Mithun Digest

NATIONAL RESEARCH CENTRE ON MITHUN

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INSTITUTIONAL ACTIVITIES

Republic Day Celebration

The Republic day was celebrated at the institute with full enthusiasm where all the staff members of the institute participated and children of the staff members took part in many cultural events organized on the day.

Celebration of the Republic Day

Participation in North East Agri Expo

The North East Agri Expo 2006 which was organized by Govt. of Nagaland in collaboration with Ministry of Agriculture, Ministry of Development of North Eastern Region and Ministry of Rural Development, Govt. of India was held at Dimapur, Nagaland with effect from 27-31 March'2006. The institute has participated in the Expo and demonstrated various activities to the participants and to the visitors. The institute had also kept a provision for separate stall (in the expo) especially for exhibiting live Mithuns of different strains found in Arunachal Pradesh,Nagaland, Manipur and Mizoram.

Mrs. Indrani Kaur, Director, Agriculture, CII is taking keen interest on value added mithun products displayed by NRCM at NE-Agri-Expo

Industries Minister Khekiho Zhimomi is taking keen interest to know about the feed blocks displayed in NE-Agri Expo by NRCM

Processed mithun meat products are being displayed at NE-Agri-Expo held at Dimapur

Milk and finished Leather products of mithun are being displayed at NE-Agri-Expo held at Dimapur

Staff Research Council Meeting

The annual SRC meeting was held on 8th March'2006 in the meeting hall of NRC on Mithun under the chairmanship of Dr. Chandan Rajkhowa, Director, NRC on Mithun. A total of 17 members participated in the meeting. The committee evaluated various ongoing projects of the institute and also suggested various steps so that more information can be generated on this hitherto not fully explored species of Indian origin. The committee also approved few new proposals at this meeting.

Inauguration of KVK at Porba

The KVK at Porba was inaugurated by Honourable Home Minister, Govt. of Nagaland, Mr. Thenucho on 29th April 2006. Dr. Chandan Rajkhowa, Director of the institute was also present at the function.

Participation of farmers through their cultural activities in the inaugural function of the KVK at Porba

RESEARCH ACTIVITIES

Animal Nutrition

Rumen degradation characteristics and effective degradability of dry matter and crude protein of important foliages were studied. The dry matter disappearance of foliages linearly increased as its incubation period in rumen increased. The instantly soluble dry matter fraction of fodder samples was 17.5 and 28.7 percent in *Ficus infectoria* and *Stereospermum chelonoedes* respectively. The insoluble but degradable dry matter fraction with time was lowest in Sabia sp 26.5% and highest in *Emblica officinalis* 64.1%. The effective degradability ranged from 27.1- 41.0% among the fodder samples. A linear increase in protein disappearance of fodder samples was also observed with increased period of incubation in rumen up to 72 h. The undegradable protein (UDP) contents of different fodders varied from 55.9 to 73.6 g per 100 g of protein. There was a significant ($P<0.01$) negative correlation between effective degradability of dry matter and cell wall content (NDF and ADF). The regression equation showed that, the chemical constituents of different fodders, alone or in various combinations were well correlated with effective degradability of dry matter and crude protein.

Temichiede (*Ficus hirta*) Herb

Phegwe (*Thysalona agrostis*) grass/Broom grass

Dzapri (*Oroxylum indicum*) Tree

Animal Physiology

As an alternative to radioimmunoassays, a simple, highly sensitive and quick enzymeimmunoassay (EIA) for determination of 13,14-dihydro-15-keto-PGF2α (PGFM) in blood plasma of Mithun (*Bos frontalis;* bovine) on microtitreplates using second antibody coating technique and PGFM-horseradish peroxidase as a label has been developed. The developed EIA was further validated biologically by estimating PGFM in cyclic cows for the entire estrous cycle and in peri-parturient cows beginning day 7 prior to calving till day 30 post-calving; the concentrations were along with the expected lines as reported in bovine. The study revealed that the EIA developed in our study is simple, highly sensitive, valid and sufficiently reliable method for estimation of PGFM directly in bovine plasma.

Livestock Production & Management

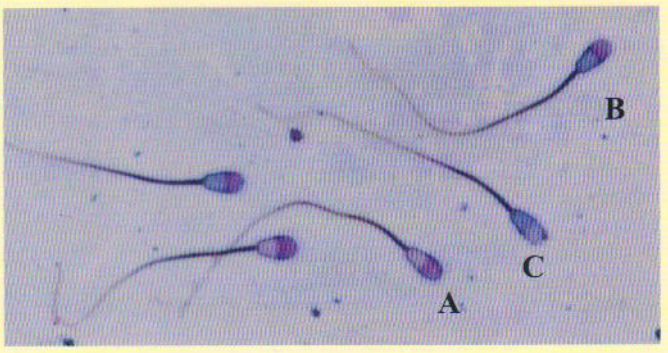
A study was carry out on cryopreservation of mithun semen. In this study only good quality semen (mass activity score 3 or more) were preserved in liquid nitrogen.

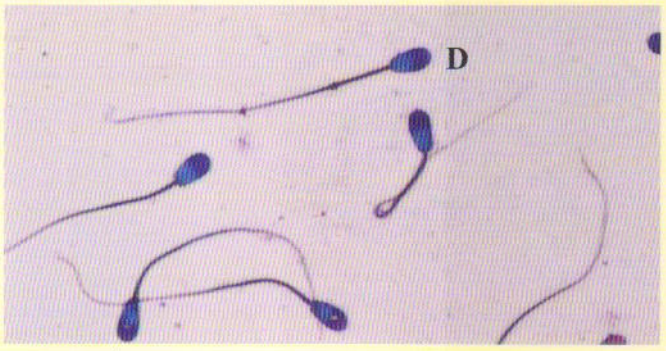
After final dilution, samples were packaged in 0.50 ml straws leaving a small air space at the laboratory seal end. The straws were heat sealed by pressing between the heated ends of a forceps and then equilibrated at 5°C for 4 h. After equilibration, straws were frozen in liquid nitrogen vapour, 5 cm above the liquid nitrogen level for 10 min and then plunged into liquid nitrogen for storage.

The characteristics of the cryopreserved mithun semen were studied in detail and the study revealed that the morphological abnormalities of mithun sperm was increased after cryopreservation and approximately 30% morphological abnormalities was recorded in cryopreserved semen.

To check the efficacy of the developed cryopreservation protocol, AI was done in three mithuns with cryopreserved semen. Following AI, pregnancy has been established in two mithuns. In conclusion, acceptable level of progressive motility, live sperm count and acrosomal integrity were observed in cryopreserved mithun semen. The results indicate that the developed cryopreservation protocol can be used effectively for mithun semen preservation and subsequent AI.

Figure: Light micrograph of mithun spermatozoa after staining with trypan blue and giemsa stains. A: live spermatozoa with intact acrosome, B: dead spermatozoa with intact acrosome, C: dead spermatozoa without acrosome, D: dead spermatozoa with damaged acrosome Magnification × 400.

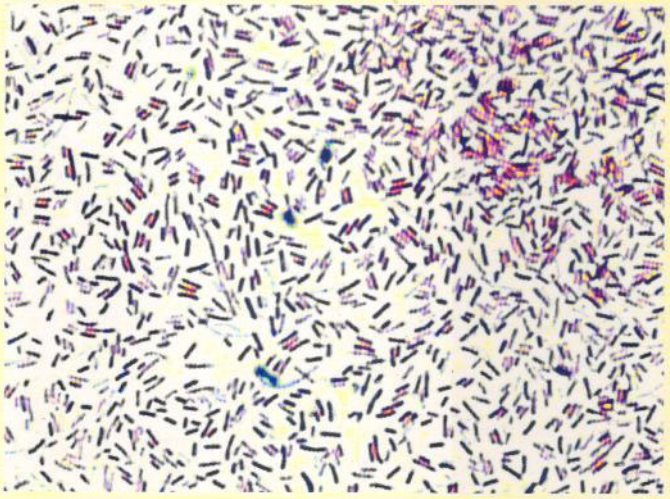




Animal Health

Studies on prevalence of BVDV and Bovine Adenovirus-3 in mithun revealed that the overall prevalence was 23 and 91%, respectively. The epidemiological features of these diseases were also studied.

A study was also undertaken to find out the bacterial pathogens associated with diarrhea in mithun calves. For this purpose faecal samples from diarrhoeic calves were collected and analyzed by standard bacteriological methods. Based on cultural, morphological and biochemical studies *Escherichia coli (E. coli)* isolates were isolated from 65 faecal samples and these isolates were



Gram negative rods under microscope

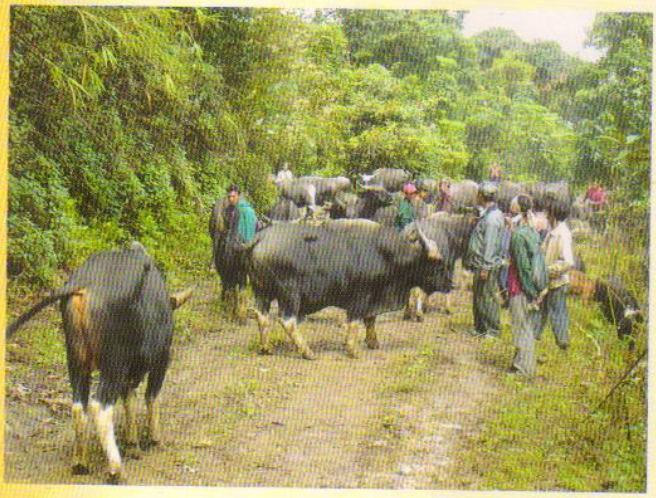
Antimicrobial sensitivity test against *E. coli* isolates

subjected to antimicrobial drug sensitivity test. Out of 13 antimicrobials (Amikacin, Amoxycillin, ceftriaxone, Co-trimoxazole, Enrofloxacin, Floxidin, Furazolidone, Gentamicin, Kanamycin, Nalidixic Acid, Norfloxacin, Oxytetracycline and Streptomycin) tested against these isolates, isolates were found to be susceptible only to Kanamycin and Streptomycin. In another test, all these *E. coli* isolates (obtained from 65 diarrhoeic samples) were subjected to specific etiologic diagnosis of K^{99+} *E. coli* by using K^{99+} Pilitest. Out of 65 *E. coli* positive samples, only 10 samples were found to be positive for K^{99+} *E. coli.* The E. coli isolates were got serotyped at National Salmonella and Escherichia Centre (Kasauli, HP).

EXTENSION ACTIVITIES

An animal health camp was conducted at Porba village, Phek district of Nagalnd where activities like vaccination of free range mithuns against FMD and deworming of mithuns were carried out. Apart from vaccinating mithuns, blood and faecal samples were also collected from those mithuns for screening against some important diseases.

Vaccination of free-range mithuns against FMD at Porba Village



A herd of free-ranging mithun brought to the field for vaccination against FMD

A training programme on rearing of poultry was organized among the villagers of phek district where various aspects of rearing of backyard poultry was taught to the poultry farmers. Sixty six farmers of Thuvopisumi village of Phek district had participated in the programme

DISTINGUISHED VISITORS

Honourable Union Minister of State for Agriculture Mr. Kantilal Bhuria visited the institute on 26th March'2006.

Mr. Thenucho, Home Minister, and Minister for Animal Husbandry and Vetrinary, Mr. Azo Nyienu, Minister, Agriculture, Govt. of Nagaland, Dr. P. Das, DDG (AE), Smt. Sushma Nath Additional Secretary (DARE) & Secretary ICAR, Mr. Alemteshi Jamir, Agriculture Production Commissioner, Govt. of Nagaland, Mrs. Thangi Manen, Secretary, Horticulture, Govt. of Nagaland and Dr. K.M. Bujarbaruah, Director, ICAR Research Complex for NEH Region, Barapani visited the institute on 11th January'2006.

Mr. W. Wangyuh Konyak, M. P. Lok Sabha visited the Institute on 1st June 2006 to know the activities of the institute and to know the farmer's interaction with the institute.

Padmashree Anil P. Joshi of Dehradun visited the institute on 6th March 2006 and has been impressed with the activities of the institute.

Commandant Ravi Tuteja of 42 Assam Rifles had visited the institute on 6th March'2006.

Visit of NRCM campus by Honourable Union Minister of State for Agriculture Mr. Kantilal Bhuria

Visit of NRCM by Mr. Thenucho, Honourable Home Minister, Govt. of Nagaland.

A high level meeting held at NRC on Mithun on 11th January'2006 to discuss about the arrangement of North East Agri Expo which was held at Dimapur.

Visit of NRC on Mithun by Smt. Sushma Nath, Additional Secretary (DARE) & Secretary ICAR on 11th January'2006.

PERSONALIA

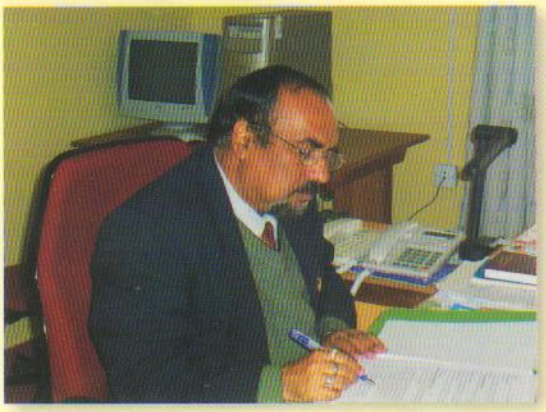
Participation in Seminar/ Conference / Symposium

Dr. Mohan Mondal, Scientist (Animal Physiology) has attended XV Annual conference of SAPI, Mumbai w.e.f. January 5-7' 2006.

Dr. S. Rajkhowa, Scientist (Sr. Scale) has attended XXIV Annual Convention of ISVM held at Bangalore w.e.f February 22-24' 2006.

Dr. C. Rajkhowa, Director has participated in National Symposium on buffalo for rural upliftment & Annual convention of Indian Society for Buffalo Development held at Bombay veterinary College, Mumbai w.e.f. May 27-30'2006.

From The Director's Desk



The animal protein has a major contribution to nutrient requirement of human being. It also plays a significant role in maintaining sound health and vigor. At present there is a wide gap between the requirement and production of animal protein in our country. So to bridge this gap along with the effort to augment productivity in traditional species of Animals we should also give emphasis to promote some of the promising indigenous species of animal of our country. Mithun *(Bos frontalis)* which is found in North Eastern hilly region can play a significant role in augmenting the meat and milk production of our country if scientific inputs can be incorporated in the traditional husbandry practices.

The effort made by the scientist to generate information on productivity and production in relation to this animal is really commendable and will be of great help for farmers for improving their stock and thereby increasing the productivity. Studies on degradability of locally available feeds and fodder with an aim to formulate TMR is an earnest aim to solve the problem of high cost feed.

Protocols standardized by the scientist for preservation of semen in freezing condition by using liquid nitrogen is an very encouraging step to go ahead for successful artificial insemination programme.

Work carried out successfully by the scientist to identify some of the important causal agents of calf mortality will be of great use for subsequent formulation of control strategies.

I must congratulate all the scientist and other staff in their endeavour for solving problem faced by farming community engaged in Mithun rearing in spite of certain limitation.

(C. Rajkhowa)

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