

PROCEEDINGS OF SRC MEETING:

The SRC meeting was held on 08.03.2006 in the meeting hall of NRC on Mithun of Nagaland. Dr. Chandan Rajkhowa, Director, NRC on Mithun chaired the meeting. The following members have attended the meeting.

1. Dr. C. Rajkhowa,
Director, NRC on Mithun, Jharnapani.
2. Dr. Kishore Barua,
Prof. & Head Animal Nutrition, Faculty of Vety. Science, Khanapara, Guwahati.
3. Dr. Kishore Barua,
Prof. Associate Prof. Physiology, Faculty of Vety. Science, Khanapara, Guwahati.
4. Dr. Dilip Sharma,
National Prof. Faculty of Vety. Science, Khanapara, Guwahati
5. Dr. V.B. Sharma,
Prof. APM, SASRD, NU, Medziphema, Nagaland
6. Dr. Savino,
Associate Prof. LPM, SASRD, NU, Medziphema, Nagaland.
7. Dr. S.Rajkhow,
Scientist (AH), NRC on Mithun, Jharnapani
8. Dr. M. Karunakaran
Scientist (Animal Reproduction), ICAR Res. Complex, Nagaland Centre.
9. Dr. A. Dhali,
Scientist (LPM), NRC on Mithun, Jharnapani
10. Dr. (Mrs. Ajumoni Mech,
Scientist (LPM),NRC on Mithun, Jharnapani.
11. Dr. M. Mondal,
Scientist (AP), NRC on Mithun, Jharnapani
12. Dr. B. Prakash,
Scientist (AN), NRC on Mithun, Jharnapani.
13. Dr. (Miss) Paihem Mechu
SRF, Animal Health Division, NRC on Mithun

14. Dr. (Miss) Roukoubeinuo Huozha
SRF, Animal Physiology Division, NRC on Mithun, Jharnapani
15. Dr. R.K. Das,
RA, Animal Health Division, NRC on Mithun, Jharnapani.
16. Dr. Prakash, R. Dutta,
RA (Animal Health), NRC on Mithun, Jharnapani.
17. Dr. Dipak Sinha,
Research Scholar (M.VSc.) Dept. of Animal Nutrition, NRC on Mithun,
Jharnapani

Dr. C. Rajkhowa, Director, NRC on Mithun and chairman of the SRC delivered the welcome address for the meeting. He briefed about the purpose and main objectives of this meeting and opined that this meeting would provide a platform for interaction with the personals from other animal sciences institute, which will ultimately help in evaluation of ongoing research projects of this institute. He also mentioned that this interaction will also help in identifying the important areas of research and other collaborative research programme with other research organizations. He further mentioned that this institute is yet to be a full-fledged research organization with ample scope for developing better research facilities in coming days. The chairman proposed that the institute project will be presented first and requested the participants to put forward their views if any (in the form of suggestion/ recommendations) regarding the projects proposal and achievements.

Ongoing and Proposed Projects under different Sections of the Institute:

ANIMAL PRODUCTION:

Project Title: Development of Suitable Protocol for Preservation of Mithun Semen

PI: Dr. A. Dhali

Activities and Achievement:

The activities of the project have been presented during the SRC meeting. The PI of the project described the different methods of semen collection in Mithun and their subsequent preservation. The PI also described the procedure for cryo-preservation of

Mithun semen adopted particularly for Mithun. He opined that this cryo-preservation will be useful for preservation of Mithun semen for longer duration and will facilitate in A.I. under field condition, which will ultimately help the Mithun farmers.

Suggestion:

Dr. K.K. Baruah from C.V.Sc. Khanapara suggested that CASA can be purchased to carryout more research work on Mithun semen and Dr. D.K. Sharma from C.V.Sc. Khanapara suggested that microbial study in regards to preservation of semen is also another area to be explored.

Project Title: Studies on estrous cycle in mithun

PI: Dr. A. Dhali

Activities and Achievement:

The activities of the project have been presented during the SRC meeting. During the project period the estrous behaviour in Mithun during natural estrous cycle has been studied. The results of use of various hormones in synchronization of estrous cycle in Mithun have been presented before the house. The PI also elaborated the role of this hormone in synchronization of estrous cycle in Mithun.

Project Title: Survey, Evaluation & Characterization of Tho-Tho Cattle:

PI : Dr. A. Dhali

Activities and Achievement:

The population density, distribution, physical characteristic, production performance and carcass characteristic of this indigenous cattle of Nagaland have been studied in detailed and presented before the house.

Suggestion:

Dr. K.K. Baruah from C.V.Sc. Khanapara suggested that the more detail study (including genetic characteristic) should be carried out in collaboration with institute like NBAGR.

Project Title: To Study the ^{milk} Meat Production Performance of Miithun under Semi - intensive system of Management:

PI: Dr. (Mrs.) Anjumoni Mech

Activities and Achievement:

Under this project the PI explained in detail about the variation of different milk constituents during different stages of lactation. The total average milk production for 210 days of lactation period was calculated to be 260.61 litres. A high positive correlation between fat and total solid content a positive correlation was also observed between urea and crude protein content. There was no significant effect of individual animal variation and week of lactation on fat, urea lactose and crude protein content. However, there was significant effect (<0.01) of all the factors on TS content and milk production performance whereas there is significant effect of individual animal variation (<0.01) and diurnal variation (<0.05) with respect to ash content.

Suggestion:

Dr. K. K Baruah, AAU said that this basic information on milk production potentiality of mithun will help to take up future in-depth programme in this field to explore this animal for milk production. There was also a suggestion that detail studies on genetic studies related to milk production can also be taken up. Once scientists from genetics discipline join in the institute.

Project Title: To study the role of colostrum on neonatal immunity and it's effect on growth performance in Mithun calves.

PI : Dr. (Mrs.) Anjumoni Mech

Activities and Achievement:

Under this project the results of serum concentrations of different classes of immunoglobulin, serum protein as well as serum albumin in neonate mithun calves were presented. The PI also presented the results of the effect of colostrum feeding on growth performance of Mithun calves.

Suggestion:

Dr. D.K. Sharma from C.V.Sc. Knapara suggested that the immunoglobulins and its role on disease resistance is an another important area that needs to be thoroughly investigated

ANIMAL NUTRITION:

Project Titles: A Comprehensive Study on Survey, Nutritional Evaluation and Development of Improved Agronomic Practices for Year Round Availability of Green Fodder for Mithun under NEH Region of India

PI: Dr. B. Prakash

Activities and Achievement:

Under this project the PI of the project collected various feeds and fodder samples from the states of Nagaland and Arunachal Pradesh for analysis. The PI also analysed these samples for chemical composition and anti nutritional factors. The results of these findings were presented before the house. The PI has also taken the initiative to identify the scientific name of different grasses collected from those regions in collaboration with BSI, Shillong.

Suggestion:

Dr K. K. Baruah, Professor & Head, Animal Nutrition, College of Veterinary Science, Khanapra suggested to analyze for Non protein nitrogen fraction (NPN) of crude protein rich foliage samples, in order to know the exact position of protein fractions of different foliages. He also suggested to analyze for anti-nutritional factor if any, especially in protein rich foliages. Dr. Savino, Associate Professor, APM, opined that the propagation techniques of some important perennial trees are needed to be developed, which will be of immense importance in multiplying the important fodder trees at farmers field.

Project Titles: Effect of feeding locally available feed stuff based ration on nutrient utilization and growth in Mithun (*Bos frontalis*)

PI: Dr. B. Prakash

Activities and Achievement:

Under this project, the PI described in detail the effect of different mixed rations on growth performance and nutrient utilization in different categories of Mithun. The PI also explained about the economic benefits of incorporation of locally available fodders in mixed rations of Mithun.

Suggestion:

Dr K. K. Baruah, Professor & Head, Animal Nutrition, College of Veterinary Science, Khanapra has suggested to carryout digestibility trials to standardize the nutrient (DCP and TDN) requirements for mithun, as authentic information is not available on DCP and TDN requirement of Mithun.

Project Titles: Mithun rumen ecology and its manipulation

PI: Dr. B. Prakash

Activities and Achievement:

Parameters like total VFA and P^H of ruminal contents were estimated.

Suggestion:

Dr. D. K. Sharma, National Fellow, Professor, Department of Microbiology, College of Veterinary Science, Khanapra suggested to carryout a detailed study of rumen microbial population. Dr K. K. Baruah, Professor & Head, Animal Nutrition, has also suggested to conduct a detailed study on enzymes of ruminal fluid with different diets.

ANIMAL PHYSIOLOGY:

Dr. M Mondal presented salient findings of five research projects. Of which, four were Institute funded project and one was A P Cess Fund Project of ICAR.

Project Title: Development and Validation of Hormone Principles by Enzyme Immunoassay in Mithun (*Bos frontalis*) Plasma and its Application for Growth Studies"

PI: Dr. Mohan Mondal

Activities and Achievement:

The PI presented the procedures for enzymeimmunoassays for hormone estimation in mithun blood plasma and advantageous nature of these developed assay procedures over conventional RIA and commercially available kits in terms of economics, sensitivity, reliability, rapidity and accuracy. He has also presented the endocrine mechanism of puberty in his presentation. He further emphasized that prepubertal doubling of GH concentrations and increased pulse frequency and amplitudes are the essential requirements for sexual maturity in mithuns.

Suggestion:

Dr. K. K. Baruah, Professor of Animal Nutrition and Dr. Dilip Sharma, National Professor from Assam Agricultural University suggested to develop kits for estimation of hormones in the laboratory of NRC on Mithun itself.

Project Title: Studies On Different Physiological Stages Of Growth, Blood Metabolites and Minerals and Their Relationship in Mithun (*Bos Frontalis*)

PI: Dr. Mohan Mondal

Activities and Achievement:

Under this project the PI described the growth curve of mithun from birth through adulthood and relationship of blood metabolites with different stages of growth in mithun.

Project Title: Association of Single Nucleotide Polymorphisms (SNP) in Growth Hormone (GH) and GH Receptor genes with blood GH and IGF-I concentrations and growth traits in Mithun (*Bos frontalis*)

PI: Dr. Mohan Mondal

Activities and Achievement:

While presenting the findings of the project the PI indicated that microsatellite genotyping for GH receptor genes is on progress. Already 13 microsatellite genes have been generated and another 12 to be worked out. He also mentioned that for different hormone genes like GH and IGF, primers have been designed and procured for the further studies to be conducted in this aspect.

Project Title: Studies on Endocrine Status of Mithun (*Bos frontalis*) During Different Stages of Pregnancy, Peri-parturient Period and Lactation

PI: Dr. Mohan Mondal

Activities and Achievement:

The elucidated the detailed procedures for development and validation of enzymeimmunoassay for determination of estradiol-17 β , total estrogen, prolactin and oxytocin in blood plasma of mithun. He also explained the plasma prolactin and oxytocin concentrations during the milk letdown process in mithun cows.

Project Title: Development of estrus synchronization protocols in mithun (*Bos frontalis*) for fixed-time insemination.

PI: Dr. Mohan Mondal

Activities and Achievement:

Under this project the PI presented the detailed endocrinology of estrous cycle and during the peri-estrous period in mithun cows. The relationship of plasma estradiol-17 β , total estrogen and progesterone to estrous behavior has been described for mithun cows. He has also indicated timing of ovulation in relation to estrus and LH peak in his presentation. The project leader also explained the possibilities of using different estrous signs as a predictor for ovulation emphasizing the mounting heat as a promising one in this regard for practical viewpoint.

ANIMAL HEALTH:

Dr. S. Rajkhowa, the project leader presented the salient findings of five research projects, of which, four were Institute funded project and one was A P Cess Fund Project of ICAR. In addition he also proposed a new project proposal for approval of SRC. He also mentioned that the first two projects have already been completed and the preparation of final report is in progress.

Project title: Screening, evaluation and monitoring of parasitic diseases in mithun

PI: Dr. S. Rajkhowa

Activities and Achievement:

Under this project the project leader has presented in detail about the common parasites of mithuns, their seasonal prevalence, anthelmintic efficacy of different drugs against important parasites of mithun, molecular biological tools used for the diagnosis of some important parasites of mithun, formulation of deworming schedule and measures used for control of those parasites of mithun

Project title: Survey on Prevailing Diseases of Mithun in NEH region

PI: Dr. S. Rajkhowa

Activities and Achievement:

The PI presented the salient research findings in detail during the study period which included- the common diseases of mithun reared in free-range system as well as mithuns kept in semi-intensive system of management, important bacterial, viral, parasitic and fungal diseases of mithuns, suitability and reliability of different diagnostic tests used for the diagnosis of important infectious diseases of mithun, different molecular biological tools used for the diagnosis of important infectious diseases of mithun, status of various important diseases of mithun and possible preventive and control measures adopted for the prevention of those diseases in mithun.

Project title: Studies on FMD in mithuns with particular reference to epidemiology and seromonitoring

PI: Dr. S. Rajkhowa

Activities and Achievement:

This project was undertaken in collaboration with AICRP on FMD, AAU, Khanapara unit and mithuns above 6 months of age were vaccinated with polyvalent FMD vaccine and immune response of mithuns against vaccination was evaluated on day 0, 30, 90, 180 and 270 post vaccinations. The study revealed protective antibody titre in vaccinated mithuns up to day 180 post vaccinations. The project leader also strongly suggested the vaccination of mithuns at every 6 months interval rather than vaccinating mithun annually.

Project title: Studies on production and deficiency diseases of Mithun

PI: Dr. S. Rajkhowa

Activities and Achievement:

Under this project the incidence of ketosis in mithun and the possible influence of managerial system on its incidence was discussed.

Project title: Microbial and Parasitic causes of calf mortality in mithun and their possible control (AP cess fund project):

PI: Dr. S. Rajkhowa

Activities and Achievement:

Mithuns were screened against diseases (diseases mainly associated with calf diarrhoea) like rotavirus infection, coronavirus infection, *Cryptosporidium parvum* infection and Bovine viral diarrhoea and mithuns were found to possess antibody against

these diseases. *Escherichia coli* (sero group 025) was also isolated from the pericardial sac of a mithun calf during the study period. Antibiotic sensitivity pattern of this isolate against 13 antibiotics was also assessed.

Proposed Project: Isolation, identification and characterization of important bacterial pathogens of mithun.

PI: Dr. S. Rajkhowa

Objectives:

A. Immediate Objectives:

1. To isolate, identify and characterize the organisms from the clinical cases of mithun.
2. To carry out antibiotic sensitivity test against isolated organisms.

B. Long term Objectives:

1. To formulate preventive and control measures against important bacterial diseases of mithun

Technical Programme:

1. Animals from both the farms of the institute as well as from mithun inhabited areas will be used for the study.
2. Appropriate clinical samples will be collected and will be subjected to cultural study in common routine media or in specific enriched media.
3. Isolation of the organism will be done as per standard method.
4. Identification and characterization of the isolated organism will be carried out by morphological study, biochemical tests and application of PCR technique.
5. Antibiotic sensitivity test and pathogenicity test be carried out as per standard method.
6. Preventive and control measures will be formulated based on results obtained from the study.

The proposed project has been approved by the committee.

The meeting ended with vote of thanks by Dr. A. Dhali.


(C. RAJKHOWA)
Director.

5/3/06