck rearing	DRDC, N. 24 Pgs	12	0	0	32	0	44	44
13	May, 17-21	Poultry & Duck rearing	DRDC, N. 24 Pgs	40	4	0	6	7	43	50
14	May, 24-28	Nursery rearing of fish	DRDC, N. 24 Pgs	21	0	0	15	0	36	36
15	June, 7-11	Goat rearing	DRDC, N. 24 Pgs (4 self)	49	1	0	2	6	46	52
16	June 21- July 2	Master Trainers training on Livelihood generation of SHG resource persons through Livestock care & Management	DRDC, N. 24 Pgs	7	2	3	30	0	42	42
17	August, 2-6	House Dairy	DRDC, N. 24 Pgs	19	0	0	12	0	31	31
18	August, 16-20	Pig rearing	DRDC, N. 24 Pgs	1	50	2	1	0	54	54
19	August, 20-27	Pig rearing	DRDC, N. 24 Pgs (1 self)	5	47	1	0	1	52	53
TOTAL										812

E.3.1. National Fisheries Development Board (NFDB) sponsored training programme for fish farmers of Sundarbans - Organized during 2008-09 by Sundarban Development Board in collaboration with University

Sl.No.	Period	Venue	Training Topic	No. of participants
1	Oct 20-24, 2008	Bali Island, Gosaba	Seed production & culture of economic fish species in homestead & rain water harvesting tank	30
2	Nov 10-14, 2008	Patharpratima	Seed production & culture of economic fish species in homestead & rain water harvesting tank	30
3	Nov 17-21, 2008	KKMTS, Kultai, Basanti	Shrimp Seed Bank & Crab Fattening in backyard & sustainable brackish water polyculture	30
4	Dec 15-19, 2008	FDH, Namkhana	Shrimp Seed Bank & Crab Fattening in backyard & sustainable brackish water polyculture	30
5	Jan 05-09, 2009	R K Ashram KVK, Nimpith	Seed production & culture of threatened economic fish species & ornamental fisheries in backyard	30
6	Jan 19-23, 2009	Mathurapur	Seed production & culture of threatened economic fish species & ornamental fisheries in backyard	30
7	Feb 02-06, 2009	Mohanpur, WBUAFS	Integrated fish farming with livestock	30
8	Feb 16-20, 2009	Mohanpur, WBUAFS	Integrated fish farming with livestock	30

E.3.2. NFDB sponsored training programme for capacity building and skill development of fish farmers of Sundarbans during 2010. Title of the Training Course: Culture of freshwater fish and shellfish including seed nursery

Sl.No.	Period	Venue	Details about trainees (participants)						
			SC	ST	OBC	Gen.	Male	Female	Total
1	July 26-28, 2010	CIFA, Rahara	11	2	1	14	27	0	27
2	July 29-31, 2010	CIFA, Rahara	7	0	2	12	19	2	21
3	Aug 09-11, 2010	Lahripur GP, Gosaba	13	14	1	0	16	12	28
4	Aug 12-13, 2010	Lahripur GP, Gosaba	28	20	0	0	21	27	48
5	Aug 30-Sept 1 '10	Bali Island, Gosaba	13	1	4	7	23	2	25
6	Sept 02-04, 2010	Bali Island, Gosaba	16	9	0	0	23	2	25
7	Sept 20-22, 2010	Dhamakhali, Sandehkhali	18	5	0	2	25	0	25
8	Sept 23-25, 2010	Dhamakhali, Sandehkhali	14	2	4	5	22	3	25
9	Oct 04-06, 2010	Patharpratima Island	3	0	1	21	23	2	25
10	Oct 07-09, 2010	Patharpratima Island	3	1	3	18	23	2	25

E.4. CONSULTANCY CELL AND ADVISORY SERVICES

The Extension wing of the Directorate of Research, Extension and Farms helps in providing Consultancy and Farm Advisory services to the stakeholders in relation to livestock farming, dairy product processing including fish farming. In this regard, the active cooperation of the expertise is being received from the faculty members and officials/scientists of the University through field visits, farm or home visits, face-to-face discussions, over telephone, e-mails and postal communications. During 2008-2010 a total number of 27, 875 persons were rendered technical advises through this Directorate. The Extension wing also provides consultancy on animal husbandry, dairy technology and fishery related laboratory and field services. A total of 23 Consultancies for establishing livestock farms, dairy, fishery and other animal origin food products processing and for similar projects / schemes were provided during 2008-2010 through the Consultancy Cell. Such consultancies were provided to the clientele through the individual or group consultants from the University. In addition, need based training and distribution of extension literature to the beneficiaries is being made during such Advisory and Consultancy services.

E.5. DOCUMENTARY FILMS PRODUCED

Six numbers of Documentary Video film have been produced and being sold, namely-

- Gabadi (in Bengali on Cattle husbandry)
- Garoler golpo (in Bengali on Garole sheep husbandry)
- Chhagoler golpo (in Bengali on Bengal goat husbandry)
- Hangsomin (in Bengali on Integrated farming of duck cum fishery)
- Choroibeti (in Bengali on Institution Village Linkage Programme)
- Ghoongroo (in Bengali on Ghoongroo pig production through Centrally sponsored scheme on Threatened breed – Ghoongroo pig).

E.6. PARTICIPATION IN MELA (FAIR) / EXHIBITION

1. State Fruit, Fish and Animal Resource Festival – 2008 and 2009 at Amritlal College, Baruipur, South 24 Parganas, West Bengal.
2. Agricultural Exhibition at Uluberia, Howrah, 2008.
3. Educational Exhibition in Kolkata, 2008.

E.7. ORGANIZATION OF ANIMAL / FISH HEALTH CAMPS

The University is working with the social mandate for the rural poor people in the State. The Directorate of Research, Extension and Farms takes lead role in giving extension services to the farming community residing at remote villages, where conventional aid systems are yet to receive. Some of the teaching departments of the Veterinary and Animal Sciences faculty conjointly with the Extension wing of the Directorate of Research, Extension and Farms regularly organizes free of cost treatment camps or vaccination camps against major livestock diseases at different corners of the State. During the reporting period, a total of nearly 47 animal health camps have been organized throughout the State.

In the similar fashion, the faculty of Fishery Sciences also organizes fish health camps and extends free of cost advisory services to the practicing fishermen inhabiting at different remote areas of the State.

E.8. WOMEN EMPOWERMENT

It is established fact in the Indian household that in majority of livestock keeping activities are carried out by the women. The same is also true for indigenous dairy product preparation and to some extent in case of fishery operations. The State has the thrust area of activities for the upliftment of the rural women. The University is working from its initiation for improvement of the womenfolk through developing of their socio-economic status. The University is consistently trying for the betterment of the farming women through organization of skill development training programmes, sensitization camps, capacity building and awareness for the self-help groups. The physical and financial assistance extended by the District Rural Development Cell (DRDC), North 24 Parganas district Zilla Parishad of the state in organization of such programmes is duly acknowledged. Through the Krishi Vigyan Kendras of the University situated at Murshidabad, North Parganas and Jalpaiguri districts are also regularly organizes specific women empowerment and drudgery reduction programmes.

E.9. PUBLICATIONS

The publication of newsletters, extension literature like leaflets, booklets, pamphlets, handouts etc. are published and updated regularly by the Extension wing of Directorate of Research, Extension & Farms. The Directorate also monitors publication of research papers and scientific popular articles in different print, electronic and web media as released by the faculty members, scientists and officials. Various reports on research findings, practical class manuals, training programme compendiums are also being prepared under the active supervision of the Directorate of Research, extension and Farms in the University. The extension literatures are distributed amongst the stakeholders through the Extension wing of the Directorate.

E.9.1 PUBLICATION OF ACADEMIC, SCIENTIFIC AND EXTENSION LITERATURE

1. WBUAFS Newsletter	2 Nos.
2. University Annual Report	1 No.
3. Research Project Annual Report	77 Nos.
4. Faculty At A Glance	2 Nos.
5. University At A Glance	5 Nos.
6. Research Highlights	3 Nos.
7. Status of KVKs under WBUAFS	3 Nos.
8. Epidemiological Investigation Report on Bird flu occurrence in West Bengal	1 No.
9. Monograph of VCI Course	5 Nos.
10. Course Practical Manuals	17 Nos.
11. Laboratory Manuals	4 Nos.
12. Text Books and other Books	11 Nos.
13. Extension Book/Booklets in Bengali	12 Nos.
14. Leaflets in Bengali	10 Nos.
15. Compendium of Training Programmes	16 Nos.
16. Package of Practices	3 Nos.

E.10. ACTIVITIES OF KRISHI VIGYAN KENDRAS

E.10.1. NORTH 24 PARGANAS KRISHI VIGYAN KENDRA

1. Abstracts of different Training programmes conducted

Discipline	No. of FLDs		No. of beneficiaries											
	On-campus	Off-campus	SC			ST			Others			Total		
			M	W	T	M	W	T	M	W	T	M	W	T
PRACTICING FARMERS														
TOTAL	50	03	754	60	754	34	3	37	2603	164	2/67	3331	227	3558
RURAL YOUTH														
TOTAL	3	1	20	05	25	-	-	-	88	05	93	108	10	118
EXTENSION FUNCTIONARIES														
GRAND TOTAL	53	84	714	65	779	34	3	37	2693	169	2860	3439	237	3676

2. Abstract of Frontline Demonstrations (FLDs) conducted

Discipline	No. of FLDs		No. of beneficiaries											
	Initiated (No./ha)	Completed (No./ha)	SC			ST			Others			Total		
			M	W	T	M	W	T	M	W	T	M	W	T
PRACTICING FARMERS														
Agronomy	4/17	5/56	70	10	80	11	-	11	196	15	211	277	25	302
Horticulture	1/0.5	1/0.25	4	-	4	-	-	-	9	-	9	19	-	13
Ani. Sci. & Ani. Health	1	2	34	30	64	2	-	2	52	19	71	88	49	137
TOTAL	6/17.5	8/56.25	108	40	148	13	-	13	257	34	291	384	74	452

3. Discipline-wise salient achievements through FLDs

(a) Discipline - Agronomy

FLD-1: FLD on Blackgram

Sl. No	Thematic Area*	Technology demonstrated	Details of popularization methods suggested to the Extension system	Horizontal spread of technology		
				No. of villages	No. of farmer	Area in ha
1	Integration of good agronomic practices	Package demo. on blackgram c.v. sarada (WBU-108)	Productivity increases over local var. was more than 20%, var. showed disease resistant against yellow vein mosaic	10	80	30
2		Component demo. on aman paddy cv. Gonra Bidhan-1	Short duration variety with higher yield	15	60	15
3		Package demo. on Greengram c.v. Samrat (PDM 84-139)	Higher yield, 80% ripening at a time, no plucking is needed	07	42	10
4		Component demo. on Bidhan barbata-1	Dwarf var., no requirement of trellises, higher B:C ratio of 2.57:1	02	12	1
5	Crop diversification	Seed treatment on onion c.v. Suk Sagar	Good yield as well as good quality & market price	01	40	15

4. Abstracts of On-Farm Trials (OFTs) /On-Station Trials(OSTs) conducted

Discipline	No. of OFTs/OST		No. of beneficiaries											
	Initiated (No./ha)	Completed (No./ha)	SC			ST			Others			Total		
			M	W	T	M	W	T	M	W	T	M	W	T
PRACTICING FARMERS														
Agronomy	1/1	1/1	3		3	-	-	-	13	-	13	16	-	16
Horticulture	2	0	4	-	4	-	-	-	17	-	17	21	-	21
Anal.Sci. & Anal. Health	1	1	10	6	15	-	-	-	28	6	34	38	11	49
TOTAL	4/1	2/1	17	5	22	-	-	-	58	6	64	75	11	86

5. Abstract of other Extension activities CONDUCTED

Nature of Extension Activity	No. of activities	Farmers			Extension Officials			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Field Day	12	246	28	274	7	-	7	253	28	281
Kisan Mela	2	763	133	896	5	1	6	768	134	902
Kisan Ghosthi										
Exhibition	2									
Film Show	1	43	-	43	2	-	2	43	2	45
Method Demonstrations	12	265	24	289	-	-	-	265	24	289
Farmers Seminar	3	73	3	76	-	-	-	73	3	76
Workshop	2	97	-	97	2	-	2	99	-	99
Group meetings	16	233	64	297	-	-	-	233	64	297
Lectures delivered as resource persons	15	352	59	411	15	4	19	367	63	430
Newspaper coverage	17									
Radio talks	-									
TV talks	-									
Popular articles	05									
Extension Literature	21									
Advisory Services	55	123	9	132	-	-	-	123	9	132
Scientific visit to farmers field	439	855	91	946	-	-	-	855	91	946
Farmers visit to KVK	380	355	25	380	-	-	-	355	25	380
Diagnostic visits	117	197	41	238	-	-	-	197	41	238
Animal Health Camp	7	334	31	365	2	-	2	336	31	367
Soil test campaigns	9	58	1	59	-	-	-	58	1	59
Farm Science Club Conveners meet										
SHG meetings	1	-	40	40	3		3	3	40	43
Mahila Mandals Conveners meetings										
Celebration of important days (specify)	6	963	253	1216	-	-	-	963	253	1216
Celebration of Technology Week	1	44	21	65	12	3	15	56	24	80
Total	1123	4915	618	5533	48	8	56	4963	626	5589

6. Linkages established with other organizations /line department/institutes etc

Sl. No.	Name of organization	Area (activity) of linkage
1.	Animal Resource Development Department, Govt. of W.B.	<ul style="list-style-type: none"> Vaccination camp Health and Infertility camp Attended as resource person in training programme
2.	ATMA	<ul style="list-style-type: none"> Governing body and management committee member Fund released for Strategic Research & Extension Plan (SREP)
3.	RKVY	<ul style="list-style-type: none"> Governing body and management committee member Bio-village programme sanctioned
4.	State Seed Corporation,	Foundation and certified seed etc.
5.	Department of Fisheries, Govt. of W.B.	<ul style="list-style-type: none"> Awareness camp on subsidized loan scheme,
6.	Bidhan Chandra Krishi Viswavidyalaya, Mohanpur	<ul style="list-style-type: none"> Time to time planning execution Planting material collection Bio fertilizers collection Resource persons
7.	State Department of Agriculture	Time to time planning execution
8.	Regional Station for Forage Production & Demonstration, Kalyani	Training and fodder seed collection
9.	NREGS	Linkage in pipeline
10.	State Department of Horticulture	Time to time planning execution Preparation of demonstration unit under planning stage

7. Detail of outside fund received for the sponsored projects/training/seminar etc.

Name of the activity	Name of the sponsoring organization	Total fund received or sanctioned for the purpose (Rs.)
Strategic Research & Extension Plan (SREP)	ATMA	1,50,000.00
BIO-VILLAGE	District Agril. Office & RKVY	70,000.00

8. Major achievement/ success story

“Vaccination against PPR to prevent mortality in goats in the district of North 24 Parganas”

Background about cases or problem

In every year after winter season i.e. during January, February and March huge number of goats of different villages around Mena, Habra-II block used to die after suffering from fever, respiratory problem followed by diarrhoea and dehydration. This causes a huge loss to the small and marginal farmers of those villages. The farmers acknowledged the problem to the Krishi Vigyan Kendra, Ashokenagar, North 24 Parganas during village visit. After taking the history regarding vaccination, pattern of death and observing the clinical signs of goat we, the scientists of the KVK, diagnosed the problem as PPR (*Peste des Petits Ruminants*).

Vaccination was conducted in five villages of North 24 Parganas (Mena North & South, Daulatpur, Koalipota and Bagpara) on December, 2007 by Krishi Vigyan Kendra, North 24 Parganas under West Bengal University of Animal & Fishery Sciences. Freeze dried tissue culture PPR vaccine of 100-dose vial produced since 2005 at Institute of Animal Health & Veterinary Biologicals, but yet not available in market was procured from the Animal Resources Department, Government of West Bengal for vaccination. The lyophilized vaccine vial was reconstituted in 100 ml chilled normal saline and 1 ml dose was injected subcutaneously in goats. Three hundred (300) goats were vaccinated including kids above 3 months of age and pregnant does. All the vaccinated goats were given neck tag as an identification mark.

Effect of the technology/process

There was no adverse reaction recorded after vaccination. None of the vaccinated goats were died till December, 2009 nor even showed any major respiratory or gastrointestinal disorders. The mortality (percentage of goats died out of total goat population) and case-fatality rate (percentage of goat died out of total goats affected) in 2008 were 11.9 % and 61.73 % and in 2009 were 13.04 % and 58.82 % respectively in goats of those villages which were suffering from acute respiratory and gastrointestinal problems before death and were suspected as PPR on the basis of clinical symptoms, sudden huge morbidity and mortality rates including post-mortem findings.

The farmers whose goats were vaccinated were satisfied with the vaccination process. The farmers of those villages and the surrounding villages were interested to vaccinate their goats against PPR to prevent huge loss. They were suggested to consult the nearest Veterinary Officer, ARD Department, Govt. of West Bengal regarding vaccination against PPR.

E.10.2. MURSHIDABAD KRISHI VIGYAN KENDRA

1. Abstract of different Training programmes conducted

Discipline	No. of Training Courses		No. of participants												TOTAL
	On-campus	Off-campus	SC			ST			Others			Total			
			M	W	T	M	W	T	M	W	T	M	W	T	
PRACTISING FARMERS															
2008-09	22	11	560	87	647	18	0	18	1053	293	1346	1631	380	2011	2011
2009-10	16	10	525	79	604	5	0	5	538	60	598	1068	139	1207	1207
TOTAL	38	21	1085	166	1251	23	0	23	1591	353	1944	2699	519	3218	3218
RURAL YOUTH															
2008-09	5	0	40	7	47	2	0	2	83	8	91	125	15	140	140
2009-10	4	0	28	5	34	2	2	4	56	10	66	86	18	104	104
TOTAL	9	0	68	13	81	4	2	6	139	18	157	211	33	244	244
EXTENSION FUNCTIONARIES															
2008-09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2009-10	1	-	-	-	-	-	-	-	22	-	22	22	-	22	22
TOTAL	1	-	-	-	-	-	-	-	22	-	22	22	-	22	22

2. Abstract of Frontline Demonstrations (FLDs) conducted

Discipline	No. of FLDs		No. of beneficiaries												TOTAL
	Initiated (No./ha)	Completed (No./ha)	SC			ST			Others			Total			
			M	W	T	M	W	T	M	W	T	M	W	T	
2008-09	10 ha	10 ha	21	0	21	0	0	0	27	0	27	48	0	48	48
2009-10	13.77 ha	13.77 ha	68	6	74	0	0	0	53	0	53	121	6	127	127
TOTAL	23.77	23.77	89	6	95	0	0	0	80	0	80	169	6	175	175

3. Discipline-wise salient achievements through FLDs

(a) Discipline – Animal Science

FLD-1: A Frontline Demonstration was conducted on enhancement of breeding efficiency and milk yield in cattle administering mineral mixture supplementation and outstanding performance obtained as per following design-

Enterprise	Breed	No. of farmers	Parameter / Indicators	Data on parameter in relation to technology demonstrated		Remarks
				Demon.	Local check	
Cattle	Crossed bred	30	1. Percentage of onset of estrous. 2. Milk production.	80% coming in estrous, 8-10 % increased in milk production.	No change	The farmers expensed about Rs. 2.00 per day for each anestrus cow. As a result of mineral mixture supplementation, increased fertility and also milk production

(b) Discipline – Soil Science

FLD-2: The Performance of the FLD on Black gram as revealed is as follows -

Crop	Technology Demonstrated	Variety	No. of Farmers	Area (ha.)	Demo. Yield Qtl. per ha			Yield of local Check Qtl./ha	Increase in yield (%)
					H	L	A		
Black Gram	Full package	WBU-108	38	5	10.50	6.75	8.26	6.5	22%

The economic impact analysis of the FLD on Blackgram was analyzed as bellow -

Average Cost of cultivation (Rs./ha)		Average Gross Return (Rs./ha)		Average Net Return (Profit) (Rs./ha)		Benefit-Cost Ratio (Gross Return / Gross Cost)
Demonstration	Local Check	Demonstration	Local Check	Demonstration	Local Check	
13598.00	11615.00	34692.00*	27300.00*	27094.00	15685.00	2.5

*Selling price of Black gram Rs. 42/- per Kg

(c) Discipline – Horticulture

FLD-3: A new crop - Sprouting Broccoli was grown during the year 2008-09 under FLD programme, which was cultivated by replacing the existing crop Cauliflower in the cropping system of the farmer. From the result it is revealed that the Broccoli gave Benefit : Cost ratio of 2.56 as compared to the 2.29 with Cauliflower.

4. Abstract of On-Farm Trials (OFTs) conducted

Discipline	No. of OFT		No. of beneficiaries												TOTAL
	Initiated (No./ha)	Completed (No./ha)	SC			ST			Others			Total			
			M	W	T	M	W	T	M	W	T	M	W	T	
2008-09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2009-10	4/2-94ha	4/2-94ha	11	0	11	1	0	1	18	0	18	30	0	30	30
TOTAL		4/2-94ha	11	0	11	1	0	1	18	0	18	30	0	30	30

5. Discipline-wise salient achievements through OFTs

(a) Discipline-Horticulture

OFT-1: The two new varieties of Okra namely F1 Hybrid Okra-152 and Sonal (NUN-1142) produce better yield of 13-23t/ha and 12.59t/ha respectively as compare to the farmers variety Mahyco-10 which produce an yield of 9.76t/ha. From the trial it is observed that the infestation of Yellow Vein Mosac Virus was very very less in those two varieties with 2.83 and 3.40% occurrence respectively as compare to the existing variety with 13.77% infestation. B:C ratio raises 1.46 to 2.33 and 2.13 in respect of the varieties

OFT-2: In the OFT Assessment of Elephant Foot Yam (EFY) with intercrops during spring summer season the Technology Option-1 (TO-1) i.e. the growing of improved varieties of EFY along with Amaranthus give the maximum B:C ratio of 3.11 where as the EFY and okra intercrop system give the result with 2.81 B:C ratio as compare to the B:C ratio of 2.61 incase of sole crop with the local variety of EFY.

6. Abstract of other Extension activities conducted

Activity year	No. of activities organized	No. of beneficiaries												TOTAL
		Sc			ST			Others			Total			
		M	W	T	M	W	T	M	W	T	M	W	T	
2008-09	16	196	149	345	12	23	35	531	179	710	739	351	1090	1090
2009-10	12	420	136	556	16	0	16	416	68	484	852	204	1056	1056
TOTAL	28	616	285	901	28	23	51	947	247	1194	1591	555	2146	2146

7. Linkages established with other organizations/line departments/ institutes etc.

Name of organization	Nature of linkage
Principal Agriculture Office, Govt. of West Bengal	Formulation of action plan & RKVY
NABARD	Formulation of action plan
Zilla Parishad	Formulation of action plan
Animal Resource Development Department, GoWB	Formulation of action plan
District Horticulture Department, Govt. of West Bengal	National Horticulture Mission, Rejuvenation of mango trees & establishment of vermicompost units at KVK farm
Soil Testing Laboratory, Govt. of West Bengal	Testing of soil sample and supply of Bio-fertilizer
Pulse & Oil Seed Research Station, Berhampore	Conducting of FLD on oilseeds and pulses
Ambuja Cement, Farakka	Conducting of SRI and OFT

8. Details of outside fund received for the sponsored project/training/seminar etc.

Name of the activity	Name of the sponsoring organization	Total fund received or sanctioned for the purpose (Rs.)
Trial on use of different micronutrients on agri-horticultural crops	Karnataka Agro-chemicals	1800.00
Rejuvenation of old fruit plants at KVK	National Horticulture Mission	8000.00
Establishing Vermicomposting Unit		60,000.00

9. Other relevant information

KVK, Murshidabad hosted the FOCARS Training – 2009 for some of the ARS Scientists. The Field Experience Training (FET) of Probationer Agricultural Research Scientists (ARS) from NAARM, Hyderabad has been hosted successfully at KVK from 27th June to 17th July, 2010.

E.10.3. . JALPAIGURI KRISHI VIGYAN KENDRA

1. Abstract of different Training programmes conducted

Discipline	No. of Training Course		No. of participants											
			SC			ST			Others			Total		
	On Campus	Off Campus	M	W	T	M	W	T	M	W	T	M	W	T
PRACTICING FARMERS:														
Agronomy	14	7	134	217	351	6	16	22	29	21	50	169	254	423
Horticulture	10	6	154	54	208	15	28	43	33	16	49	202	98	300
Animal Science	7	2	74	81	155	6	21	27	45	50	95	125	152	277
Home Science	8	6	-	327	327	-	25	25	-	49	49	-	401	401
TOTAL	39	21	362	679	1041	27	90	117	107	136	243	496	905	1401
RURAL YOUTH :														
Agronomy	4	-	17	27	44	10	-	10	21	1	22	48	48	96
Horticulture	2	-	20	7	27	7	-	7	3	-	3	30	7	37
Animal Science	4	-	12	52	64	89	35	124	11	1	12	112	88	200
TOTAL	10	-	49	86	135	106	35	141	35	2	37	190	143	333
EXTENSION FUNCTIONERIES :														
Agronomy	2	-	10	-	10	-	-	-	26	-	26	36	-	36
Horticulture	2	-	6	-	6	-	-	-	25	-	25	31	-	31
TOTAL	4	-	16	-	16	-	-	-	61	-	51	67	-	67

2. Abstract of Frontline Demonstrations (FLDs) conducted

Discipline	No. of FLDs		No. of beneficiaries											
			SC			ST			Others			Total		
	Initiated (No. / ha.)	Completed (No. / ha.)	M	W	T	M	W	T	M	W	T	M	W	T
Agronomy	35	25	76	-	76	2	-	2	26	-	26	104	-	104
Horticulture	227.28	227.28	1458	-	1458	150	-	150	300	-	300	1908	-	1908
Animal Science	18 nos. 0.05 Ha.	18 nos. 0.05 Ha.	30	21	51	2	2	4	3	3	6	35	26	61
TOTAL			1564	21	1585	154	2	156	329	3	332	3632	26	3658

3. Discipline-wise salient achievements through FLDs

(a) Discipline – Animal Science

FLD-1: Popularization of Ghoongroo Pig Production

Animal Husbandry has profound impact on rural economy, self-employment and poverty alleviation. Jalpaiguri, the largest district of North Bengal is mostly covered with forest and tea garden with a vast stretch unsuitable for agriculture. Self-employment through pig rearing will be achieved successfully particularly in the socio-agro-economical condition of the district. For successful implementation of different livestock enterprises, the new technology must be integrated with the indigenous knowledge and practices of livestock owners & farmers, which can be best achieved through practical & vocational training courses. Based on this thrust area Ramshai KVK organizes long term vocational training programmes on “Ghoongroo pig production as a profitable enterprise for un-employed rural youth.

The farmers of this area who have participated in the piggery training programme already started their own piggery farm. They took the challenge to earn more what they learnt from Ramshai KVK by seeing is believing and doing by learning. The Subject Matter Specialist from Ramshai KVK also visited their farm in a regular interval to boost up their spirit and to provide necessary advice.

These skill development vocational training programmes offered the following advantages:

- ❑ Helped the farmers and farm women to earn more income per unit.
- ❑ Enhanced productivity per unit.
- ❑ Generated more employment opportunity.
- ❑ Improved nutritional and health standard of livelihood.

(b) Discipline – Horticulture

FLD-2: Seed Treatment

Farmers widely adopted seed treatment technology to increase the yield as well as to reduce the pest attack in agricultural crops. The seed treatment practice reduced the cost of cultivation. Approximately 60 % of the farmers have adopted this technology.

FLD-3: Cultivation of Elephant Foot Yam (OI)

Jalpaiguri distinct with its conducive agro-climatic condition offers a vast potential for development of horticultural crops, specially, Elephant Foot Yam. Based on the thrust area analyzed through PRA conducted in the village level, Ramshai KVK organizes long term vocational training programme on “Skill development training on agro techniques for producing different horticultural crops”. This crop favours light sandy soil with high organic matter content. Elephant Foot Yam helps farmers to earn more income per unit area, enhance productivity per unit area, and generate more employment opportunity. Elephant Foot Yam is not a perishable product, so, market glut or influence of market intermediaries can be avoided to get perfect price. It improves nutritional & health standard of livelihood.

These skill development vocational training programme is formulated with following objectives:

- Enhanced productivity per unit area.
- Helped the farmers and farm women to earn more income per unit.

- To generate employment opportunity for women & weaker section of the farming community.
- To uplift economic condition & social recognition.
- To exploit agro-climatic advantage.

For successful implementation of the FLD, training programmes were organized by KVK. A special venture has been taken to implement the FLD at the potential pockets in 6 Blocks of the district, viz. Maynaguri, Dhupguri, Jalpaiguri Sadar, Malbazar, Matiali and Rajganj, where the farmers have experienced the suitability of the crop production for their livelihood generation.

(c) Discipline - Agronomy

FLD-4: Use of Micronutrients in Rabi Crops

Wide use of micronutrients specially boron application increased the yield of rabi crops. Now a days 75 % of the farmers after getting the training has adopted this technology.

4. Abstract of On-Farm Trails (OFTs) / On-Station Trials (OSTs) conducted

Discipline	No. of OFT / OST		No. of beneficiaries											
			SC			ST			Others			Total		
	Initiated (No. / ha.)	Completed (No. / ha.)	M	W	T	M	W	T	M	W	T	M	W	T
Agronomy	2	2	8	-	8	-	-	-	-	-	-	8	-	8
Horticulture	4	4	32	-	32	-	-	-	-	-	-	32	-	32
Animal Science	2	2	20	-	20	-	-	-	-	-	-	20	-	20
Home Science	2	2	-	40	40	-	-	-	-	-	-	-	40	40
TOTAL			60	40	100	-	-	-	-	-	-	60	40	100

5. Abstract of other Extension activities conducted

SN	Activity	No. of activities	Duration (Days)	No. of beneficiaries											
				SC			ST			Others			Total		
				M	W	T	M	W	T	M	W	T	M	W	T
1	Field Day	10	10	170	30	200	15	5	20	50	35	85	235	70	305
2	Kishan Mela	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	Kishan Goshthi / Mahila Goshthi	20	20	180	30	210	25	10	35	50	30	80	255	70	325
4	Exhibition														
5	Film Show	5	5	300	30	330	10	3	13	190	45	235	500	78	578
6	Method Demos.	16	16	110	22	132	5	2	7	98	46	144	213	70	283
7	Farmers Seminar	4	4	130	45	175	7	3	10	68	32	100	205	80	285
8	Group Meeting	12	12	35	7	42	3	-	3	58	32	90	96	39	135
9	Lecturers deliver as resource person	37	37	30	110	140	3	15	18	30	45	75	63	170	233
10	Newspaper coverages	10													
11	Radio Talk	3													
12	TV talk	5													
13	Popular articles	6													
14	Extension Literature	3													
15	Advisory services	80													
16	Scientist visit to farmers field	116	116	80	-	80	10	-	10	120	-	120	210	-	210
17	Farmers visit to KVK	930	-	330	25	355	30	5	35	300	240	540	660	270	930
18	Diagnostic visit	8	-	15	-	15	7	-	7	67	-	67	89	-	89
19	Exposure visit														
20	Farm Science Club convenors meet	6		62	-	62	-	-	-	-	-	-	62	-	62
21	SHG convenors meet	7		-	165	165	-	-	-	-	-	-	-	165	165
22	Mahila Mandal convenor meeting	24		-	720	720	-	-	-	-	-	-	-	720	720
23	Celebration of Independence Day	1		65	15	80	5	3	8	55	25	80	125	43	168

ACTION PHOTOS



Students' class room in the Faculty of Vety. & Animal Sciences.



Dairy Technology Faculty building complex at Mohanpur campus, Nadia



Students laboratory in the Faculty of Dairy Technology



Faculty of Fishery Sci building complex at Chakgaria campus, Kolkata



Development of flower garden under NSS at Main campus, Belgachia, Kolkata



Boys' Hostel at Belgachia main campus,



Trainees' Hostel under DREF at Mohannur

ACTION PHOTOS



Krishna Gandhi, former Governor of West Bengal & Chancellor of the University releasing University Annual Report 2007-08



Sri M. K. Narayanan, Governor of West Bengal & Chancellor of the University releasing CD of documentary film produced by RKVY on backyard poultry farming



Chancellor awarding degree certificates in 5th Convocation of the University



Dr. S. Ayappan, the Secretary, DARE, GOI & DG with the Chancellor & Vice Chancellor of the University



The Vice Chancellor welcoming Sri N. Biswas, the MIC, ARD Deptt., Govt. of West Bengal in the University



National anthem being sung by the dias persons during 6th Convocation of the University



Faculty Teachers' in a Seminar at CLINS, Belgachia campus, Kolkata

ACTION PHOTOS



Prof. Srikumar Banerjee, Chairman of the Atomic Energy Commission, GOI with the Vice Chancellor in the University



Dr. G. C. Tewari, ADG (EPD), ICAR inaugurating Large animal Operation Theatre at Faculty of Vety. & Animal Sciences



Dr. K. D. Kokata, DDG (Agril. Extn.), ICAR visiting CLINS at Belgachia campus



From left- Sri S.K. Misra, MIC (Health & Family Welfare), Sri S. Roy Chowdhury, MIC (Higher Edn.) & Sri K. nanda, MIC (Fisheries Dev.), GoWB at the University during 17 Science & Technology Congress



Dignitaries on the dais in the inauguration programme of 17 State Science & Technology Congress in the University



Invocation of lights in the Canine Congress - 2009 by the hon'ble Vice Chancellor



Exhibition stall of the University erected in the 17th State Science & Technology Congress held at Belgachia main campus, Kolkata

ACTION PHOTOS



Livestock Farm complex at Deptt. of Animal Nutrition, Belgachia campus of the University



Fish processing on solar drier under AICRP on Post-harvest technology, F/ Fishery Sciences



Gateway of University livestock farm complex at Mohanpur campus, Nadia



Ghoongroo pig breeding unit at Mohanpur campus



Value added meat food product is being prepared in the Deptt. of Livestock Products Technology



Stocking of fingerlings in the demonstration pond at Gobindapur village, Paschim Midnapore under NAIP, Comp-3



Training programme on goat farming at Patasimul village of Lodhasuli Under NAIP, Comp-3

ACTION PHOTOS



Inauguration ceremony of farmers' training programme in the Kishan Abas, Belgachia campus



Inaugural ceremony ARD Awareness camp at S. 24 Pgs under AICRP (Goat Improvement)



Inauguration of demonstration unit of duck-cum-fish farming under Technology transfer funded by DST, GoWB



NFBF training launching ceremony by the University at CIFA, Rahara, Kolkata



Inauguration of IGNOU Distance study centre under the Deptt. of Livestock Products Technology



Hon'ble Vice Chancellor, former DREF & ICAR personnel inspecting construction work at Murshidabad KVK under the University



Practical classes during DRDC, N. 24 Pgs. assisted training programme for the Resource Person of SHGs

ACTION PHOTOS



Celebration of technology week at N 24 Pgs KVK during 26-30 Oct,2010



PI in the village level advisory services under AICRP(Goat Improvement)



SRI technology of rice culture Demonstration field under Murshidabad KVK



Observance of field day under FLD on Marigold cultivation by the Murshidabad KVK



FOCARS (FET) of ARS Scientists during village study at Murshidabad KVK during July,2009



Field visit for Horticultural Nursery bed preparation by the Scientists of Jal KVK



Field visit for the trainees during DRDC, N. 24 Pgs. sponsored training programme conducted under DREI

6. Functional linkage with different organizations/institutes/line Departments

Sl.No.	Name of organization	Nature of linkage
1	District Rural Development Cell	Training for SHGs
2	Uttar Banga Krishi Viswavidyalaya (SAU)	Technical support
3	Jaipalguri Zilla Parishad	Infrastructure & NREGA training
4	District Horticulture Department, Govt. of West Bengal	Area expansion under Horticultural Crops, National Horticulture Mission
5	ATMA, Jaipalguri	Training and On Farm Trial
6	Central Plantation Crop research Institute, Mohitnagar	Technical support
7	Animal Resource development Department, Govt. of West Bengal	Joint Diagnostic and Technical Support.
8	NABARD	WADI area expansion work
9	Backward Classes Welfare Department, Govt. of West Bengal	Training, Project Implementation

7. Details of outside fund received for the sponsored project/training/seminar etc.

Name of the funding organization	Amount Received (Rs.)	Purpose
Animal Resources Development Department	8,50,000.00	For Fodder Cultivation
NREGA	4,00,000.00	Training to SHG women members
FPARP	91,000.00	Demonstration

F. DETAILED ABOUT PUBLICATION OF BOOK, BOOKLETS, LEAFLETS, MANUAL ETC.

F.1. FACULTY OF VETERINARY & ANIMAL SCIENCES

F.1.1. Department of Veterinary Gynaecology and Obstetrics

Name of book, booklets, handout, report, manuals etc.	Name of the specific item published	Author / Co-Author (s)
Text Book of Veterinary Gynaecology	Veterinary Gynaecology, Artificial Insemination, Obstetrics and Assisted Reproduction	Prof. Siddhartha Basu (Author)
Practical manual	Veterinary Gynaecology and Obstetrics	Dr. Uttam Datta (Co-author)
Practical manual	Veterinary Andrology and artificial insemination	Dr. Uttam Datta (Co-author)

F.1.2. Department of Veterinary Microbiology

Name of book, booklets, handout, report, manuals etc.	Name of the specific item published	Author / Co-Author (s)
Teaching manual	Hans Palan (Bengali)	Dr. Indrajit samanta
Report	Annual Reports of All India Network Project (AINP) on Blue tongue disease for the year 2007-08 and 2008-09	Dr. Siddhartha Narayan Joardar
Report	Annual report of RGYI scheme, DBT for 2008-09	Dr. Siddhartha Narayan Joardar

F.1.3. Department of Veterinary Surgery and Radiology

Name of book, booklets, handout, report, manuals etc.	Name of the specific item published	Author / Co-Author (s)
Book	Restraint, First Aid and Physiotherapy in Veterinary Practice	Dr. Samit Kr. Nandi (Co-author)
Book (as per VCI Syllabus)	Veterinary Surgery and Radiology	Dr. Samit Kr. Nandi (Co-author)
Handout for Work shop conducted by VCI, West Bengal	Advances in Veterinary Surgery & Radiology	Dr. Samit Kr. Nandi (Contributor)

F.1.4. Department of Veterinary Epidemiology and Preventive Medicine

Name of book, booklets, handout, report, manuals etc.	Name of the specific item published	Author / Co-Author (s)
Practical Manual	Epidemiology for B.V.Sc & A.H. 7 th Semester.	Prof. Chanchal Guha & Dr. Ujjal Biswas
Practical Manual	Preventive Veterinary Medicine-I for B.V.Sc & A.H. 8 th Semester	Prof. Chanchal Guha & Dr. Ujjal Biswas
Practical Manual	Preventive Veterinary Medicine-II for B.V.Sc & A.H. 9 th Semester	Prof. Chanchal Guha & Dr. Ujjal Biswas

F.1.5. Department of Veterinary Public Health

Name of book, booklets, handout, report, manuals etc.	Name of the specific item published	Author / Co-Author (s)
Practical Manual	Milk Hygiene and Public Health	Dr. Chanchal Debnath & Prof. Amiyo Kr. Pramanik
Practical Manual	Meat Hygiene and Public Health	Dr. Chanchal Debnath & Prof. Amiyo Kr. Pramanik
Practical Manual	Environmental Hygiene and Public Health	Dr. Chanchal Debnath & Prof. Amiyo Kr. Pramanik

F.1.6. Department of Veterinary Anatomy and Histology

Name of book, booklets, handout, report, manuals etc.	Name of the specific item published	Author / Co-Author (s)
Text Book, 4 th Edn.	Primary Veterinary Anatomy	Prof. Ranajit Kr. Ghosh
Text Book, 1 st Edn.	Essentials of Veterinary Embryology	Prof. Ranajit Kr. Ghosh

F.1.7. Department of Livestock Products Technology

Name of book, booklets, handout, report, manuals etc.	Name of the specific item published	Author / Co-Author (s)
Text Book, Jaypee Publishers, New Delhi	Milk and Milk Product Technology	Prof. Subhasis Biswas
Book	Meat and Egg Technology	Prof. Subhasis Biswas
Book	Food Processing	Prof. Subhasis Biswas
A chapter in Book : <i>Functional Food and Chronic Diseases</i> , Vol-4, Amazon Publication, USA, 2008	Meat Microbiology and Food Safety - A Review	Prof. Subhasis Biswas
Booklet published by DREF, WBUAFS, December 2008	Murgi Prokriakaran (Bengali)	Prof. Subhasis Biswas
Booklet, Published by NEWS, May 2009	Sunderban- Bikalpa Jibika (Bengali)	Prof. Subhasis Biswas
Practical Manual	Course No. LPT – 311 for B.V.Sc & A. H.	Prof. Subhasis Biswas & Dr. Debasis Bhattacharyya
Practical Manual	Course No. LPT – 321 for B.V.Sc & A. H.	Prof. Subhasis Biswas & Dr. Debasis Bhattacharyya
Practical Manual	Course No. LPT – 411 for B.V.Sc & A. H.	Prof. Subhasis Biswas & Dr. Debasis Bhattacharyya
Study material for Indira Gandhi National Open University	Study material for Diploma in Meat Technology	Prof. Subhasis Biswas & Dr. Debasis Bhattacharyya

F.1.8. Department of Veterinary Pathology

Name of book, booklets, handout, report, manuals etc.	Name of the specific item published	Author / Co-Author (s)
Chapters in Booklet	Management practices for Rearing of RIR poultry and Performance Characters of good layers bird in the Booklet published by RKVY on Model Backyard poultry farming	Dr. Saktipada Pradhan
Practical manual	Veterinary Pathology for B.V.Sc. & A.H. course No. VPP 211, VPP221, VPP311, VPP	Dr. Sunit Kr. Mukhopadhyay, Dr. Nimai Chandra Patra and Dr. Saktipada Pradhan

F.1.9. Department of Veterinary Medicine, Ethics & Jurisprudence

Name of book, booklets, handout, report, manuals etc.	Name of the specific item published	Author / Co-Author (s)
Reference Book, Intas Pharmaceuticas (2008)	Diseases of companion animals and their emergency medicine	Prof. Amamlendu Chakrabarti (Editor)
Text Book, Kalyani Publishers (2010)	Practice of Poultry Medicine	Prof. Amamlendu Chakrabarti (Editor)

F.2. FACULTY OF FISHERY SCIENCES

F.2.1. Department of Fishery Biology and Resources Management

Name of book, booklets, handout, report, manuals etc.	Name of the specific item published	Author / Co-Author (s)
Chapter in Book: <i>Aquatic Biodiversity</i> (L.R. Patro Ed.), Discovery Publishing House, New Delhi (2009), pp:53-62	Biological considerations in shrimp farming	Prof. Sudhir Kr Das (Co-author)
Chapter in Book: <i>Issues & Challenges in Biotechnology</i> (L.R. Patro Ed.), Discovery Publishing House, New Delhi (2009)	Biotechnological options to enhance aquafood production	Prof. Sudhir Kr Das (Co-author)
Chapter in Book: <i>Environmental Awareness</i> (L.R. Patro, Ed.), Discovery Publishing House, New Delhi (2009), pp:190-196	Disaster management and its need in formal education	Prof. Sudhir Kr Das (Co-author)

F.2.2. Department of Fishery Biology and Resources Management

Name of book, booklets, handout, report, manuals etc.	Name of the specific item published	Author / Co-Author (s)
Chapter in Book: <i>Fish & Fisheries in North East India - Recent Advances and Rebuilding</i> . Geophil Publishing House, Guwahati, Shillong (2009), pp:54-60	Extruded Product- A Novel Method of Value Addition	Dr. Sreekanta Sarkar, Prof. K.C Dora (Co-authors)

F.3. DIRECTORATE OF RESEARCH, EXTENSION AND FARMS

Name of book, booklets, handout, report, manuals etc.	Name of the specific item published	Author / Co-Author (s)
Chapter in Book: <i>Evaluation & Impact Assessment of Technologies in Agriculture, Horticulture, Livestock, Fisheries and Aquaculture in India</i>	Agro-Ecosystem Analysis and Impact Assessment of Technological Interventions – A Case Study	Dr. Bimal Kinkar Chand
Chapter in Book: <i>Fish & Fisheries in North East India - Recent Advances and Rebuilding</i> . Geophil Publishing House, Guwahati, Shillong (2009), pp:54-60	Extruded Product- A Novel Method of Value Addition	Dr. Bimal Kinkar Chand (Co-author)
Training Manual (2010)	Training Manual on livestock farming for self-employment of the rural women of SHGs	Dr. Bikash Kanti Biswas & Dr. Sourav Chandra (Editor)
Training Calendar, Gipidi Boxco (2009)	Round the training calendar of the University on animal husbandry, dairy technology & fishery sciences	Dr. Sourav Chandra
Status of KVKs under WBUAFS (2010)	Status paper on KVKs under the aegis of the University	Dr. Sourav Chandra

G. PUBLICATION ON RESEARCH FINDINGS

G.1. FACULTY OF VETERINARY & ANIMAL SCIENCES

G.1.1. Department of Animal Genetics and Breeding

Akuli, S.; Sahoo, A. K.; Taraphder, S. and Basu, S. (2008). Cytogenetic study on metaphase chromosome of Mirzafarmagn sheep. *Proc. 8th Indian Veterinary Congress and XV Annual conference of IAAVR* held at Kolkata, India during 22-24 February.

Dhara, K. C., Ray, N. and Taraphder, S. (2009). Body weight and body measurement of Garole sheep under semi-intensive system of management. *Proc. Int. symposium on inorganic material* held at Kolkata, India during December.

Mitra, M.; Taraphder, S.; Verma, A.; Sonawane, G. S.; Gupta, I. D. and Hazra, R. (2010). Genetic variants of TI R4 gene and their association with incidence of mastitis in Murrah buffaloes. *Proc. Int. Buffalo Conf.* held at New Delhi, India during January.

Pan, S and Sahoo, A.K. (2008). Use of the Fec B (Booroola) gene in sheep breeding programmes. *ACIAR. Proc. Helen Newton Turner Memorial Int. Workshop* held at Pune, Maharashtra, India during 10-12 November. Pp. 32-43.

Panja, P.K. and Taraphder, S. (2010). Estimation of optimum first dry period in Karan Fries cattle. *Orissa Vet. J.* (Accepted on 10 March).

Panja, P.K. and Taraphder, S. (2010). Optimization of age at first calving in Karan Fries cattle. *Orissa Vet. J.* (Accepted on 10 March).

Roy, M.; Pandey, P. K.; Roy, S. and Misra, S. (2008). Environmental contamination due to Arsenic and its effects on livestock system. *Indian J. Anim. Sci.* **78**: 1195-1198.

Sengupta, D.; Basu, S. and Sahoo, A. K. (2008). The effect of diclofenac sodium on oxytocin mediated luteolysis. *Proc. 8th Indian Veterinary Congress and XV Annual conference of IAAVR* held at Kolkata, India during 22-24 February.

Sudhakar, A. and Misra, S. K. (2008). Body weight prediction in Bengal goats using haematological parameters. *J. Interacad.* **12**: 218-221.

Sudhakar, A. and Misra, S. K. (2009). Genetic analysis of hematological parameters and body weight in Bengal goats. *Indian J. Anim. Hlth.* (Accepted)

Taraphder, S.; Tomar, S. S.; Gupta, A. K. and Sahoo, A.K. (2008). Study on disposal pattern in an organized herd of Murrah buffaloes. *Proc. 8th Indian Veterinary Congress and XV Annual conference of IAAVR* held at Kolkata, India during 22-24 February.

Yadav, D. K.; Taraphder, S.; Sahoo, A. K. and Dhara, K.C. (2009). Investigation of Transferrin Polymorphism in Garole sheep. *Vet. Res. Comm.* (Accepted on 10 March).

G.1.2. Department of Veterinary Biochemistry

Baksl, R.; Baksi, S.; Chattopadhyay, S. and Batabyal, S. (2008). Isolation and immunobiochemical characterization of OMP of *E. coli* isolates of dog. *Anim. Sci. Reporter.* **2** (4): 147-149.

Baksl, R.; Baksi, S.; Chattopadhyay, S. and Batabyal, S. (2009). Isolation and immunobiochemical characterization of secretory protein of *E. coli* isolates of dog. *Anim. Sci. Reporter.* **3** (2): 43-46.

Barun, B.K.; Chattopadhyay, S.; Batabyal, S.; Ghosh, S.P. and Vinita kumara. (2008). Changes in biochemical and enzymatic profile in *peste des petits* (PPR) infected goats. *Indian J. Field Vets.* **4** (1): 10-12.

Das, P.; Joardar, S. N.; Abraham, T. J.; Kamilya, D. and Batabyal, S. (2009). Dynamic changes in immune-effector characteristics of Indian major carp, Rohu (*Labeo rohita*) sensitized with *Aeromonas hydrophila*. *Indian J. Comp. Microbiol. Immunol. Infect. Dis.* **30** (1): 45-49.

De, A.; Batabyal, S.; Biswas, S. K.; Chand, K.; Singh, R.K. and Mondal, B. (2009). Surveillance of Blue tongue virus antibody in goats using a recombinant VP7- based indirect ELISA in the coastal saline area of West Bengal. *India. Veterinaria Italiana.* **45** (2): 339-348.

Gayen, D.; Chattopadhyay, S. and Batabyal, S. (2009). Partial purification and immunobiochemical characterization of 26 Kda fertility associated protein of normal and BIV seropositive bull: a comparative case study. *J. Natural Listoryal.* **5** (1): 12-26.

Ghosh, P.; Chattopadhyay, S.; Mukherjee, R. and Batabyal, S. (2008). Immuno biochemical characterization of 55 Kda fertility associated protein in Garole sheep (*Ovis aries*) seminal plasma. *Indian J. Vet. Res.* **17** (1): 1-10.

Ghosh, P.; Chattopadhyay, S.; Mukherjee, R.; Aich, R. and Batabyal, S. (2008). Partial purification and immunological characterization of 26 kDa fertility associated protein in Garole sheep (*Ovis aries*) seminal plasma. *Anim. Sci. Reporter.* **2** (4): 138-146.

Kesh, S.S.; Pradhan, P.C.; Aich, R.; Chattopadhyay, S. and Batabyal, S. (2009). Isolation, purification and biochemical characterization of erythrocyte membrane spectrin in Jamunapuri goat. *J. Interacad.* **13** (1): 90-94.

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- Paul, R.K.; Batabyal, S.; Chattopadhyay, S.; Niyogi, D. and Kesh, S. S. (2008). A study on polypeptide profiles of blood plasmas and fluids from rete testes, epididymis and vas deference of Garole sheep by SDSPage. *J. Interacad.* **12** (4): 517-520.
- Polley, S.; De, S.; Batabyal, S.; Kaushik, R.; Yadav, P.; Arora, J. S.; Chattopadhyay, S.; Pan, S., Barhma, B. T.K. and Goswami S.I. (2009). Polymorphism of fecundity genes (BMPRIB, BMP15 and GDF 9) in the Indian prolific Black Bengal goat. *Small Ruminants Res.* **85** : 122-129.
- Polley, S.; De, S.; Mukherjee, A.; Vinesh, P.V.; Batabyal, S.; Arora, J. S.; Pan, S.; Samanta, A. K.; Datta, T. D. and Goswami, S. L. (2009). Polymorphism of BMPR IB, BMP 15 and GD F9 fecundity genes in prolific Garole choep. *Trop. Anim. Hlth Prod.* (Published online on 18 Dec.).
- Sumathy, R.; Chattopadhyay, S.; Batabyal, S. and Pramanik, B.K. (2009). Haematobiochemical changes in drug induced immunosuppressed rabbits. *Indian J. Field Vets.* **15** (1) : 1-4.

G.1.3. Department of Livestock Production Management

- Halder, A.; Paul, R.; Pan, S.; Mitra, A.; Biswas, C.; Majumder, D.; Ghosh, S.; Singh, N. P.; Ngachaa, S. V.; Bajurbhoruea, K. M. and Prakash, B. S. (2009). Validation of a simple sensitive immunoassay (FIA) for determination of caprine plasma LH. *Small Ruminant Res.* **84**: 22-27.
- Pan, S. and Layek, S. S. (2009). Ecotourism in Sundarban delta. *Solitaire*. (ITC, UK). **20**: 14-15.
- Pan, S. and Shao, A. K. (2009). The Garole sheep – history, management, production and current status. In: Use of Fec B (Booroola) gene in sheep-breeding programs. *Proc. ACIAR 133. Australian Centre for International Agricultural Research, Australian Govt.* : 32-43.
- Pan, S.; Dhawan, M. and Pica-Ciamarra, U. (2009). Backyard poultry farming through self-help groups. *South Asia Pro Poor Livestock Policy Prog.* (FAO). SGPA 11.
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G.1.4. Department of Veterinary Gynaecology and Obstetrics

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- Datta, U.; Hembram, M. L.; Roy, S. and Mukherjee, P. (2009). Natural biomolecules from marine snail (*Telescopium telescopium*) and structure of its sperm: A phylogenetic study. *Nature Precedings* : <http://hdl.handle.net/10101/npre.2009.3386.1> > or <http://precedings.nature.com/documents/3386/version/1>.
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- Kumar, S. D.; Ghosh, T. K.; Biswas, U.; Datta, U.; Das, P. and Kundu, S. (2008). Spermatheca gland extract of snail (*Telescopium telescopium*) has wound healing potential: an experimental study in rabbits. *Int. J. Lower Extremity Wounds.* **7** (4) : 204-209.
- Kumar, S.; Ghosh, D.; Datta, U.; Das, P.; Mukhopadhyay, S. K. and Kundu, S. (2008). Wound healing potential of spermatheca gland extract of snail (*Telescopium telescopium*) in rabbits. *Indian J. Vet. Surg.* **29** (1) : 4-6.
- Maji, S.; Datta, U. and Hembram, M. L. (2009). Cell surface changes associated with in-vitro capacitation and acrosome reaction of goat epididymal sperm by marine bioactive compound from snail *Telescopium telescopium*. *Veterinarski Arhiv.* (Accepted).
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- Mukherjee, P.; Ghosh, D.; Roy, S. and Basu, S. (2008). Management of femur fractures with self made polymethylmethacrylate plates, stainless steel plates, intra-medullary pins and interlocking nails in dogs. *Int. J. Med.* (http://priority.com/vet/dog_bone_fixation.htm).
- Roy, S.; Ghosh, D.; Datta, U.; Dasgupta, P.S. and Roychoudhary, U. (2008). Preparation of freeze dried glandular extract from marine mollusca *Telostoeopium telescopium*. *Indian J. Anim. Hlth.* **47** (1) : 51-52.
- Roy, S.; Ghosh, G. L.; Moulik, N. and Datta, U. (2008). Surgical management of intestinal obstruction in a dog. *Indian Vet. J.* **85**: 75-76.
- Roy, S.K.; Batabyal, K.; Das, B. and Singh, B. (2009). Antiblogram of *Escherichia coli* isolated from infected bovine genitalia. *Environ. Ecol.* **27** (4) : 1524-1525.
- Roy, S.K.; Das, B. and Batabyal, K. (2009). Antiblogram of pathogenic *Escherichia coli* isolated from canine pyometra cases. *J. Interacad.* **13** (4) : 481-483.

G.1.5. Department of Veterinary Parasitology

- Dandopadhyay, S.; Sasmal, D.; Dutta, T. K.; Ghosh, M. K.; Sarkar, M.; Sasmal, N. K. and Bhattacharya, M. (2008). Seroprevalence of Brucellosis in yak (*Poephagus grunniens*) in India and evaluation of protective immunity to S-19 Vaccine – a field study. *Trop. Anim. Hlth. Prod.* **40**: DOI10.1007/s11250-008-9228-0.
- Chinya, A.; Jas, R.; Bandyopadhyay, M.C. and Ghosh, J.D. (2008). Anticoccidial efficacy of 'Immular', an herbal preparation against experimentally induced caecal coccidiosis in broiler chicken. *J. Interacad.* **12** (1) : 76 – 81.
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G.3.4. Department of Fishery Extension

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- Barman, R. C.; Dana, S. S. and Talwar, N. A. (2009). Empowering women for sustainable beel fisheries in Assam. *J. Environ. Sociobiol.* **6** (1): 93-97.
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G.3.5. Department of Fishery Engineering

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- Chand, B. K. and Sarkar, S. (2008). Development of value added fishery products from low-cost marine fish (in Bengali). *Training manual for fishery livelihood training programme on 'Low cost fish drying, post harvest processing, value added fishery product and ornamental fisherios'* by National Fisheries Development Board held at RRS, BCKV, Kakdwip during 15-24 February.
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H. HUMAN RESOURCE DEVELOPMENT (HRD)

In order to strengthen the basic, applied and strategic researches on Veterinary and Animal Sciences, Dairy Technology and Fishery Sciences, interaction of the University scientists with the scientists from other Institutes within the State, Country and abroad as well facilitates easy percolation of new ideas and further improvement of innovations in multifaceted ways. Such interactions through participation in different conference, training programmes, summer school, short courses, seminar, symposium, workshop etc. helps in keeping abreast with the latest scientific knowledge and technologies. The University teachers/scientists/officers and also non-teaching staff are regularly permitted to attend such programmes of various disciplines organized by other Institutions / Agencies. This effective means of Human Resource Development engaged in the University is briefed as hereunder :

H.1. PARTICIPATION OF THE TEACHERS/ SCIENTISTS/ OFFICERS IN THE SEMINAR, SYMPOSIUM, WORKSHOP, TRAINING PROGRAMMES ETC.

H.1.A. FACULTY OF VETERINARY AND ANIMAL SCIENCES

H.1.A.1. Department of Animal Genetics and Breeding

Name of the faculty member with designation.	Title of seminar, symposium, workshop and training attended	Venue	Duration (Dates)
Dr. S. Taraphder, Lecturer	Application of Bioinformatic tools in Animal Genome Analysis,	NDRI, Karnal, Haryana	27 Jan. - 16 Feb. 2009

H.1.A.2. Department of Livestock Production Management

Name of the faculty member with designation.	Title of seminar, symposium, workshop and training attended	Venue	Duration (Dates)
Dr. S. Pan, Professor	Regional Conference on 'Food security & sustainable agriculture development'	IGNOU, Agartala, Tripura	24-25 Nov. 2008
	XVIII Annual Conference on 'Contemporary issues in developmental economics'	Jadvpur University, Kolkata, WB	19-20 Dec. 2008
	Helen Newton Turner Memorial International Workshop on 'Using Fec B (Booroola) gene in sheep breeding programs' organized by NARI, Pune and University of New England, Australia	NARI, Pune	10-12 Nov. 2008

H.1.A.3. Department of Veterinary Microbiology

Name of the faculty member with designation.	Title of seminar, symposium, workshop and training attended	Venue	Duration (Dates)
Dr. S. N. Joardar, Lecturer	Eighth Indian Veterinary Congress and XV Annual Conference of IAAVR and National Symposium on 'Public-Private- Partnership In Veterinary Research and Education Sector'	WBUAFS, Kolkata, W.B.	22-24 Feb. 2008
	Continuing Medical Education Programme	Institute of Life Sciences, Bhubaneswar	11 Dec. 2008
	The 35 th meeting of Indian Immunology Society	Institute of Life Sciences, Bhubaneswar	12 – 14 Dec. 2008
	National Congress & National Symposium of 6 th Convocation of Indian Society for Advancement of Canine Practice on 'Modern Look on canine Health care Management in the Global Perspective' organized by F/O. VAS, WBUAFS	Hotel Hindustan International, Kolkata, W.B.	6-8 Feb. 2009
	National seminar on 'Aquaculture research in India : status and strategies for future development	Utkal University, Bhubaneswar, Orissa	26 – 27 March, 2009
	UGC sponsored Refresher course on 'Role of analytical instruments in research'	Jadavpur University, Kolkata, WB	2 – 23 Feb. 2009
	The 17 th State Science & Technology Congress organized by DBT, Govt. West Bengal and WBUAFS	WBUAFS, Kolkata, W.B.	4 –5 March, 2010
Dr. D. P. Isore, Lecturer	Farmers' training programmes, health camps, vaccination camps under NAIP, AICRP & RKVY as resource person	Mohanpur, Lodhasuli, Gosaba, Sandeshkhali	Feb., March, Aug., Nov., Dec. 2009, Jan. 2010
Dr. I. Samanta, Lecturer	Training programme on 'Bioinformatics – concept and application'	CAU, Aizawl, Mizoram	26 – 27 Feb. 2009
	Training programme for practicing farmers under ATMA as resource person	KVK, CRIJAF, ICAR, Budbud, Burdwan, WB	18 Sept. 2009
Dr. S. N. Joardar, Lecturer; Dr. I. Samanta, Lecturer and Dr. D. P. Isore, Lecturer	National seminar on 'Role of Veterinarians on social and livelihood development'	F/O. VAS, WBUAFS, Kolkata, W.B.	2 Jan. 2010
Dr. S. N. Joardar, Lecturer and Dr. I. Samanta, Lecturer	The 15 th State Science & Technology Congress organized by DBT, Govt. West Bengal and WBUAFS	Bengal engineering & Science University, Howrah, W.B.	28 – 29 Feb. 2008
	The 16 th State Science & Technology Congress organized by DBT, Govt. West Bengal and WBUAFS	Burdwan University, W.B.	28 –29 Feb. 2009

H.1.A.4. Department of Veterinary Biochemistry

Name of Faculty member with Designation	Title of Seminar, symposium, workshop, training attended	Venue	Duration (Dates)
Dr. S. Chattopadhyay, Sr. Lecturer and Dr. S. Batabyal, Sr. Lecturer	Eighth Indian Veterinary Congress and XV Annual Conference of IAAVR and National Symposium on 'Public-Private- Partnership in Veterinary Research and Education Sector'	WBUAFS, Kolkata, W.B.	22-24 Feb. 2008
Dr. S. Batabyal, Sr. Lecturer	XXXVth Annual National Conference of Clinical Biochemist of India	Vedic Village, Kolkata, W. B.	19-20 Dec. 2008
	National Congress & National Symposium of 6 th Convocation of Indian Society for Advancement of Canine Practice on 'Modern Look on canine Health care Management in the Global Perspective' organized by F/O. VAS, WBUAFS	Hotel Hindustan International, Kolkata, W.B.	6-8 Feb. 2009
	National Symposium of Indian Society of Animal Production & Management (ISAPM) on 'Organic Livestock Farming- Global Issues, Trends & Challenges'	WBUAFS, Kolkata, W.B.	26-28 Feb. 2009
	Ninth Indian Veterinary Congress and XVIth Annual Conference of IAAVR and National Symposium on 'Transition from Empiricism to molecularism in Veterinary research for a sustainable animal health and production'	Bombay Veterinary College, Mumbai	20- 21 Feb. 2009

H.1.A.5. Department of Veterinary Gynaecology and Obstetrics

Name of Faculty member with Designation	Title of seminar, symposium, workshop, training attending	Venue	Duration (Dates)
Dr. S. Basu Professor	Studies on Vaginal Cytology in different phases of Estrus Cycle in Bitch. National Symposium on 'Modern look on Canine Health Care Management in Global Perspective' Organized by ISACP & F/O. VAS, WBUAFS	Hotel Hindustan International, Kolkata, W.B.	6-8 Feb. 2009 (3 days)
Dr. S. Basu Professor and Dr. (Mrs.) K. Roy, Sr. Lecturer	Antigenicity of Bull Acrosome in Model Rabbits in 17 th Bangla Science Congress organized by DBT, Govt. West Bengal and WBUAFS	WBUAFS, Kolkata, W.B.	4-5 March, 2010 (2days)
Dr. S. K. Roy, Reader	Training programme on 'Impact of Frozen semen into female genital tract of cow'	Haringhata, Mohanpur, Nadia, W.B.	9-16 Sept. 2008
	Extension activity on 'Infertility of cow and its remedy ' in the discussion held at Doordarshan Kendra ,Kolkata	Doordarshan Kendra, Kolkata	3 Feb. 2009
Dr. U. Datta, Sr. Lecturer and Dr. (Mrs.) K. Roy, Sr. Lecturer	Eighth Indian Veterinary Congress and XV Annual Conference of IAAVR and National Symposium on 'Public-Private- Partnership in Veterinary Research and Education Sector'	WBUAFS, Kolkata, W.B.	22-24 Feb. 2008
Dr. U. Datta, Sr. Lecturer	Refresher course on Recent perspective of nano Science and Technology	Jadavpur University, Kolkata, W.B.	4-26 Dec. 2008 (21 days)

H.1.A.6. Department of Veterinary Parasitology

Name of the faculty member	Title of seminar, symposium, workshop	Venue	Duration
Dr. J.D. Choudh, Professor	XIX National Congress of Veterinary Parasitology	UADVA/30, Ludhiana, Punjab	Feb. 2009
	National Seminar on "Role of Veterinarians on Social and Livelihood Development"	WBUAFS, Kolkata, W.B.	10-11 Jan. 2010
Dr. S. Baidya, Lecturer	Advanced PCR based DNA Fingerprinting for improvement of Farm Animals	Deptt. of AGB, F/O.VAS, WBUAFS, Kolkata, W.B.	31 Jan - 14 Feb. 2008 (15 days)
Dr. S. Baidya, Lecturer and Dr. J.D. Ghosh, Professor	Eighth Indian Veterinary Congress and XV Annual Conference of IAVR and National Symposium on 'Public-Private- Partnership in Veterinary Research and Education Sector'	WBUAFS, Kolkata, W. B.	22-24 Feb. 2008
	National Symposium of Indian Society of Animal Production & Management (ISAPM) on 'Organic Livestock Farming- Global Issues, Trends & Challenges'	WBUAFS, Kolkata, W. B.	26-28 Feb. 2009

H.1.A.7. Department of Veterinary Pharmacology and Toxicology

Name of Faculty member with Designation	Title of seminar, symposium, workshop, training attending	Venue	Duration (Dates)
Dr. T.K. Mandal, Professor	Sixth Annual Conference of ISVPT. Paper presented on Pharmacokinetics of ceftriaxone in hepatopathic and nephropathic goats	Mathura Veterinary College, U.P.	2008
Dr. T. K. Sar, Lecturer	Orientation Training Programme organized by U.G.C. Academic Staff College	Jadavpur University, Kolkata, W.B.	1-27 Feb. 2010 (24 days)
Dr. T.K. Mandal, Professor and Dr. T. K. Sar, Lecturer	First Regional Conference of Indian Pharmacological Society	Rajendra Institute of Medical Sciences, Ranchi, Jharkhand	19-20 April, 2008
	The 41 st Annual Conference of Indian Pharmacological Society	AIIMS, Ansari Nagar, New Delhi	18-20 Dec. 2008
	Second Eastern Regional Conference of Indian Pharmacological Society	Central Research Institute of Ayurveda, Kolkata, W.B.	28-29 Nov., 2008
	International Conference on Integrative & Personalized Medicine and 42 nd Annual Conference of Indian Pharmacological Society	Swabhami, Kolkata, W.B.	10-12 Dec. 2009

H.1.A.8. Department of Veterinary Surgery and Radiology

Name of Faculty member with Designation	Title of seminar, symposium, workshop, training attending	Venue	Duration (Dates)
Dr. (Mrs.) S. Hazra	Short term training on "Electro physiology of vision"	L. V. Prasad Eye Institute, Hyderabad, A.P.	1-30 April, 2008
	Short-term training on "Phacoemulsification" from R.P.Center for ophthalmic sciences	AIIMS, New Delhi	1 - 30 Dec. 2008
	Asia- ARVO Congress & International Meeting on 'Research in Vision and Ophthalmology'	Hyderabad, A.P.	15-18 Jan. 2009
	Annual Congress of All India Ophthalmological Society	Kolkata, W.B.	21- 24 th Jan. 2010
Dr. A. Maji, Lecturer	Annual Conference of Indian Society for Veterinary Surgery and National symposium	TANUVAS, Namakkal, T.N.	6 – 8 Nov., 2008
	National Symposium on 'Modern look on Canine Health Care Management in Global Perspective' Organized by ISACP & F/O. VAS, WBUAFS	Hotel Hindustan International, Kolkata, W.B.	6-8 Feb. 2009 (3 days)
	Global Meet on Veterinary Public Health and Symposium on 'New Horizon in Food security with special reference to veterinary public health & hygiene- evolving strategies with global perspective'	Hotel Taj Residency, Lucknow, U.P.	19-21 Nov. 2008
	National Symposium of Indian Society of Animal Production & Management (ISAPM) on 'Organic livestock farming- global issues, trends & challenges'	WBUAFS, Kolkata, W. B.	26-28 Feb. 2009
	"Stool War" workshop on Human Urology	Nadiad Urological Hospital, Gujrat	29 – 30 May, 2009
	Annual Congress of ISVS & International Symposium	GADVASU, Ludhiana, Punjab	11 – 13 Nov. 2009
	Novel Approaches in Companion Animal Practice	Bangalore Veterinary College, Bangalore	21– 23 Jan. 2010
	Training programme of Agricultural Technology and Management Agency	Amta-1 Block, Howrah, W. B.	28 March, 2008
Dr. S. K. Nandi, Sr. Lecturer	International Conference on "Tissue Engineering & Stem Cell Research using Nanomaterials (Nano Bio-2009)"	Kochi, Kerela	17-19 Feb. 2009
	Invited paper delivered on "Prospects of bioceramics in canine orthopaedic surgery" in the National Symposium on 'Modern look on Canine Health Care Management in Global Perspective' Organized by ISACP & F/O. VAS, WBUAFS	Hotel Hindustan International, Kolkata, W.B.	6-8 Feb. 2009 (3 days)
	Invited talk delivered in the 1 st International Conference on "Recent advances in Surgery-2009 (ICOS-2009)"	Kottayam, Kerala	4-6 Sept. 2009
	The 79 th Annual Session of the National Academy of Sciences, India and National Symposium on "Science and Technology and the Young (Career, Creativity, Excitement)"	Calcutta University, Kolkata, W.B.	14-16 Dec. 2009
Dr. S. K. Nandi, Sr. Lecturer and Dr. (Mrs.) S. Hazra	Eighth Indian Veterinary Congress and XV Annual Conference of IAAVR and National Symposium on 'Public-Private- Partnership in Veterinary Research and Education Sector'	WBUAFS, Kolkata, W.B.	22-24 Feb. 2008

H.1.A.9. Department of Veterinary Epidemiology and Preventive Medicine

Name of Faculty member with Designation	Title of seminar, symposium, workshop, training attending	Venue	Duration (Dates)
Dr. U. Biswas, Sr. Lecturer	Advancement in Molecular Diagnosis of Important Bacterial Diseases of Animals	Division of Bacteriology and Mycology, IVRI, Izatnagar, U.P.	15-24 Sept. 2009
	Training of Trainers on advancement of Elephant Healthcare & Managerial Practices	College of Veterinary Science, Assam Agricultural University, Guwahati, Assam	1-11 Dec. 2009
	Global Meet on Veterinary Public Health and Symposium on 'New Horizon in Food security with special reference to veterinary public health & hygiene- evolving strategies with global perspective'	Hotel Taj Residency, Lucknow, U.P.	19-21 Nov. 2008
	National Symposium on 'Modern look on Canine Health Care Management in Global Perspective' Organized by ISACP & F/O. VAS, WBUAFS	Hotel Hindustan International, Kolkata, W.B.	6-8 Feb. 2009 (3 days)
Dr. C. Guha, Professor & Dr. U. Biswas, Sr. Lecturer	Conservation of Animal Genetic Resources Biodiversity with special reference to West Bengal Context	Kolkata, W.B.	27-28 Dec. 2009
	Emerging challenge and strategies for disease and health management of livestock, pet and zoo animal.	Ranchi, Jharkhand	26-28 Feb. 2008
	Eighth Indian Veterinary Congress and XV Annual Conference of IAAVR and National Symposium on 'Public-Private- Partnership in Veterinary Research and Education Sector'	WBUAFS, Kolkata, W.B.	22-24 Feb. 2008

H.1.A.10. Department of Veterinary Public Health

Name of Faculty member with Designation	Title of seminar, symposium, workshop, training attending	Venue	Duration (Dates)
Dr. C. Debnath, Lecturer	Winter School on 'Pesticides and veterinary drug residues in foods of animal origin'	Deptt. of VPH, CVAS, GBPUAT, Pantnagar, Uttarakhand	24 Feb.- 15 March, 2008
	Winter School on 'Molecular diagnostic techniques for zoonotic & food borne diseases'	Divn. of VPH, IVRI, Izatnagar, Bareilly, U.P.	7-27 Feb. 2009
	Launching Workshop of ICAR sponsored 'Outreach programme on zoonotic diseases'	Divn. of VPH, IVRI, Izatnagar, Bareilly, U.P.	17 Nov. 2009
Dr. C. Debnath, Lecturer and Dr. A.K. Pramanik, Rtd. Professor(Contractual)	Global Meet on Veterinary Public Health and Symposium on 'New Horizon in food security with special reference to veterinary public health & hygiene- evolving strategies with global perspective'	Hotel Taj Residency, Lucknow, U.P.	19-21 Nov. 2008
	The '52 nd Conference of the Indian Public Health Association, West Bengal State Branch'	Rabindra Bhawan, Barasat, W.B.	26 Oct. 2008

H.1.A.11. Department of Animal Nutrition

Name of Faculty member with Designation	Title of seminar, symposium, workshop, training attending	Venue	Duration (Dates)
Dr. G. Samanta, Professor; Dr. P. Biswas, Professor; Dr. T.K. Ghosh, Professor; Dr. R. Ray, Professor; Dr. S. Halder, Sr. Lecturer; Dr. A. K. Patra, Lecturer and Dr. G. P. Mondal, Lecturer	Eighth Indian Veterinary Congress and XV Annual Conference of IAAVR and National Symposium on 'Public-Private- Partnership in Veterinary Research and Education Sector'	WBUAFS, Kolkata, W.B.	22-24 Feb. 2008
Dr. T.K. Ghosh, Professor and Dr. B. Ray, Professor	International Livestock and Dairy Expo	New Delhi	26-28 Aug. 2008
Dr. T.K. Ghosh, Professor; Dr. S. Halder, Sr. Lecturer and Dr. G.P. Mondal, Lecturer	Sustainable and Integrated Dairy Development in Eastern and North-Eastern Region – status and strategies	NDRI (ERS), Kalyani, Nadia, W.B.	11-12 Dec. 2008
Dr. P. Biswas, Professor	The 13 th Biennial Conference of Animal Nutrition Society of India	National Institute of Animal Nutrition & Physiology, Adugodi, Bangalore	17-19 Dec. 2009
	Learning and capacity building programme on 'Management development programme on leadership for innovation in agriculture'	IIM Lucknow, Noida Campus	22-26 Feb. 2010
Dr. A. K. Patra, Lecturer	The 96 th Indian Science Congress	Shillong, Meghalaya	3-7 Jan. 2009
	National Symposium on 'Modern look on Canine Health Care Management in Global Perspective' Organized by ISACP & F/O. VAS, WBUAFS	Hotel Hindustan International, Kolkata, W.B.	6-8 Feb. 2009 (3 days)

H.1.A.12. Department of Veterinary Anatomy and Histology

Name of Faculty member with Designation	Title of seminar, symposium, workshop, training attending	Venue	Duration (Dates)
Dr. R.K.Ghosh, Rtd. Professor and Dr. P. Das, Reader	The 23 rd Annual Convention of Indian Association of Veterinary Anatomists	CCSHAU, Hissar	5-7 Nov. 2008
Dr. R.K.Ghosh, Rtd. Professor; Dr. P. Das, Reader; Dr. S. Ray, Reader and Dr. M. M. Roy (Rtd. Professor)	The 6 th Mid Annual Convention of Indian Association of Veterinary Anatomists	WBUAFS, Kolkata, W.B.	14 March, 2009
	The 16 th Annual Conference of Anatomical Society of India (W. B. Chapter)	IPGMR(SSKM Hospital & Medical College), Kolkata, W.B.	18 Jan. 2009
	The 17 th Annual Conference of Anatomical Society of India (W. B. Chapter)	WBUAFS, Kolkata, W.B.	18 Jan. 2010
Dr. R.K.Ghosh, Rtd. Professor; Dr. P. Das, Reader and Dr. S. Ray, Reader	The 17 th State Science & Technology Congress organized by DBT, Govt. West Bengal and WBUAFS	WBUAFS, Kolkata, W.B.	4 –5 March, 2010
Dr. P. Das, Reader and Dr. S. Ray, Reader	The 17 th Annual conference of Indian Society of Animal Production and Management	WBUAFS, Kolkata, W.B.	26-28 Feb. 2009
Dr. P. Das, Reader	International Congress of Veterinary Anatomy	Taj Hotel, Lucknow, U.P.	4-6 Nov. 2009

H.1.A.13. Department of Livestock Products Technology

Name of Faculty member with Designation	Title of seminar, symposium, workshop, training attending	Venue	Duration (Dates)
Dr. S. Biswas, Professor and Dr. D. Bhattacharyya, Lecturer	National Conference of Indian Meat Science Association	Bangalore	7-8 Aug. 2008 (2 days)
	Eighth Indian Veterinary Congress and XV Annual Conference of IAAVR and National Symposium on 'Public-Private- Partnership in Veterinary Research and Education Sector'	WBUAFS, Kolkata, W.B.	22-24 Feb. 2008
	Organized 'Model Training Course on 'Value Added Products of Foods from Animal Origin-Its Processing and Marketing' funded by Ministry of Agriculture, Govt. of India	Deptt. of LPT, F/VAS, Mohanpur & Kolkata campus, W. B.	8-15 Dec. 2008 (8 days)
	National Symposium on 'Modern look on Canine Health Care Management in Global Perspective' Organized by ISACP & F/O. VAS, WBUAFS	Hotel Hindustan International, Kolkata, W.B.	6-8 Feb. 2009 (3 days)

H.1.A.14. Department of Veterinary and Animal Husbandry Extension Education

Name of the faculty member with designation.	Title of seminar, symposium, workshop and training attended	Venue	Duration (Dates)
Dr. D. Ganguli, Lecturer	Eighth Indian Veterinary Congress and XV Annual Conference of IAAVR and National Symposium on 'Public-Private- Partnership in Veterinary Research and Education Sector'	WBUAFS, Kolkata, W.B.	22-24 Feb. 2008
	National symposium on 'Sustainable livestock production through SHGs and livelihood security'	WBUAFS, Kolkata, W.B.	10-11 Jan. 2009
	National symposium on 'Microplanning for poverty alleviation through management of animal resources' and 'Novel use of modern Instruments in biomedical research'	WBUAFS, Kolkata, W.B.	10-11 Jan. 2010

H.1.A.15. Department of Veterinary Pathology

Name of Faculty member with Designation	Title of seminar, symposium, workshop, training attended	Venue	Duration (Dates)
Dr. S.K. Mukhopadhyay Reader	International Symposium on 'Philosophy of diseases diagnosis thru morphological to biomolecular approaches and core theme "Diagnostic Pathology" by IAVP	Ludhiana, Punjab	28-30 Oct. 2009
	Reforms in Higher Education: meeting the challenges	Vidyasagar University, West Midnapore, W.B.	12 Feb. 2010
Dr. N. C. Patra Lecturer	C L Davis Satellite seminar on 'Advanced descriptive techniques – ultra structure cytology and immunohistochemistry'	GAUVASU, Ludhiana, Punjab	28-30 Oct 2009
	Pain management in canine	VCI, WB	One day
	Reforms in Higher Education: meeting the challenges	Vidyasagar University, West Midnapore, W.B.	12 Feb. 2010
Dr. S. Pradhan Lecturer	Eighth Indian Veterinary Congress and XV Annual Conference of IAAVR and National Symposium on 'Public-Private- Partnership in Veterinary Research and Education Sector'	WBUAFS, Kolkata, W.B.	22-24 Feb. 2008
	International symposium on 'Quality assurance in pathology & disease diagnosis' and Satellite Seminar on 'Descriptive gross & microscopic veterinary pathology in necropsy'	IVRI, Bareilly, U.P.	3 days 2008
	National Symposium of Indian Society of Animal Production & Management (ISAPM) on 'Organic livestock farming- global issues, trends & challenges'	WBUAFS, Kolkata, W. B.	26-28 Feb. 2009
	Winter School on 'Recent advances in molecular techniques for diagnosis of bacterial diseases of animals'	CAU, Mizoram	21 days 2009
	Role of Veterinarians on social & livelihood development	WBUAFS, Kolkata, W.B.	One day 2010

H.1.A.16. Department of Veterinary Medicine, Ethics & Jurisprudence

Name of Faculty member with Designation	Title of seminar, symposium, workshop, training attended	Venue	Duration (Dates)
Dr. S. Sarkar, Professor	Fogarty international training programme	Indian Institute of Chemical Biology, Kolkata, W. B.	Jan. 2010
Dr. C. Lodh, Reader	Training programme on 'Recent perspective of nano-science & nano-technology'	Jadavpur University, Kolkata, W. B.	04-26 Dec. 2008
	SAARC Congress on canine practice & symposium on 'Changing horizon in companion animal health care – evolving strategies with global perspective'	TANUVAS, Chennai, T. N.	07-09 Feb. 2008
	National Symposium on 'Modern look on Canine Health Care Management in Global Perspective' Organized by ISACP & F/O. VAS, WBUAFS	Hotel Hindustan International, Kolkata, W.B.	6-8 Feb. 2009 (3 days)
Dr. A. Chakrabarti, Re-employed Professor	Delivered a talk on Brucellosis and its public health significance at the 12 th Annual General Body meeting of the Association of Public Health Veterinarians and National Seminar (17.12.2009)	Kolkata, W. B.	17 Dec. 2009
	Delivered talk on seminar on Nutritional challenges in pet food practice on 13.02.2010 organised by Zyduz Animal Health Ltd.	Kolkata, W. B.	13 Feb. 2010
	Delivered talk on seminar on Brucellosis and its public health significance on World veterinary day.	Ranchi, Jharkhand	24 April, 2010
	Delivered talk on Zoonoses and public Health significance in 17 th State Science and Technology congress organized by WBUAFS & DST, Govt. of W. B.	Kolkata, W. B.	4 – 5 March. 2010
	Delivered talk in extended technical seminar in 'World veterinary Day organized by Assam Animal Husbandry and Veterinary Services Association on 24.4.2010	Guahati, Assam	26 April, 2010
	Proceedings on 17 th State Science and Technology congress organized by WBUAFS & DST, Govt. of W. B.	Kolkata, W. B.	4 – 5 March. 2010
	Delivered talk on "Importance of metabolic diseases and mastitis for field veterinarians" as guest speaker at New collectorate building at Howrah organized by Deputy Director (ARD)	Howrah, W. B.	18 June. 2010
	Chaired the meeting of IAEC of School of Tropical Medicine on 12.07.2010.	Kolkata, W. B.	12 July. 2010
	The 17 th Annual conference of Indian Society of Animal Production and Management	WBUAFS, Kolkata, W. B.	26-28 Feb. 2009

H.1.B. FACULTY OF DAIRY TECHNOLOGY

H.1.B.1. Department of Dairy Technology

Name of Faculty member with Designation	Title of seminar, symposium, workshop, training attending	Venue	Duration (Dates)
Dr. D. C. Sen, Professor	National Conference on 'Global warming: face to face'	Institution of Engineers, Kolkata, W.B.	19-20 Jan. 2008
	XXXVI Dairy Industry Conference on 'Indian dairying-another revolution' and acted as Rapporteur in Technical Session.	BHU, Varanasi, U.P.	19-21 Feb. 2008
	As invited speaker presented paper on 'Fats and Oils: some facts and fallacies' in the Seminar on 'Life style foods and medical nutrition.'	Jadavpur University, Kolkata, W.B.	22 Feb. 2008
	National Seminar & Doctors' Meet on 'Nutritional benefits of rice bran oil'	Hotel Taj Bengal, Kolkata, W.B.	3 Aug. 2008
	Workshop on 'Food and nutrients' and delivered talk on 'Honey and its nutritional benefits'	Jadavpur University, Kolkata, W.B.	4 Aug. 2008
	National Seminar on 'Technological developments and product visionaries in fats and oils industry' and presented paper on 'Roles of conjugated linoleic acid in milk fat'	Central Glass and Ceramic Research Institute, Jadavpur, Kolkata, W. B.	29-30 Nov. 2008
	XXXVII Dairy Industry Conference on 'Dairying for livelihood and growth'	Kala Academy, Panjim, Goa	7-9 Feb. 2009
	Seminar on 'Food processing and nutraceuticals derived from natural sources for wellness of heart' and delivered speech on 'Dahi : an unique health food'	Jadavpur University, Kolkata, W.B.	6 July, 2009
	National Seminar on 'Dairy development in eastern India : Bihar summit'	Hotel Maurya, Patna, Bihar	23 Jan. 2010
Dr. D. C. Sen, Professor; Dr. M. K. Sanyal, Professor; Dr. S. C. Paul, Professor and Dr. S. K. Gangopadhyay, Professor	XXXVIII Dairy Industry Conference on 'Indian dairying – productivity & food Safety' and as invited speaker presented paper on 'Health beneficial roles of conjugated linoleic acid in milk & milk products'	NIMHANS Convention Centre, Bengaluru	17-19 Feb. 2010
	National Seminar on 'Road map for dairy development in eastern India'	Poura Bhawan Auditorium, Salt lake, Kolkata, W.B.	17 Jan. 2009
	The 17 th State Science & Technology Congress organized by DBT, Govt. West Bengal and WBUAFS	WBUAFS, Kolkata, W.B.	4 – 5 March, 2010
Dr. D. C. Sen, Professor and Dr. M. K. Sanyal, Professor	MDP Workshop on 'Policy and prioritization, monitoring and evaluation (PME) support to consortia based research projects in agriculture'	NAARM, Hyderabad, A.P.	21-25 Oct. 2008
	National Convention on 'Sustainable and integrated dairy development in eastern & north eastern region: status and strategies.' As invited speaker Prof. Sanyal presented paper on 'Sustainable and integrated dairy development in eastern and north-eastern region: status & strategies'	NDRI, ERS, Kalyani, Nadia, W.B.	11 - 12 Dec. 2008

H.1.B.2. Department of Dairy Chemistry

Name of Faculty member with Designation	Title of seminar, symposium, workshop, training attending	Venue	Duration (Dates)
Dr. P.R. Ray, Sr. Lecturer	Short term course on 'Intellectual property rights (IPRs) and patent system in India'	NITTTR, Chandigarh	15-19 Sept. 2008
Dr. P. K. Ghatak, Professor; Dr. P. R. Ray, Sr. Lecturer and Dr. A. K. Bandyopadhyay, Rtd. Professor	National Seminar on 'Road map for dairy development in eastern India'	Poura Bhawan Auditorium, Salt lake, Kolkata, W.B.	17 Jan. 2009
Dr. P.K.Ghatak, Professor and Dr. A. K. Bandyopadhyay, Rtd. Professor	XXXVII Dairy Industry Conference on 'Dairying for livelihood and growth'	Kala Academy, Panjim, Goa	7-9 Feb. 2009
	National Seminar on 'Dairy development in eastern India - Bihar summit'	Hotel Maurya, Patna, Bihar	23 Jan. 2010
	XXXVIII Dairy Industry Conference on 'Indian dairying – productivity & food Safety'	NIMHANS Convention Centre, Bengaluru	17-19 Feb. 2010
Dr. P. R. Ray, Sr. Lecturer and Dr. P. K. Ghatak, Professor	The 17 th State Science & Technology Congress organized by DBT, Govt. West Bengal and WBUAFS	WBUAFS, Kolkata, W.B.	4 – 5 March, 2010

H.1.C. FACULTY OF FISHERY SCIENCES

H.1.C.1. Department of Fishery Biology and Resources Management

Name of Faculty Member with Designation	Title of conference, training, seminar, symposium and workshop	Venue	Duration (Dates)
Dr. T. S. Nagesh, Reader	Refresher Course on 'Innovation and technology management'	Academic Staff College, Jawaharlal Nehru Technological University, Hyderabad, A.P.	13 Oct. – 4 Nov. 2008
Dr. S. Behera, Reader	Winter school on 'Recent advances in fish and shellfish immunology and its applications'	CIFA, ICAR, Bhubaneswar, Orissa	21 Oct. – 10 Nov. 2008
Dr. S. K. Das, Professor and Dr. T. S. Nagesh, Reader	The Eighth Indian Fisheries Forum	Eastern Zonal Cultural Centre, Salt Lake city, Kolkata, W.B.	22 – 26 Nov. 2008

H.1.C.2. Department of Fishery Pathology and Microbiology

Name of faculty member with Designation	Title of seminar, symposium, workshop, training attended	Venue	Duration (Dates)
Dr. T. J. Abraham, Professor	Seminar on 'Emerging researches in biotechnology: vision for twenty first century'	Jadavpur University, Kolkata, W.B.	27 Feb. .2010
	Workshop on 'Intellectual property and technology Management'		16 – 19 Oct. 2008
	National Seminar on 'Recent trends in processing and marketing of fishery and horticulture products'	Institution of Engineers, Kolkata, W.B.	19 – 20 Dec. 2008
Dr. G. Dash, Reader	Workshop on 'Fish health management'	F/O. F Sc, WBUAFS, Chakgaria, Kolkata, WB	11-12 Aug. 2009
	National Seminar on 'Aquaculture researches in India- status and strategies for future development'	Utkal University, Bhubaneshwar, Orissa	26-27 March, 2009
	The Eighth Indian Fisheries Forum	Eastern Zonal Cultural Centre, Salt Lake city, Kolkata, W.B.	22 – 26 Nov. 2008
	The 17 th State Science & Technology Congress organized by DBT, Govt. West Bengal and WBUAFS	WBUAFS, Kolkata, W.B.	4 – 5 March, 2010

H.1.C.3. Department of Fish Processing Technology

Name of Faculty member with Designation	Title of seminar, symposium, workshop, training attended	Venue	Duration (Dates)
Dr. K. C. Dora, Professor	The 20 th All India Congress of Zoology & National Seminar on 'Bioresources and it's management for food, livelihood and environmental security' and National Helminthological Congress	Hyderabad, A. P.	29-31 Dec. 2009
	National Seminar on 'Integrated management of water resources with special reference to biodiversity and livelihood'	Bhopal, M.P.	16-17 Jan. 2010
	Presented papers in National Seminar on 'Managing rural livelihood in India: challenges & opportunities'	Orissa Society of Extension Education	27-28 Nov. 2009
	National Seminar on 'Fisheries based livelihoods in India: present status, problems & prospects'	The Livelihood School, Kolkata, WB	28-29 Nov. 2009
	National Conference on 'Biodiversity conservation & management of bioresources' organized by Applied Zoologists Research Assoc. & Andhra University	Hyderabad, A. P.	28-29 Oct. 2009
	Seminar on "GC-MS" organized by Thermo Electron LLS India Pvt. Ltd.	Hotel Hindustan International, Kolkata, WB	13 Nov. 2008
	ICAR sponsored Training-Cum-Workshop on 'IP & technology management'	National Institute for Research on Jute and Allied Fiber Technology (NIRJAFT), Kolkata, WB	16-18 Oct. 2008
Dr. S. Sarkar, Sr. Lecturer and Mr. S. Chowdhury, Lecturer	Workshop on 'Fish health management'	F/O. F.Sc, WBUAFS, Chakgaria, Kolkata, WB	11-12 Aug. 2009
Dr. K. C. Dora, Professor and Dr. S. Sarkar, Sr. Lecturer	The Eighth Indian Fisheries Forum	CIFRI, Barrackpore, W.B.	22-26th November, 2008

H.1.C.4. Department of Fishery Extension Extension

Name of faculty member with Designation	Title of Seminar, symposium, workshop, training attend	Venue	Duration (Dates)
Dr. S. S. Dana, Professor	International Conference on 'Mother Earth: save it for future generation'	Burdwan University, WB	13-15 Feb. 2010
	The 17 th State Science & Technology Congress organized by DBT, Govt. West Bengal and WBUAFS	WBUAFS, Kolkata, W.B.	4 – 5 March, 2010
	Golden Jubilee International Seminar	Burdwan University, WB	17-19 March, 2010
	National Science Day	Jadavpur University, Kolkata, WB	27 Feb. 2010

H.1.C.5. Department of Fishery Engineering

Name of faculty member with Designation	Title of Seminar, symposium, workshop, training attend	Venue	Duration (Dates)
	The 17 th State Science & Technology Congress organized by DBT, Govt. West Bengal and WRIIAFS	WRIIAFS, Kolkata, W.B.	4 - 5 March, 2010

H.1.D. DIRECTORATE OF RESEARCH, EXTENSION AND FARMS

Name of faculty member with Designation	Title of Seminar, symposium, workshop, training attend	Venue	Duration (Dates)
Dr. B. K. Chand, Farm Manager	The Eighth Indian Fisheries Forum	CIFRI, Barrackpore, W.B.	22-26th November, 2008
	The 17 th State Science & Technology Congress organized by DBT, Govt. West Bengal and WBUAFS	WBUAFS, Kolkata, W.B.	4 - 5 March, 2010
	National Seminar on 'Fisheries based livelihoods in India: present status, problems & prospects'	The Livelihood School, Kolkata, WB	28-29 Nov. 2009
Mrs. Aparajita Biswas, Computer Programmer	National Seminar on "University Governance in 21 st Century : Challenges Ahead"	WBUT, Kolkata	29 th August, 2009
	Workshop on "Implementation of UGC Guidelines on Sexual Harrasment on College Campuses"	JU, Kolkata	18-19 th March, 2010
	All India Seminar on "Foreign University Bill and Proposed Reforms in Indian Education"	JU, Kolkata	8-9 th October, 2010
	National Seminar on "Agro-Biotech and Dairy Technologies and Animal Health"	ICC, Kolkata	16 th November, 2010

H.2. SCIENTIST'S VISIT TO ABROAD

H.2.1. Dr. Samit Kr Nandi, Sr. Lecturer, Department of Veterinary Surgery and Radiology

Sl.No.	Period of visit		Institute/ Country visited	Purpose of visit
	From	To		
1	09.06.2008	13.06.2008	Kuopio, Finland	To present research paper in the 15 th Symposium and the 7 th Conference on "Lameness in Ruminants"
2.	27.10.2008	30.10.2008	Bangkok, Thailand	To present research paper in the 15 th Congress of the Federation of Asian Veterinary Association and OIE Symposium
3.	08.08.2009	10.08.2009	Dalian, China	To deliver invited speech in the 4 th China Medical Biotech Forum and International Experts Symposium

H.2.2. Dr. (Mrs.) Sarbanmi Hazra, Sr. Lecturer, Department of Veterinary Surgery and Radiology

Sl.No.	Period of visit		Institute/ Country visited	Purpose of visit
	From	To		
1	28.06.2008	02.07.2008	Hong Kong	To present research paper in the World Ophthalmology Congress

H.2.3. Dr. Amlan Kr. Patra, Lecturer, Department of Animal Nutrition

Sl.No.	Period of visit		Institute/ Country visited	Purpose of visit
	From	To		
1	31.08.2008	05.09.2008	Queretaro, Mexico	To participate in the 9 th International Conference on Goats

H.2.4. Dr. Goutam Samanta, Professor, Department of Animal Nutrition

Sl.No.	Period of visit		Institute/ Country visited	Purpose of visit
	From	To		
1	29.06.2008	05.07.2008	Brisbane, Australia	To participate in the 23 rd World Poultry Congress

H.2.5. Dr. Subhasis Biswas, Professor, Department of Livestock Products Technology

Sl.No.	Period of visit		Institute/ Country visited	Purpose of visit
	From	To		
1	26.10.2008	30.10.2008	Bangkok, Thailand	To participate in the 15 th Congress of the Federation of Asian Veterinary Association and OIE Symposium
2	08.02.2009	12.02.2009	Dhaka, Bangladesh	To participate in the Workshop on 'Food policy of the SAARC countries' organised by Cornell University, USA and BARC

H.2.6. Dr. Bimal Kinkar Chand, Farm Manager, Directorate of Research, Extension and Farms

Sl.No.	Period of visit		Institute/ Country visited	Purpose of visit
	From	To		
1	04.02.2009	07.02.2009	Kathmandu, Nepal	International Symposium on Small-scale Aquaculture for increasing resilience of rural livelihood
2	03.06.2009	29.06.2009	Faculty of Agriculture, Food & Environment, The Hebrew University of Jerusalem, Israel	International Course on Agricultural Resource Management

I. 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. S. K. Nandi, Deptt. of Vety. Surgery & Radiology	Jawaharlal Nehru Award - 2007	ICAR, New Delhi	Outstanding Post-Graduate Agricultural Research Work
2	Dr. Ramgopal Laha, PhD scholar in the Deptt. of Vety. Parasitology under the guidance of Prof. N. K. Sasmal	Jawaharlal Nehru Award - 2008	ICAR, New Delhi	Outstanding PhD research work in the field of Animal production and Veterinary Science on Comparative valuation of diagnostic assays for detection of suspected and carrier cases of 'Surra' in buffaloes, cattle and horses
3	Dr. S. K. Nandi, Deptt. of Vety. Surgery & Radiology	National Bioscience Award - 2008	Department of Biotechnology, Ministry of Science and Technology, Govt. of India.	Career Development work
4	Dr. S. K. Nandi, Deptt. of Vety. Surgery & Radiology	Letter of Appreciation	The 15 th Congress of the Federation of Asian Veterinary Association and OIE Symposium, Bangkok, Thailand	For paper presentation on outstanding research work
5	Dr. (Mrs.) S. Hazra, Deptt. of Vety. Surgery & Radiology	Best paper presentation award - 2007	INTAS POLIVET Pharmaceutical Company	For paper presentation on outstanding research work
6	Dr. U. Biswas, Deptt. of Vety. Epidemiology & Preventive Medicine	Dr. C. Natrajan and Indira Natrajan Endowment award (Gold Medal)	Association of Public Health Veterinarian, Kolkata	For paper presentation on outstanding research work
7	Dr. A. K. Patra, Deptt. of Animal Nutrition	Dr. (Mrs.) Gouri Ganguly Memorial Award - 2009	Indian Science Congress Association	For promising Young Scientist in Animal Science through research paper presentation
8	Dr. P. Das, Deptt. of Vety. Anatomy & Histology	Fellow of Indian Association of Veterinary Anatomists	Indian Association of Veterinary Anatomists	For outstanding contribution in the field of Vety. Anatomy
9	Dr. P. Das, Deptt. of Vety. Anatomy & Histology	A.M.Srivastav Best M.V.Sc Thesis guidance award - 2008	Indian Association of Veterinary Anatomists	For M.V.Sc Thesis guidance
10	Dr. P. Das, Deptt. of Vety. Anatomy & Histology	A.M.Srivastav best M.V.Sc thesis guidance award -	Indian Association of Veterinary Anatomists	For M.V.Sc Thesis guidance

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

11	Dr. P. Das, Deptt. of Vety. Anatomy & Histology	Mohan Bhattachary best paper award on Histology - 2008	Indian Association of Veterinary Anatomists	For paper presentation on outstanding research work in Vety. Histology
12	Dr. R.Choudhary, student of Dr.Partha Das, Dept. VA&H	Young Scientist award - 2009	Indian Association of Veterinary Anatomists	For paper presentation on outstanding research work
13	Prof. S. Biswas, Deptt. of Livestock Products Technology	Fellow, National Academy of Veterinary Science	New Delhi, National Academy of Veterinary Science	Outstanding lifetime contribution in Vety. Sciences
14	Prof. S. Biswas, Deptt. of Livestock Products Technology	R. R. K. Shukla Award on Veterinary Research	Indian Association for the Advancement of Veterinary Research	Outstanding contribution in the field of researches in Vety. Sciences
15	Prof. S. Biswas, Deptt. of Livestock Products Technology	Member of Peer review committee	Tamilnadu Veterinary & Animal Science University	For development of e-courses in B.V.Sc. & A.H
16	Prof. T. J. Abraham, Deptt. of Fishery Pathology & Microbiology	Nation Science Day Award - 2010	The Science Association of Bengal, Kolkata	Outstanding research contribution in the field of Fishery sciences
17	Prof. T. J. Abraham, Deptt. of Fishery Pathology & Microbiology	Best poster paper award - 2008	International Conference on Emerging & Infectious Diseases of Animals and Biotechnological Applications held at Madras Veterinary College, TANUVAS, Tamil Nadu	Poster presentation on research finding
18	Prof. K. C. Dora, Dean, F/Fishery Sciences & Deptt. of Fishery Processing Technology	Fellow- Academy of Science, Engineering and Technology – 2010	ASET, Bhopal	Outstanding lifetime contribution in Fishery Sciences
19	Prof. K. C. Dora, Dean, F/Fishery Sciences & Deptt. of Fishery Processing Technology	Fellow, Zoological Society of India – 2009	Zoological Society of India	Outstanding lifetime contribution in Zoology
20	Prof. K. C. Dora, Dean, F/Fishery Sciences & Deptt. of Fishery Processing Technology	Fellow, Indian Association of Biological Sciences – 2009	Indian Association of Biological Sciences	Outstanding lifetime contribution in Biological Sciences
21	Prof. K. C. Dora, Dean, F/Fishery Sciences & Deptt. of Fishery Processing Technology	Dr. Anada Prakash Award -2008	Applied Zoologists Research Association	Outstanding research work in applied Zoology
22	Prof. K. C. Dora, Dean, F/Fishery Sciences & Deptt. of Fishery	Environmental Sciences Fellow Award – 2008	International Society of Environmental	Outstanding lifetime contribution in Environment-friendly

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

23	Prof. Dipak Kr. De, Deptt. of Vety. Surgery & Radiology	Fellowship	Indian Society of Veterinary Surgery	Remarkable contribution in the filed of Vety. Surgery & Radiology
24	Prof. K. C. Dora, Dean, F/Fishery Sciences & Deptt. of Fishery Processing Technology	Hind-Agri- horticultural Society Fellow Award – 2008	Hind Agri- horticultural Society	Outstanding lifetime contribution in Fishery sciences
25	Dr. S. N. Joardar, Deptt. of Vety. Microbiology	Best research paper (poster) award – 2008	West Bengal State Council of Science & Technology	Best paper presentation in the 15 th State Science & Technology Congress
26	Dr. S. N. Joardar, Deptt. of Vety. Microbiology	Best research paper (poster) award – 2009	West Bengal State Council of Science & Technology	Best paper presentation in the 16 th State Science & Technology Congress
27	Prof. A. Chakrabarti, Deptt. of Vety. Medicine, Ethics & Jurisprudence	Felicitatation from the Governor of Orissa as the Man of high achiever	Orissa University of Agriculture & Technology, Bhubaneswar	In the occasion of Golden Jubilee Celebration of COVs, Orissa -2010

J. IMPORTANT OCCASIONS ATTENDED BY THE HONOURABLE VICE CHANCELLOR OF THE UNIVERSITY

Sl.No	Hon'ble VC's Occasions	Venue	Duration (Dates)
1	Vice Chancellors' Conference organized by ICAR	New Delhi	19-20 Jan. 2008
2	Observance of Republic Day	Raj Bhavan, Kolkata, W. B.	26 Jan. 2008
3	Collaborative programme between WBUAFS and Sundarban Development Board	Rangabelia, S. 24 Parganas	29-30 Jan. 2008
4	Inaugural programme of DBT, GOI sponsored 15 days National Workshop on Advanced PCR based techniques in husbandry of farm animals	WBUAFS, Kolkata, W. B.	31 Jan. 2008
5	Site visit for research & extension activities, meeting with D.M. & other district officials	Garchumuk, Howrah	7 Feb. 2000
6	Developmental planning of the University with MIC, Fisheries Development, Govt. of West Bengal	Writers' Buildings, Kolkata	12 Feb. 2008
7	Meeting with Commissioner, State Agriculture Commission, Govt. of West Bengal	Kolkata, W. B.	15 Feb. 2008
8	Planning for research activities & meeting with officials of BCKV	NBSS & LUP, Salt Lake, Kolkata, W. B.	21 Feb. 2008
9	Meeting with Paschim Banga Vigyan Mancha	AJC Bose Road, Kolkata, WB	26 Feb. 2008
10	Meeting with Indian Association for the Cultivation of Science	Indian Institute of Chemical Engineering, Jadavpur University campus	22 Feb. 2008
11	Krishi-O-Mahila Samridhi Mela	Jalpaiguri KVK, Ramshai, WB	1 March. 2008
12	South Asian Conference on 'Science based agricultural transformation towards alleviation of hunger & poverty in SAARC countries organized by the IFFCO, IFFCO Foundation & ICAR, GOI	New Delhi	5-7 March. 2008
13	Executive committee meeting of the Indian Agricultural Universities' Association	Punjab Agricultural University, Ludhiana	8 March. 2008
14	Meeting of Scientific Advisory Committee of Murshidabad KVK	Murshidabad KVK, Digha, Murshidabad	31 March, 2008
15	Observance of Veterinary Pharmacists Day-2008	WBUAFS Campus, Kolkata	10 April. 2010
16	Meeting of the West Bengal Universities' Association	Kolkata, W. B.	12 April. 2008
17	Meeting at Legislative Assembly, West Bengal	Bidhansava Bhavan, Kolkata	24 April. 2008
18	Observance of International Day for Biological Diversity	Paribesh Bhavan, Saltlake, Kolkata, W. B.	24 April. 2008
19	Meeting between Ministry of Agriculture and ICAR	New Delhi	17-18 June, 2008
20	Executive committee meeting of the Indian Agricultural Universities' Association	New Delhi	18 June. 2008
21	Meeting of State Agriculture Commission, Govt. of West Bengal	Kolkata, W. B.	2 July. 2008
22	Guest of Honour in the Foundation day Celebration of Sripat Singh School, Jiaganj, Murshidabad	Jiaganj, Murshidabad, W. B.	1 Aug. 2008
23	Inaugural programme for observance of State Animal Resources Week by ARD Deptt., W. B.	Purulia, W. B.	13-14 Nov. 2008
24	Valedictory programme for observance of State Animal Resources Week by ARD Deptt., W. B.	Maju, Jagatballabhpur, Howrah, W. B.	19 Nov. 2008
25	ICAR Regional Committee Meeting - II	Bhubaneswar, Orissa	26-27 Sept. 2008

Sl.No	Hon'ble VC's Occasions	Venue	Duration (Dates)
26	Meeting with Veterinary Council of India	New Delhi	1 Oct. 2008
27	Meeting with Agril. Scientists' Recruitment Board	New Delhi	4 Nov. 2008
28	Annual GB committee meeting of Indian Agricultural Universities' Association	Anand Agricultural University, Gujarat	4-6 Dec. 2008
29	Meeting of Indian Science Congress Association & delivered invited lecture	Shillong, Mrghalaya	3-8 Jan. 2009
30	Annual Conference of Indian Dairy Association & delivered invited lecture	Salt lake, Kolkata, W. B.	17 Jan. 2009
31	Observance of Animal Welfare Day & delivered invited lecture	Alipore, S. 24 Parganas, W. B.	19 Jan. 2009
32	Meeting of Bird Lovers and Breeders Association	Kolkata, W. B.	23 Jan. 2009
33	Seminar organized by Paschim Banga Go-Sampad Bikash Sangstha, Govt. of West Bengal	Hotel Sonar Bangla, Kolkata, W. B.	28 Jan. 2009
34	Meeting for extending service privileges to the KVK employees with MIC, Finance Deptt., MIC, ARD Deptt., Secretary, Finance Deptt. & Secretary, ARD Deptt., Govt. of West Bengal	Writers' Building, Kolkata	3 Feb. 2009
35	Presided over inaugural programme of All India Canine Congress organized by the FIVAS	Hotel Hindusthan International, Kolkata, WB	6 Feb. 2009
36	Vice Chancellors' Conference organized by ICAR	New Delhi	16-17 Feb. 2009
37	Meeting with team of Veterinary Council of India	WBUAFS, Kolkata, W. B.	19 Feb. 2009
38	Brain Storming session on alternative livelihood options for the fisherfolk of Sundarbans	Kolkata, W. B.	24 April. 2009
39	Guest of Honour in the Water Resource Day - 2009	Institute of Engineers (India), W. B. State Centre, Kolkata	28 May. 2009
40	Vice Chancellors' meeting with UGC for pay revision of teachers	New Delhi	4 June. 2009
41	Meeting with State Council of Higher Education, Govt. of West Bengal on issues regarding Aila affected students of Sundarbans, West Bengal	WBSCH, Kolkata, W. B.	4 June. 2009
42	Meeting with the Chancellor of the University	Raj Bhavan, Kolkata, W. B.	30 June. 2009
43	Visit at S.D. Marine Institute	Sagarwip, S. 24 Parganas	18 July. 2009
44	Release of documentary film on Ghoongro pig	WBUAFS, Mohanpur, Nadia	20 July. 2009
45	Meeting with the Chancellor and also MIC & Secretary, ARD Deptt., Govt. of West Bengal on University issues, VCI recommendations etc.	Writers' building, Kolkata, W. B.	28 July. 2009
46	Tea party with the Chancellor and other VIPs	Raj Bhavan, Kolkata, W. B.	15 Aug. 2009
47	Annual Conference of Indian Agricultural Universities' Association and delivered talk on theme of the conference	G.KVK, Bangalore	26-29 Aug. 2009
48	Meeting with the new MIC, ARD Dept, Govt. of WB	Writers' building, Kolkata	2 Sept., 2009
49	Annual General meeting of State Council for Higher Education	WB Council for Higher Education, Kolkata, W. B.	7 Sept. 2009
50	Seminar of IGNOU on Community Colleges	Salt lake, Kolkata	9 Sept. 2009
51	Delivered invited lecture on ARD programme	Ashutosh College, Kolkata	11 Sept. 2009
52	Meeting on NSS programme with MIC, Higher Education, Govt. of West Bengal	Bikash Bhavan, Salt lake, Kolkata, W. B.	14 Sept. 2009
53	Vice Chancellors' Conference of East Zone, India	Izwal, Mizoram	17-19 Sept. 2009
54	RKVY programme at Jalpaiguri district, W. B.	Nagrakata, Jalpaiguri	9 Oct. 2009
55	Mid-term review meeting of Planning Commission on Agricultural Research, GOI	Salt Lake, Kolkata, W. B.	30 Oct. 2009

IMPORTANT OCCASIONS ATTENDED BY
THE HONOURABLE VICE CHANCELLOR OF THE UNIVERSITY

Sl.No	Hon'ble VC's Occasions	Venue	Duration (Dates)
56	Delivered invited lecture on ARD programme and visited ongoing activities	Ganqarampur, Dakshin Dinajpur, W. B.	13-14 No. 2009
57	Meeting with ADM (I & R), N. 24 Parganas, W. B. to discuss about land issues of KVK, N. 24 Parganas	Barasat, N. 24 Parganas, W. B.	17 Nov. 2009
58	Delivered a talk at Vidyasagar University Officers' Association	Vidyasagar University West Midnapore, W. B.	20 Nov. 2009
59	Delivered lecture in the Academic Staff College, Burdwan University	Burdwan University, Burdwan, W. B.	4 Dec. 2009
60	Meeting with QRT team of ICAR	WBUAFS, Mohanpur campus, Nadia, W. B.	5 Dec. 2009
61	Conference of Indian Agricultural Universities' Association	NDRI, Karnal, Haryana	7 Dec. 2009
62	Addressed the meeting of India Pharmacological Society	Kolkata, W. B.	10 Dec. 2009
63	Visited CIFE, Mumbai & delivered invited lecture	Mumbai, Maharashtra	29 Dec. 2009
64	Visited AICRP (Goat) adopted village in Gosaba block of Sundarbans to observe on-going activities	Jatirampur, S. 24 Parganas, W. B.	25 Jan. 2009
65	Meeting with the MIC, ARD Deptt., Govt. of W.B.	Writers' building, Kolkata	27 Jan. 2010
66	Delivered talk in the seminar of WBCUTA, West Midnapore district committee	Vidyasagar University, West Midnapore, W. B.	12 Feb. 2010
67	Vice Chancellors' meeting organized by ICAR	New Delhi	17-18 Feb. 2010
68	Meeting of ICAR with the SAUs	CARI, PortBlair, A&N Islands	23-24 Feb. 2010
69	Scientific Advisory Committee meeting of N. 24 Parganas KVK	N. 24 Parganas KVK, Ashokenagar, W. B.	26 Feb. 2010
70	Meeting with the Chancellor of the University	Raj Bhavan, Kolkata, W. B.	2 March. 2010
71	MHRD meeting at Rabindra Okakura Bhavan, Kolkata	Salt lake, Kolkata, W. B.	3 March. 2010
72	Delivered invited lecture in the seminar on Biodiversity at the University of Kalyani	University of Kalyani, Nadia, W. B.	10 March. 2010
73	Chaired a session in the International Seminar organized by Zoology Department, Burdwan University	Burdwan University, Burdwan, W. B.	17 March. 2010
74	Chaired a special seminar on Challenges to Higher Education & role of academic administrators organized by in Burdwan University	Burdwan University, Burdwan, W. B.	19 March. 2010
75	Meeting of the Vice-Chancellors of the State Universities with the Chancellor on University administration and developmental planning	Raj Bhavan, Kolkata, W. B.	6 June. 2010
76	ICAR Regional Committee – II meeting	CARI, PortBlair, A&N Islands	14-15 Sept. 2010
77	Vice Chancellors' meeting organized by ICAR	New Delhi	4 Oct. 2010
78	Meeting of the Rural Programme Advisory Committee convened by All India Radio (Kolkata)	Akash Bani Bhaban, Kolkata, W. B.	5 Oct. 2010

K. CENTRAL LIBRARY AND INFORMATION NETWORK SERVICES (CLINS)

Research, communication and information always go together. Only improved methods of transmission of information can produce meaningful research. This is truer with regard to the Veterinary, Fishery and Dairy Sciences.

The Central Library of this University was established in the year 1995, with some texts books. Every academic mind of this University had the intention to develop its own Central Library to keep pace with the time. Therefore this University established the Central Library and Information Network Service (CLINS) at its Belgachia, Kolkata, main campus by utilizing some ICAR fund and started functioning with the books, journals and other materials. However, this Central Library is also maintaining another set-up at Mohanpur, Nadia (Dairy Technology) and Chakgaria, Kolkata (Fishery Sciences) campus of the University. The Library facilities improved with the collections of books & journals out of the sanctioned fund received from the ICAR and also the State Government.

The Central Library is accommodated in a total floor space of about 15000 sq. ft. in two storied building for its various activities utilizing the financial assistance from ICAR catch-up-grant. Some grant was received from the ICAR during the period from 1999-2000 to 2003-04, under the project “**Strengthening of Library information system**” for various developmental works especially electronic services (Library automation) for the benefits of the students scholars and academicians of the University.

The various activities of the CLINS are as hereunder:

- ✓ Electronic Abstracting Services like CD ROM / Internet Browsing through LAN.
- ✓ Full articles access from INFLIBNET / ICARISAT.
- ✓ Bibliographical databases on Book.
- ✓ Bibliographical databases on content of selective scientific and research journals.
- ✓ Bibliographical databases on dissertation / Theses abstracts.
- ✓ LAN facilities within our Kolkata, Mohanpur and Chakgaria Campus under CLINS.
- ✓ On-line data access from J-Gate and ICRISAT.
- ✓ Close Circuited TV.
- ✓ Electronic charging system through Bar Code.

Besides above, the CLINS provides other services like:

- ✓ Photocopying / Xeroxing by a private Agency.
- ✓ Book Bank.
- ✓ Resource Sharing.

K.1. Organizational Structure of the Library:

Out of the three faculties of the University, the Central Library is situated at the main (North Kolkata) campus. Therefore all the ICAR mandated NATP schedules work are established in the main campus at the first opportunity. Other two faculties are situated 45 km. away from the main campus where two separate off-campus small Libraries (One for Dairy Technology Faculty at Mohanpur and other for Fishery Sciences Faculty at Chakgaria, South Kolkata are functioning under the control of CLINS).

K.2. Library Holdings:

- ✓ Databases of total Number of Books 20000 (Computerized)
- ✓ Databases of total number of volumes of Journals (Computerized): 5000

- ✓ Total number of current Journals:
- ✓ Foreign Journals: 30
- ✓ Indian Journals: 50
- ✓ Databases of total number of annual reports, pamphlets, bulletin, indexes and research highlights and news letter: 1500
- ✓ Total number of thesis / Dissertation including Ph.D (fully digitized): 1500
- ✓ Total number of records in data base 30000

K.3. Services available:

- ✓ Internet Browsing privileges to the users: Extended to Post graduate and Research level users with 2 Mbps (through lease line)
- ✓ Online Abstracting Services: Extended to Post graduate and Research level users
- ✓ CD ROM
- ✓ CAS
- ✓ Photocopying services
- ✓ Information Services file
- ✓ Resource Sharing
- ✓ Services to career guidance tools Wi-fi service

K.4. Capacity Building:

- ✓ On introduction of the Library Management Software like SOUL as per recommendation of NATP, the capacity of the Library Service has been improved with regard to SOUL features and Library software (CLINS).
- ✓ Through LAN (extended by the Library) the research scholars are becoming able to search through Internet their references from their respective Departments.
- ✓ Electronic circulation by using bar-coding system has made the library management easy.
- ✓ Access to the journals, books and theses to the users are now available in a more easy and efficient manner.
- ✓ For watching the library document like reading materials has been made through close circuit security system.
- ✓ The efficiencies of the library with regard to using pattern, electronic abstracting services and library management system have been improved altogether with the NATP and University both on qualitative and quantitative basis.
- ✓ Cyber cafe for users at Belgachia, Kolkata campus.
- ✓ A small seminar cum audiovisual room for accommodation of 50 heads has been made.

K.5. Library Automation:

The CLINS has been taking up the appropriate steps to computerize the Library's housekeeping operations. The work related to retrospective conversion of Library collection is in progress in the form of bibliographical / catalogue from including digitations of theses by WINISIS 5.0 version. But these work have to be converted again to SOUL software for automation and Bar Coding of all the Library accessions.

K.6. Future planning:

- ✓ Petty Civil Work & renovation / modernization of the library building is necessary.
- ✓ To extend the more facilities for information hub for students and researchers.
- ✓ To open a 'Bookshop cum study materials' for the students.
- ✓ To extend additional bandwidth for Wi-fi connectivity.

L. CENTRAL INSTRUMENTATION FACILITIES

Utilizing the fund received from the Indian Council of Agricultural Research (ICAR), New Delhi under 'Establishment of Central Instrumentation Facility' during XIth five year plan the University has strengthened its Central Instrumentation facilities available at main campus. Some of the valuable scientific equipments costing to Rs. 1 lakh and above and procured out of the fund received from Government of India, ICAR, State Government etc. are being used in the three faculties of the University. Such equipments / instruments are enlisted below -

List of Valuable Equipments under the Central Instrumentation Facility

Sl. No.	Faculty of Fishery Sciences	Faculty of Dairy Technology	Faculty of Veterinary & Animal Sciences
1	High Performance Liquid Chromatography	Protein Analyzer	Inverted Tissue Culture (Sigma)
2	Analytical Balance	Infra red Analyzer	Low Pressure Chromatography System
3	Generator	Rheometer	HP Proliant Server : Web & Mail Server
4	Atomic Absorption Spectrophotometer	Condensing Unit	8 TPL Lab Model Torque Twin Screw Centrifuge
5	Inverted Microscope	Drying Unit	ECD with Electrometer
6	Carbon di-oxide Incubator	Ice Cream Plant	Electron capture detector
7	Water purification system	Gel Filtration	Inverted Trinocular
8	Thermal cycler	PCR	Renovation of SN Bose Hostel
9	Microfuge	BOD Analyzer	
10	U-V Trans-illuminator	Moisture Analyzer	
11	Air purifier/curtain	Vacuum Milk Concentrator	
12	Gas chromatograph		
13	Modular Laboratory		
14	Deep freeze		
15	Microblock Digestion system		
16	Canning Machine		

M. FINANCIAL

M.1. Funds received during the financial year of 2008-08 and 2009-10

Sl. No.	Funding Agency	2008-09		2009-10	
		Non Plan	Plan	Non Plan	Plan
1	State Govt.	1141.72	82.28	1662.02	142.95
2	ICAR - For Development Grant	Nil	350.00	Nil	302.00
3	ICAR & Other Central Agencies for Different Projects	Nil	241.5	Nil	282.65
4	State Govt. for RKVY Project	Nil	153.4	Nil	277.6
	Total	1141.72	827.20	1662.02	1005.20

M.2. Resource generation during the financial year of 2007-08, 2008-08 and 2009-10

Sl.No.	Category of sources	2007-08	2008-09	2009-10
1	Tuition Fees	20.26	18.79	17.48
2	Pay seats / NRI fees	Nil	Nil	Nil
3	Farm / Horticulture/ Forestry	4.50	1.00	2.50
4	Animal Sector / Fees	3.09	2.06	8.35
5	Engineering Sector	Nil	Nil	Nil
6	Royalty / Consultancy	0.35	3.27	4.19
7	Others - Rent	0.28	0.33	7.07
8	Others - Bank Interests	Nil	1.36	14.03
9	Others - Misc. Receipts	2.06	2.65	2.92
	Total	30.54	29.46	56.54

N. HIGHLIGHT OF REMARKABLE ACTIVITIES / EVENTS

N. 1. DISTINGUISHED VISITORS IN THE UNIVERSITY

1. Sri M. K. Narayanan, His Excellency, Governor, West Bengal and Chancellor of the University.
2. Sri Gopal Krishna Gandhi, the former Governor of West Bengal.
3. Dr. S. Ayyappan, Secretary, DARE & D.G. (ICAR), Govt. of India, New Delhi.
4. Dr. Surya Kanta Misra, MIC, Dept. of Health & Family Welfare and Panchayet & Rural Development, Govt. of West Bengal.
5. Sri Narayan Biswas, MIC, Dept. of Animal Resource Development, Govt. of West Bengal.
6. Sri Kiranmoy Nanda, MIC, Dept. of Fisheries, Govt. of West Bengal.
7. Dr. Sougata Roy, MIC, Dept. of Urban Development, Govt. of India.
8. Sri Sudarshan Roy Chowdhury, MIC, Dept. of Higher Education, Govt. of West Bengal
9. Dr. Debesh Das, MIC, Dept. of Information Technology and Biotechnology, Govt. of WB
10. Sri Srikumar Mukherjee, MIC, Dept. of Civil Defense, Govt. of West Bengal
11. Sri Srikumar Banerjee, Chairman of Atomic Energy Commission, Govt. of India.
12. Dr. Kokate, DDG (Agril. Extension), ICAR, Govt. of India, New Delhi.
13. Dr. A. L. Chaudhury, President, Veterinary Council of India, New Delhi.
14. Dr. G. C. Tewari, Assistant Director General (Education, Planning & Development), ICAR, New Delhi.
15. Dr. Ramlinga Raju, Vice-President, Veterinary Council of India.
16. Dr. Hemanta Kr. Mazumder, Chief Executive Officer, W.B. State Council of Science & Technology, Govt. of West Bengal.
17. Sri Anil Kr. Agarwal, Member Secretary, W.B. State Council of Science & Technology, Govt. of West Bengal
18. Dr. A. K. Singh, Zonal Project Director, Zonal Project Directorate, Zone-II, ICAR, Kolkata.
19. Prof. H. P. C. Shetty, Former Vice Chancellor, University of Bangalore and Senior Aquaculturist, FAO.
20. Dr. K. D. Kokate, Deputy Director General (Agricultural Extension), ICAR, New Delhi.
21. Dr. Dilip Kumar, Director, Central Institute of Fisheries Education, Mumbai.
22. Dr. Meena Kumari, Director, Central Institute of Fisheries Technology, Cochin.

N. 2. THE FIFTH AND SIXTH CONVOCATION

The very vainglorious fifth and sixth convocation of the University were held on 16th April, 2009 and 12th April, 2010 respectively. His Excellency the Governor of West Bengal and Chancellor of the University inaugurated both the convocations and presided over the ceremony. Dr. A. L. Chaudhary, President, Veterinary Council of India, New Delhi and Dr. S. Ayyappan, Secretary, DARE and Director General, Indian Council of Agricultural Research, New Delhi remained present as the Chief Guest during fifth and sixth Convocation respectively. Prof. H. P. C. Shetty, the renowned fishery scientist received the Honoris Causa in the fifth Convocation. A total of 23 students were awarded with Ph.D degree, while 160 and 163 students received Master's and Bachelor's degree, respectively, in all the three faculties during these two Convocations of the University. Altogether 19 students were awarded with different Gold Medals for their excellence in different disciplines of study in three faculties during fifth and sixth Convocations of the University.

N. 3. THE MOST VALUABLE EVENTS / ACHIEVEMENTS

N.3.1. VISIT OF VETERINARY COUNCIL OF INDIA (V.C.I.) INSPECTION TEAM

The Inspection Team of the Veterinary Council of India (V.C.I.), New Delhi under the Chairmanship of Dr. Ranulunga Raju, Vice President of VCI visited the University from 18th February to 19th February 2009. The report of visiting team in favour of our University is highly appreciated in the Faculty Council of Veterinary & Animal Sciences.

N.3.2. ESTABLISHMENT OF DISTANCE EDUCATION STUDY CENTRE

The first of its nature in India, a Programme Study Centre of Indira Gandhi National Open University is established during November, 2008 under the Department of Animal Products Technology and Marketing, Faculty of Veterinary & Animal Sciences at Mohanpur campus, Nadia. This Study Centre will cater studies on 'Diploma in Meat Technology'. This is a one year diploma course under Distance mode of education. Ten (10) number of students have been enrolled themselves for this course during the academic session 2009-2010.

N.3.3. COLLABORATION WITH MALAYSIAN & VIETNAM UNIVERSITIES

A team of high profile officials from Malaysian University visited the at Belgachia campus of the University and discussed in length with the hon'ble Vice Chancellor about their mission of collaboration with the University.

Ministry of Agriculture, Government of India has approved the name of our University as a collaborative Institution with Vietnam Universities for research work in the field of Aquaculture. The process is under observation of the Government of Vietnam for its final shaping.

N.3.4. ORGANIZATION OF SUMMER TRAINING ON IMMUNO-BIOCHEMICAL TECHNIQUES

The Department of Veterinary Biochemistry, Faculty of Veterinary & Animal Sciences organizes Summer Training on 'Immuno Biochemical Techniques' every year for one month duration from June to July months. Students of B. Tech. (Biotechnology), M. Tech. (Biotechnology), B. Sc. / M. Sc. (Microbiology / Genetics) from various Institutes and Universities of India participates in the said Summer Training course. Through this training course students' get exposure to practical orientation in different techniques like Antigen preparation and purification by Gel filtration chromatography, Ion exchange chromatography, Affinity chromatography, SDS – PAGE, DID, Western Blot, ELISA, Immuno-histochemistry and Cytochemistry etc. Dr. Subhasis Batabyal, Head of the Department, Veterinary Biochemistry acting as the Course Coordinator.

The Summer Training for the present year has been inaugurated by the hon'ble Vice Chancellor, Prof. C. S. Chakrabarti. He has also kind enough to deliver the introductory lecture for the participating students. Prof. Dipak Kr. De, Dean, Faculty of Veterinary & Animal Sciences remain present in the valedictory session and distributed the certificates to the successful trainees. Besides, Dr. S. N. Joardar, Head of the Department of Veterinary Microbiology, Dr. Partha Das, Head of the Department of Veterinary Anatomy & Histology and Dr. S. Baidya, Head of the Department of Veterinary Parasitology were presented lectures during the Summer Training.

No. of successful trainees during the reporting period

Year	No. of trainees
2008	20
2009	28
2010	40

N.3.5. ACTIVITIES OF NATIONAL SERVICE SCHEME (NSS)

National Service Scheme (NSS) inculcates the spirit of voluntary works among the students and teachers through sustained community interactions. The NSS being priority programmes ran by Ministry of Youth Affairs and Sports, Govt. of India, shows how to combine knowledge and action to achieve results which are desirable for community development. Over the years, NSS has emerged as India's largest student youth movement in linking with the community. The WBUAFS received the sanction of State NSS in the year 2006-07 with a minimum number of volunteer. In the month of September '2009, the University appointed Programme Co-coordinator of NSS with sanction of fund and subsequently the advisory committee was been formed.

1. Programme so-far undertaken by the NSS

- a) Animal Health Camp at Sonagaon and Dulki village of Aila affected area of Sunderbans, South 24 Pargans district.
- b) Scientific awareness on Organic Food Production on the day of foundation of the University.
- c) Essay competition to communicate commonwealth Game and its spirit to develop international understanding. Three Prizes have been awarded.

2. On-going programmes

- Organisation of Animal health programme,
 - One for awareness of Deworming and vaccination camp, in collaboration Animal Resource Development Department, Govt. West Bengal
 - General treatment and Surgical health camp
- Effort is being given to find out a village for adoption,
- Flower garden has been furnished at Kolkata, Belgachia in the main campus of the University,
- Organisation of Seminar,
- Scientific awareness programme,
- Regular activities like Blood donation camp, Animal welfare day and Tree plantation etc.

N.4. ACHIEVEMENTS OF THE TEACHERS

1. Dr. Amlan Patra of the Department of Animal Nutrition, Faculty of Veterinary & Animal Sciences has got the Young Scientist (ISCA) award for the year 2008-09 from Indian Science Congress Association.
2. Dr. Samit Kr. Nandi of the Department of Veterinary Surgery and Radiology, Faculty of Veterinary & Animal Sciences has got National Bioscience Award for Career Development from the Department of Biotechnology, Govt. of India for the year 2008.
3. Prof. Nihar Ranjan Chatterjee has participated in World Aquaculture conference held at Malaysia.
4. Prof. S. Biswas of the Department of Livestock Products Technology, Faculty of Veterinary & Animal Sciences attended expert committee meeting at New Delhi held on 3rd October, 2010 organized by National Meat and Poultry Board, Ministry of Food Processing Technology, Govt. of India.

N.5. ACHIEVEMENTS OF THE STUDENTS

1. During 2008-09, 10 students of Veterinary and Animal sciences faculty, 2 students of Dairy Technology faculty and 3 of Fishery sciences faculty have been selected for ICAR Junior Research Fellowship and one student of Veterinary faculty has got Senior Research Fellowship.
2. Four students of Veterinary and Animal Sciences faculty have been qualified the National Eligibility Test (NET) conducted by the ICAR during 2008-09.
3. During 2009-10, 2 B.F.Sc. students have got Junior Research Fellowship of ICAR.
4. Dr. R. K. Choudhry of the Department of Veterinary Anatomy and Histology has received the A.M. Srivastava outstanding M.V.Sc. thesis Award in 2008.
5. Dr. Ramgopal Laha of the Department of Veterinary Parasitology has received the prestigious Jawaharlala Neheru Award in 2008 from ICAR for outstanding doctoral research work on diagnosis of Trypanosomiasis.
6. Ms. Somdutta Biswas, B.F.Sc. graduate has been awarded as one of the 'Best Fisheries Graduates of India – 2009' by the Professional Fisheries Graduates Forum, Mumbai. Ms. Biswas received citation with Gold medal on the occasion at College of Fisheries, Mangalore on 23rd December, 2009.

N.6. ORGANIZATION OF NATIONAL CONFERENCE / SYMPOSIUM / CONGRESS/ SEMINAR ETC.

1. National Symposium on “Organic livestock farming – global issues, trends and challenges” was organized by the Indian Society of Animal Production & Management in the Department of Livestock Production & Management, Faculty of Veterinary & Animal Sciences during 26-28 February 2009.
2. National Congress on Canine Practice and Sixth Annual Convention of Indian Society for Advancement of Canine Practice and National Symposium on “Modern look on canine health care management in the global perspective” was organized by the Faculty of Veterinary & Animal Sciences during 6th - 8th February, 2009.
3. The 42nd Annual Conference of Indian Pharmacological Society and International Conference on “Integrative & personalized medicine” was organized by the Department of Veterinary Pharmacology & Toxicology, Faculty of Veterinary & Animal Sciences during 10-12 December, 2009.
4. National Scientific Seminar on 'Role of Veterinarians in social and livelihood development' was organized in cooperation with the Students' Union, Faculty of Veterinary and Animal Sciences on 2nd January, 2010 on the eve of celebration of the Foundation Day – 2010 of the University.
5. National Seminar on “Sustainable livestock production through self-help group and livelihood security in the perspective of bird flu outbreak” was organized in collaboration with the XL Veterinary Reunion Committee during 10th to 11th January, 2010.
6. The 17th State Science and Technology Congress was organized by the University in collaboration with West Bengal State Council of Science & Technology, Govt. West Bengal and in association with the Paschim Banga Vigyan Mancha during 4th to 5th March, 2010.

N.7. NEW CONSTRUCTION WORK AT DIFFERENT CAMPUSES IN THE UNIVERSITY

1. The extension of academic block in the Fishery sciences faculty at Chakgaria, Kolkata campus has been completed with fund received from the State Govt. and ICAR.
2. The ground floor with the structural work of the first floor of the Farmers' hostel (Kishan Abas) has been completed by the University at Belgachia, Kolkata main campus. An amount of Rs. 124.35 lakhs has been received from the ICAR is exhausted for the purpose and more fund is expected from ICAR for completion of the rest work on first floor of the Kishan Abas buildings.
3. The construction of International Guest House on the second floor of the Kishan Abas has been very recently started and the work is underway. International Students' hostel is being constructed utilizing fund of Rs. 459833/-.

4. The construction of Animal farm complex at Mohanpur campus, Nadia is under progress. The University has got the approval of Rs. 6 crores from ICAR for the purpose.
5. Educational museum at Belgachia campus has been constructed utilizing an amount of Rs. 537686/-.
6. Construction of Examination hall and its re-construction work is underway for which an amount of Rs. 334983/- and 628630/- has been utilized in two installments.
7. Construction of Goal posts at play ground of the students' at Belgachia campus is completed utilizing an amount of Rs. 38,650/-.
8. Under the Centrally sponsored scheme on Poultry seed production, an organized poultry house has been constructed at Mohanpur campus, Nadia, which is successfully running its activities thereon.
9. In the Mohanpur, Nadia campus the construction of Model Poultry farm under the RKVY on development of a model for sustainable backyard poultry farming is under speedy progress. The model poultry farm has already constructed Poultry breeding farm complex, which consisted of shed for hatchery, layer and brooder sheds, feed godown, germ-plasm unit alongwith backyard poultry rearing farm. Some other units under RKVY were constructed like Poultry museum and Poultry training unit. A total expenditure of Rs. 2,51,87,692/- has been incurred till to date for the purpose.
10. Under the RKVY on development of a model for sustainable backyard poultry farming in west Bengal a modernized Research laboratory has been established utilizing an amount of Rs. 68,98,902/- from the project head.
11. The sanction and release of Rs. 10 crores has been received from the State Govt. for construction of an administrative block and clinical complex having all modern facilities at Belgachia, Kolkata main campus. The University has approached ICAR for a special grant for this purpose. However, the work is pending for some internal issues.
12. Construction of concrete made service road from Dog Ward to Central Library is completed at Belgachia, main campus of the University.
13. Some major repair and renovation work have been undertaken in the Faculty of Veterinary & Animal Sciences like renovation of Sir S.N. Bose hostel at Mohanpur campus with renovation of Pathology building, renovation of New Boys hostel, renovation of Mc Pherson hostel, renovation of Canteen and renovation of main gate at Belgachia campus.
14. Some major repair and renovation work have been undertaken in the Faculty of Dairy Technology like extension of Dairy Plant building, Canteen (costing Rs. 287052/-), Girls hostel, Hands on training building etc. at Mohanpur campus.
15. Construction work of Girls' hostel utilizing Rs. 1542818/- was also undertaken in the Faculty of Fishery Sciences at Chakgaria, Kolkata campus of the University.

O. OUR MISSION

- ☯ To produce better quality of Veterinary doctors, dairy technologists and fishery specialists in the State.
- ☯ To create self-employment through livestock, dairy and fish farming.
- ☯ To develop women empowerment.
- ☯ To conduct need-based research on livestock, dairy and fishery sectors.
- ☯ To disseminate improved livestock, dairy and fishery practices at the door steps of the stakeholders.

P. OUR CONTACT

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