Mithun Digest

The bi-annual panorama.....

ICAR-National Research Centre on Mithun

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Dr. Abhijit Mitra joined as Director, ICAR-NRC on Mithun

Dr. Abhijit Mitra, joined as Director on 26.03.2015 and was given a grand welcome by Dr. Nazrul Hoque, Acting Director.

Dr. Abhijit Mitra joined as Director, ICAR-NRC on Mithun, Nagaland on 26.03.2015. Born on 12th November 1965 at Jamalpur, Munger, Bihar. Dr. Mitra completed his B.V.Sc. & A.H. from the College of Veterinary Science, Bidhan Chandra Krishi Viswavidyalaya, West Bengal in 1987; thereafter did his Masters and Ph. D. in Animal Genetics & Breeding from National Dairy Research Institute (Deemed University), Karnal in 1990 and 1994. He has been a meritorious student and awarded with Gold Medal in both graduate and post-graduate programs. Dr. Mitra pursued his Post-Doctoral Fellowship under DBT-BOYSCAST Programme in USDA-ARS, Beltsville MD, USA in 2000-01 and undergone NAIP-HRD Post-Doctoral International Training from Roslin Institute, Edinburg, Scotland, UK in 2009.

After joining ARS on 1994, Dr. Mitra served as a Scientist at National Dairy Research Institute, Karnal till 2001 and then served as a Senior Scientist (till 2009) and Principal Scientist at Indian Veterinary Research Institute, Izatnagar. Before taking over the position of Director of this Institute, Dr. Mitra worked as ICAR-National Fellow at Indian Veterinary Research Institute, Izatnagar since 2011.

D. Mitra has been working in the area of molecular genetics and genomics. He has over 65 research papers in national and international journals of repute. His major research accomplishments include identification of novel genetic polymorphisms, delineation of expression profile of the candidate genes influencing maternal recognition of pregnancy in buffalo, and genetics of host resistance against intracellular pathogens. Other notable work involved cloning of novel variants of Interferon-tau of several ruminant species including mithun, cloning & characterization of myostatin gene of Indian goat breeds and RNAi of myostatin gene for increasing the meat production. Recently, his group has developed a protocol of electroporation-aided sperm-mediated gene transfer for producing transgenic goat.

Dr. Mitra has been involved in post-graduate teaching for last 21 years in two of the most prestigious ICAR Deemed Universities - IVRI and NDRI and guided seven Ph. D. and seven MVSc students.

Dr. Mitra has the distinction of receiving several recognitions including DAAD (GAES) Fellowship, SERC Visiting Fellowship (DST), ICAR Awards for Outstanding Multidisciplinary Team Research in Agriculture and Allied Sciences for the Biennium (2007-08) as a Team Leader.

INSTITUTIONAL ACTIVITIES

Republic Day Celebration

The 68th Republic Day was celebrated in the Institute on 26th January, 2015 in a befitting manner with a pledge to work for the benefit of the motherland. Dr. N. Haque, Acting Director unfurled the tricolor in the morning with the singing of the National Anthem. Dr. N. Haque encouraged all the staffs to work with a purpose and remain ever vigilant for safeguarding the reputation of the Institute in particular and the nation in general. The children and family members also took active part in this celebration.

Institute Research Council Meeting

The Institute Research Council (IRC) Meeting was held in the meeting hall of the Institute on 20th February, 2015 under the chairmanship of Dr. N. Haque, Acting Director. Dr. K.K. Baruah, OSD & Dean, College of Fishery Sciences (AAU); Dr. R. Roychoudhory, Prof. & Head, Dept. of LPM; Dr. Atul Borgohoni, Prof. & Head, Extension Education also attended the meeting as external experts and gave valuable inputs for the refinement of the ongoing research work of the Scientists.

Institute Management Committee (IMC)

20th Meeting of IMC of the Institute was held on 5th May 2015 under the chairmanship of Dr. Abhijit Mitra, Director and discussed a number of important matters including procurement of new vehicles, initiation of new works and condemnation of obsolete store items. The IMC took the stock of various ongoing research as well other activities of the institute and suggested some important measures to refine the course of activities.

RESEARCH HIGHLIGHTS

Network project on Characterization of Mithuns (AnGR) - Nagaland unit

Six Network-Project camps were organized in different places of Kohima, Phek, Tuensang and Longleng districts of Nagaland. Through survey at the mithun rearing villages basic population statistics and management practices of mithuns were collected. Various physical traits of mithuns (n=117) were recorded. Use of micro-chips for animal identification was demonstrated and the same was also implanted on a large number of mithuns brought at these camps. The villagers were also briefed about the scientific mithun husbandry practices through group discussions and supply of printed literature.

Khonoma Camp

Pholami Camp

Ponching camp

Ultrasonography of ovary in mithun cows

In mithun, the expression of behavioral signs of estrus is markedly less pronounced. The behavioral signs of heat such as bellowing, frequent mounting, restlessness, mucus discharge and vulval swelling are rarely seen and often absent. Estrus in mithun may be termed as silent. Due to less pronounced estrus behavior, it is very difficult to identify the animal in heat for controlled breeding or Artificial Insemination. Ultrasonography, a diagnostic technique is used to study the functional status of the ovary, stage of the reproductive cycle and for the detection of estrous through presence of growing follicles, Graffian follicle and Corpus Luteum in the ovary. A study was conducted to evaluate the ultrasonographic profile of mithun ovary during diaestrus and proestrus stages of estrous cycle.

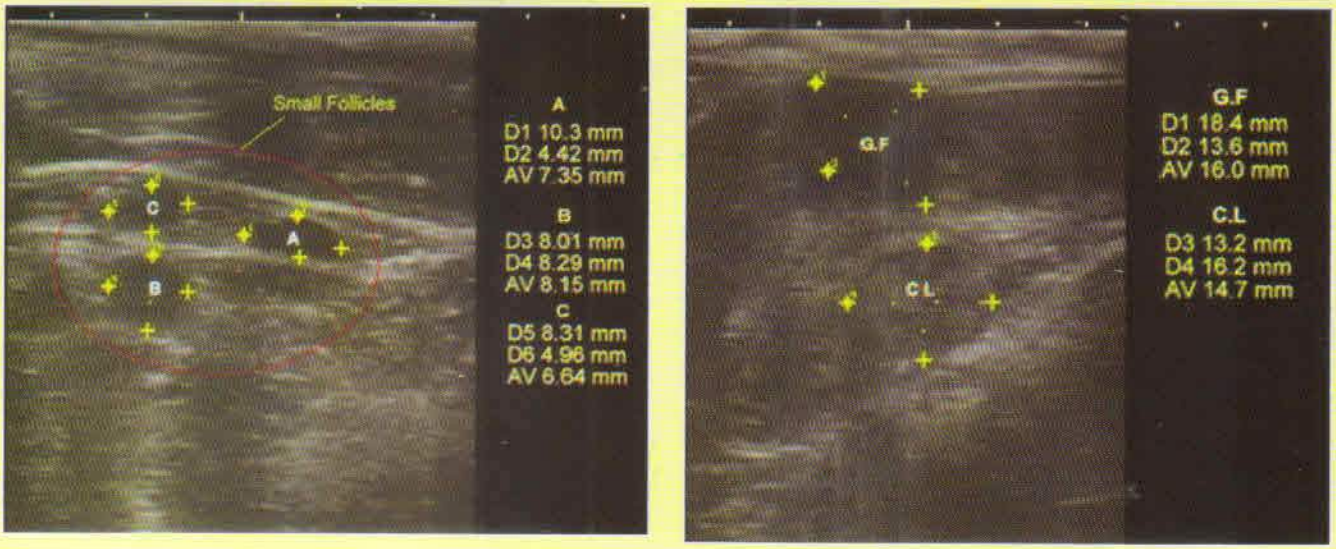

Fig. 1. Ultrasonographic Image of mithun ovary showing presence of small and medium follicles (Panel A); large pre-ovulatory follicle (Graffian Follicle) and regressing Corpus Luteum (Panel B) as observed using trans-rectal linear array transducer (7.5 Mz).

Molecular identification of Ixodid tick of mithun from Nagaland

Live specimens of gross ticks were collected from Jotsoma and Khonoma village of Kohima district of Nagaland. With the available morphological keys, ticks were identified upto genus level as Ixodes species. For accurate identification upto species level, published molecular probes namely internal transcribed spacer-2 were used. PCR analysis revealed a differential amplification of ITS2 region i.e., upto 900bp and 1000bp for the ticks of Khonoma and Jotsoma villages, respectively. Based on the nucleotide sequence analysis, Ixodes tick from Khonoma region showed 100% similarity with ITS2 region of *Ixodes ovatus* (GenBank Accession no.AB280550.1), whereas ticks from Jotsoma region showed 95% similarity with that of *I. acutitarsus* (GenBAnkAccession no. AB105168.1). This is the first report of *Ixodes ovatus* from mithun.

Fig: Gross view of *I. ovatus*

Comparative evaluation of Cell-mediated Immune status of Mithun *(Bos frontalis)* and Tho-Tho Cattle

A total of 40 plasma samples from mithun and Tho-Tho cattle under different physiological stages were analyzed for the estimation of PRF-1 and Gramzyme B as an indicator of cell-mediated immune (CMI) status. Significantly higher concentration of Granzyme B in Tho-Tho cattle than that in mithun during all the physiological stages indicated a better CMI status of the Tho-tho cattle.

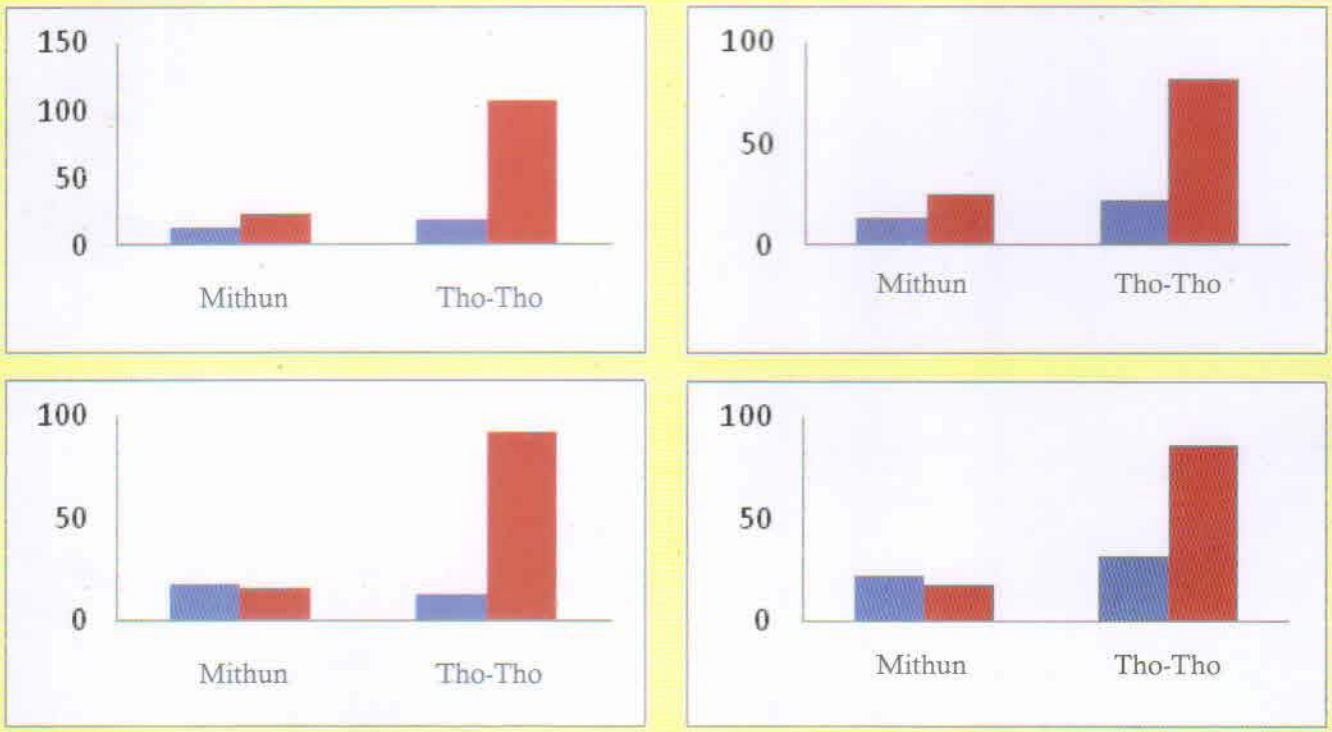

*Fig.: Concentration of Perforin-1 and Granzyme B in Mithun and Tho-Tho cattle during different physiological stages (*Independent sample t-test significance level P≤ 0.05)* ■ *Tho-tho cattle* ■ *Mithun*

Training Programme organized

- Hands-on training programme on "*Augmentation of Health and Production through Biotechnological and Bioinformatics Tools*" from 21st to 30th March, 2015 for B.Tech students from SETAM (Nagaland University).
- Training programme on "*Reproductive Management: An integrated approach to augment breeding performance of mithun and other livestock species*" under the aegis of TSP programme, ICAR, New Delhi for the Students of Veterinary Field Assistant, Veterinary Field Training Institute, Medziphema, Nagaland from 02nd to 11th February, 2015.

PERSONALIA

Transferred/Promotion/Joining

- Shri. Rokongulie Krose, Veterinary Field Assistant was promoted to the post of Senior Technician w.e.f. 12.01.2015
- Shri. Manoj Kumar Mohapatra, Assistant was transferred to CIFA, Bhubaneshwar w.e.f. 13.02.2015 (A/N)
- Dr. Abhijit Mitra joined as Director, ICAR-NRCM w.e.f. 26.03.2015 (A/N)
- Dr. (Mrs.) Saroj Toppo, Pr. Scientist joined this Institute w.e.f. 18.05.2015
- Dr. K. K. Baruah was relieved to join ICAR-NRC Pig, Guwahati w.e.f. 30.5.2015

- Dr. Prakash Ranjan Dutta, STO was promoted to the post of Chief Technical Officer (ACTO) w.e.f. 25.06.2015

VISITING DIGNITARIES

- Dr. R.S. Gandhi, ADG (AP&B), ICAR, New Delhi on 09.04.2015
- Dr. A.K. Sarma, Director, ICAR-NRC on Pig, Rani on 09.04.2015

Visit of Hon'ble Sri Padmanabha Balakrishna Acharya, Governor, Nagaland, 8.4.2015

- Sh. Kanhaiya Chowdhury, Deputy Secretary (Agri. Edn.), ICAR, New Delhi - 13.4.2015
- Brig. G.S. Bisht, HQ NSG – 2.05.2015

HONOURS/AWARDS

Dr. Perumal P. was awarded Young Scientist Award 2015 (ICBSM) in 2nd International Conference on Bio-Resource and Stress Management by Ratikanta Maiti Foundation, Kolkata, India held at PJTSAU and ANGRAU, Hyderabad, India during 07 – 10 January, 2015.

MISCELLANY

Extension activities under Tribal Sub Plan (TSP)

A total of five training programme/animal health camp/technology injection programme/FLDs were conducted in Phek, Kohima and Mon districts of Nagaland. Conducted farmers-scientist interaction to know the problems faced by the mithun farmers. Farmers were also made aware about the scientific methods of rearing and encouraged to adopt modern technology in order to get more profit. A total of 277 farmers participated in these programme. Vaccinated the mithuns against FMD (502) and BQ (245). Vaccinated 400 poultry birds against Ranikhet disease. Ear tagging has been done in all the mithuns for identification. Distributed the inputs like dewormers, common medicine and mineral mixture among mithun farmers.

Technology Injection Programme under TSP, Pongching Village, Longleng on 20.3.2015

Technology Injection Programme under TSP, Khonoma Village, Kohima on 13.3.2015

The Editorial Escapade

Welcome New Year 2015 and with this, we also extend a hearty welcome to our new Director, Dr. Abhijit Mitra, a brilliant academician and geneticist, who joined this Institute on 26 March 2015. The United Nations has declared 2015 the International Year of Soils and Light-based Technologies.

The Scientists of this Institute, during the period, could generate valuable information on various aspects of mithun husbandry. The studies on physical characterization of mithun, mithun reproduction in terms of the sperm behaviour under hypoosmotic solution, comparison of immunologic and mithun and Tho tho cattle, and identification of new parasites affecting mithun through molecular probes are a few most notable work during this period. One of our younger colleagues has been awarded with Young Scientist Award which is a testimonial to the hard work.

In International scenario, Iranian chemists from Ferdowsi University of Mashhad created biodiesel fuel from soya oil which will definitely decrease pollutions caused by fossil fuels and on the other hand, geneticists from US and UK have mapped the genome of the bowhead whale and identified genes responsible for its amazing 200-year lifespan!

During this period, we have organized few important meetings like IRC, IMC and hosted highly placed VIP dignitaries including the Hon'ble Governor of Nagaland; highly ranked Army officers, and officers from ICAR HQ. We have also lost few Scientists and staff from our rank who joined other Institutes after working for a considerable time here, and at the same time, few Scientist and staff joined our Institute to keep the activities on-going.

While the Penn State University researchers identified an ingredient in green tea which may protect against oral cancer, drug-resistant malaria has been detected at the Myanmar-India border, posing an "enormous threat" to global health.

Great news for animal lovers - the number of wild giant pandas has increased by nearly 17% over the last decade, according to a new survey in China, and at the same time, mithuns population recorded around 13% increase in India over the last livestock census.

As a first report, NASA declared that complex DNA and RNA organic compounds of life, including uracil, cytosine and thymine, have been formed in the laboratory under outer space conditions, using starting chemicals, such as pyrimidine, found in meteorites.

It is also very fascinating to know that one 1,000-year-old Anglo-Saxon remedy for eye infections – containing onion, garlic and cow bile – has been shown to completely wipe out *Staphylococcus aureus*, the methicillin-resistant superbug known as MRSA; while an ebola vaccine developed by the Public Health Agency of Canada was found to be 100% successful in an initial trial.

Lastly, a study published in the British Medical Journal finds that consuming up to 100g of chocolate every day may be able to lower heart disease and strokes, so from now on say "Chocolate please" rather than "Cheese"!

Publisher : Dr. Abhijit Mitra, Director, ICAR-NRC on Mithun, Medziphema, Nagaland
Editor : Dr. Sabyasachi Mukherjee, Principal Scientist & I/C PME Cell
Tel Fax : (03862) 247341 e-mail: director.nrcmithun@icar.gov.in, Web : www.nrcmithun.res.in