



# MITHUN DIGEST

## मिथुन डाइजेस्ट



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The bi-annual panorama.....



Shri Radha Mohan Singh, Hon'ble Union Minister of Agriculture & Farmers' Welfare visiting the Institute accompanied by Sri T R Zeliang, Hon'ble Chief Minister, Nagaland, Dr. Trilochan Mohapatra, Secretary DARE & DG, ICAR and Sri Chhabilendra Roul, Addl. Secretary DARE & Secretary ICAR on 7<sup>th</sup> August 2016

### Director's Desk



Mithun (*Bos frontalis*), a domesticated bovine species, has a very limited geographical

distribution and restricted only to North-Eastern hilly (NEH) states of India viz., Arunachal Pradesh, Manipur, Mizoram and Nagaland. This animal species enjoys a very special socio-cultural status among the tribal population of these NEH states. Since ages, mithun is considered as a sign of prosperity and the wealth of an individual, a community or a village is generally judged by the numbers of mithun possessed. It is an essential part of festivals and dispute settlement. During the past when head-hunting

was prevalent, the mithun man, who is responsible for looking after the mithun herd, used to enjoy bovine immunity. Even today mithun is akin to gold because it commands the highest value in the barter system.

Mithun farming has a tremendous potential for providing an alternative means of livelihood. Mithun husbandry can be incorporated as an economically viable and sustainable component of the agro-economic practices of the tribal communities of NEH region. Besides providing a means of income generation, it can help in ensuring the nutritional security, conserving the agro-ecological balances and preserving the cultural

uniqueness of the region. However, for exploiting the full potential of this unique animal species we need to address the following emerging issues at the earliest.

First and the most important concern is the way mithun is being presently reared. Traditionally

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Mithun is reared as free-grazing animals in the community forest land where animals are let loose in the forest and they survive at the sole mercy of nature. The only advantage of this system is to have a least possible requirement of labor and investment per unit area. However, record keeping, controlled breeding and healthcare initiatives including vaccination are not only almost nonexistent but also very difficult to implement. Consequently, the traditional way of mithun rearing renders a little scope for further improvement of the existing population. Further, this traditional extensive system of rearing requires a huge forest which is declining steadily. Therefore, with the decreasing forest coverage in the region, it is imperative to find an alternative rearing system. ICAR-NRC on Mithun has developed an alternative package of practices for mithun rearing under the semi-intensive system and the same has already been demonstrated successfully in the Institute Mithun farm since last two and half decades. We are now demonstrating this semi-intensive model of mithun rearing in the farmer's field.

The second concern is lack of bankable scheme for mithun farming. Although mithun husbandry is recognized and included in the National Livestock Mission as an important activity, due to lack of any bankable scheme, mithun rearers, who are mostly resource poor, are not getting the benefit of the ongoing subsidized schemes. Another concern is the absence of any insurance scheme for mithun. In order to have a bankable scheme for mithun husbandry, ICAR-NRC on Mithun organized a brainstorming workshop involving all the stakeholders including Department of Veterinary and Animal Husbandry of the mithun rearing States and NABARD. The Institute is preparing a scheme for its

further consideration and implementation.

Last but not the least, though mithun is reared as a meat animal and mithun meat is consumed by the tribal people of this region since time immemorial but it is yet to be registered as a Food Animal under FSSAI, New Delhi. The Institute also demonstrated the potential of mithun as a source of meat which is not only inherently organic but also comparatively leaner and tastier than the bovine meat. Therefore, to avoid any scope for confusion while selling the mithun meat and meat products, it is important that mithun is registered as a food animal. In the mean time, ICAR-NRC on Mithun organized two stakeholders workshops wherein it has been reiterated that mithun should be registered as a food animal. To this effect, Hon'ble Chief Minister of Nagaland has kindly consented to move a Cabinet note for taking the necessary steps.

The Institute is committed to the overall development of mithun and making mithun farming a profitable venture towards doubling the farmer's income by 2022. Our commitments get further vindicated with the maiden visit of Sri Radha Mohan Singh, Hon'ble Union Minister of Agriculture and Farmers Welfare on 7<sup>th</sup> August 2016. We are also privileged to host Dr. Trilochan Mohapatra, Secretary (DARE) & Director General (ICAR); Shri Chhabilendra Roul, Additional Secretary (DARE) & Secretary (ICAR); Dr. H. Rahman, DDG (Animal Science), Dr. A. K. Singh, DDG (Extension), Dr. Premjit Singh, VC, CAU, Imphal and other dignitaries during the period.

(Abhijit Mitra)

## RESEARCH HIGHLIGHTS

### Resumption of cyclicity in post-partum anestrus mithun cows following exogenous administration of kisspeptin (*kp-10*)

In mithuns, long postpartum anestrus, evidenced by as long as 465 days of inter-calving interval, is one of the major reproductive problems. An experimental trial demonstrated an early induction of estrus and an advancement of resumption of cyclicity by 35-50 days in post-partum anestrus mithun cows treated with exogenous kisspeptin (*kp-10*). *Kp-10* administration also resulted in a significant increase in the level of estradiol 17 $\beta$  and FSH, the expression of *kiss1* and *GPR54* mRNA, and in follicular development. The results of the study suggest that the exogenous administration of *kp-10* may be useful in resuming estrus in anestrus mithun cows.

### Morphometric analysis of mithun sperm in fresh semen

For the first time, a comprehensive study to evaluate various morphometric parameters of freshly ejaculated

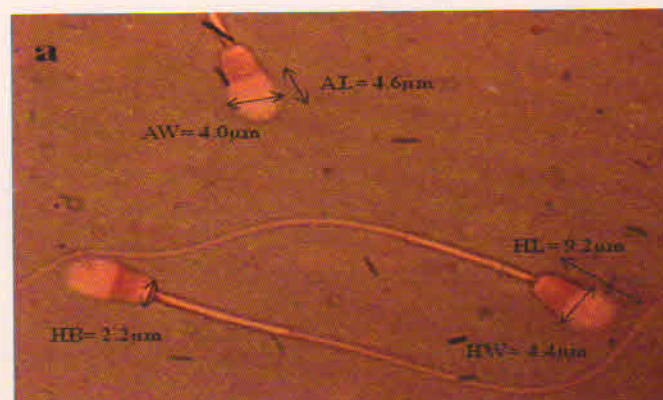


Fig. 1. Morphometric dimensions of mithun sperm head. (HL=Head length, HB=Head base, HW=Head width, AL=Acrosomal cap length, AW=Acrosomal cap width), .

mithun sperm was carried out. Linear measurements of different parameters of spermatozoa such as head length ( $9.13 \pm 0.102 \mu\text{m}$ ), head width ( $4.72 \pm 0.074 \mu\text{m}$ ), head base ( $2.21 \pm 0.049 \mu\text{m}$ ), acrosome length ( $4.29 \pm 0.047 \mu\text{m}$ ), acrosome width ( $4.12 \pm 0.086 \mu\text{m}$ ), midpiece length ( $15.64 \pm 0.289 \mu\text{m}$ ), tail length ( $43.00 \pm 0.408 \mu\text{m}$ ), head area ( $46.49 \pm 1.64 \mu\text{m}^2$ ), head circumference ( $23.71 \pm 0.376 \mu\text{m}$ ) and total length ( $72.49 \pm 0.55 \mu\text{m}$ ) were recorded.

### Estrus synchronization and artificial insemination of mithuns under field condition

Using Co-synch protocol, estrus of mithun heifers ( $n=6$ ), maintained under a semi-intensive system of rearing at Molvom village of Medziphema block, Dimapur, Nagaland was synchronized. All the animals responded to the synchronization protocol and exhibited a very good sign of estrus. Among them, three heifers were inseminated with frozen-thawed semen.

### Effect of seasons and age on scrotal & testicular biometry and endocrinological profiles in mithun

The scrotal circumference and testicular weight increased significantly with the advancement of age. Endocrinological profile varied significantly due to the seasons. Unlike cortisol, a significantly higher level of FSH, LH/ICSH, testosterone and thyroxine was recorded during spring and winter. The results of this study suggest the suitability of the spring and winter seasons for initiating the artificial breeding program of mithun.

### Veterinary Type Culture

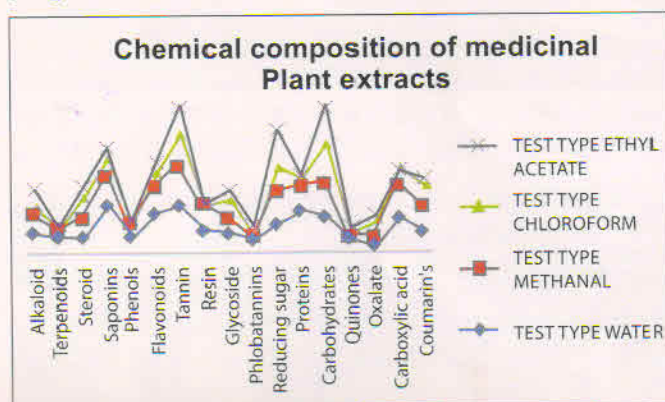
Fresh dung samples collected from free-range mithuns of Khonoma village, Nagaland were subjected to *in-vitro* culture under anaerobic condition in Hungate tubes containing tannin enriched media. The pure cultures of Gram positive streptococci were isolated and subsequently confirmed using 16s-rRNA universal primer for tannin degrading bacteria. The isolated pure cultures were submitted to ICAR-NIANP, Bengaluru for further study.

### Prevalence of Eimerian species in mithun

A total of 229 fecal samples of mithun maintained under a free range forests of Arunachal Pradesh, Nagaland, Manipur and Mizoram were screened. A very low prevalence of 1.31% (09/229) of coccidian parasites (viz., *E. bovis*, *E. aurburnensis*, *E. alabamensis*, *E. zurnii* and *E. Bukidonensis*) were recorded.

### Phytochemical screening of medicinal plants

During the reporting period, 69 medicinal herbs (viz., *Dazonha/Clementis*, *Chu Phushe*, *Phenoche*, *Rulu*, *Tridax proumbens*, *Bouheinia glauca*, *Alder nepalensis*, *Ficus prostate*, *Rubia cardifolia*, *Fragari amoschata*, *Rhododendron* and *Asparagus adscendens*) were collected from Phek, Kohima and Dimapur districts of Nagaland. A digital library and herbarium were prepared. The chemical fingerprinting of ethanolic, methanolic, chloroform, ethyl acetate and aqueous extracts of the collected medicinal herbs showed that the majority of the herbs contained Alkaloid, Terpenoids, Steroid, Saponins, Phenols, Flavonoids, Tannin, Resin, Glycoside, Phlobotannins, Reducing sugar, Proteins, Carbohydrates, Quinones, Oxalate, Carboxylic acid and Coumarin indicated these herbs have antioxidants, antimicrobial and anti-inflammatory properties.



## INSTITUTIONAL ACTIVITIES

### MAJOR EVENTS ORGANIZED

#### Director, ICAR-NRC on Mithun called on Hon'ble Chief Minister of Nagaland

On July 28, 2016, Dr. Abhijit Mitra, Director, ICAR-NRC on Mithun called on Sri TR Zeliang, Hon'ble Chief Minister, Nagaland at the residential office in Kohima and briefed him about the achievements of the Institute. The



discussion of the meeting focused on a number of issues namely registration of mithun as a food animal under the FSSAI; inclusion of mithun rearing as a profitable venture in the Vision-2030 of Nagaland; establishment of mithun farms under the Department of Veterinary and Animal Husbandry of Nagaland; celebration of an event, possibly an annual 'Mithun Day', across the NE states and need of bankable schemes for mithun husbandry.

Hon'ble Chief minister lauded the ICAR-NRCM for its continual scientific efforts towards understanding mithun production and health. He also kindly agreed to take up a Cabinet note to discuss the issue of registration of mithun as a Food animal with FSSAI. The intervention and guidance of Hon'ble Chief Minister will immensely benefit the mithun husbandry and mithun farmers of the region.

### Hon'ble Union Minister of Agriculture and Farmers Welfare laid the Foundation stone of Farmers' hostel and unveiled Mithun statue

On 7<sup>th</sup> August 2016, Shri Radha Mohan Singh, Union Minister of Agriculture and Farmers' Welfare, Government of India laid the foundation stone of 'Training Hostel-cum-Guest House' facility at



Laying of Foundation Stone of Farmers' Hostel by Hon'ble Minister of Agriculture & Farmers Welfare



Medziphema campus of the Institute. He also unveiled a 'Statue of Mithun' on the campus. In his address, Shri Singh highlighted the role of Institute towards the development of technology for the scientific rearing of mithun that has not only helped in the conservation of the biodiversity and the rich cultural heritage of the region but also contributed to the economic development and ecological stability of the NE states.

Shri Singh said that in order to bring stability in the horticulture-based farming system, animal integration is essential. The government of India has initiated schemes like Rashtriya Gokul Mission, Pasudhan Mission and Pasu Chikitsa Yojna under which the efforts are being made to conserve and further develop the indigenous breeds of cattle.

Shri T. R. Zeliang, Hon'ble Chief Minister of Nagaland stated that mithun is the most precious animal for its majestic look and is considered as 'black gold'. Chief Minister declared that 'Mithun Day' will be observed by Government of Nagaland along with the other mithun rearing states and the date will be announced very soon.

Later, Dr. Trilochan Mohapatra, Secretary DARE and Director General, ICAR had an interaction with the scientists and staffs of the Institute.

Earlier, Dr. Abhijit Mitra, Director, ICAR-NRC on Mithun welcomed all the dignitaries and highlighted the significant achievements of the Institute. On this occasion, a model for a semi-intensive system of mithun rearing and the technologies generated by the Institute during the last 28 years have been presented.

Shri S. Chuba Longkumar, Parliamentary Secretary Veterinary & Animal Husbandry, Government of Nagaland, Shri Chhabilendra Roul, Additional Secy. (DARE) & Secy. (ICAR), Dr. H. Rahman, Deputy Director General, (Animal Science), Dr. A. K. Singh, Deputy Director General (Agricultural Extension), Prof. M. Premjit Singh, Vice Chancellor, Central Agricultural University, Imphal, Dr. S. Bhaskar, ADG (AAF & CC), Dr. S. V. Ngachan, Director, RCNEHR, Barapani, Dr. Bidyut Deka, Director, ATARI Zone-III, Deans of the constituent colleges of CAU, Imphal and Dr. S. K. Singh, PS & Technical Adviser to Agriculture Minister graced the occasion.

### Independence Day Celebration

On 15<sup>th</sup> August, Institute celebrated 70<sup>th</sup> Independence Day, followed by the flag hosting by Dr. Abhijit Mitra, Director, and various events were organized in which staffs and children participated enthusiastically.

Celebration of 70<sup>th</sup> Independence Day at the Institute

### Visit of the Officials of International Fund for Agriculture Development (IFAD) and United Nation Development Project (UNDP)

A team of delegates from International Fund for Agriculture Development (IFAD) and United Nation Development Project (UNDP) visited on 7<sup>th</sup> September 2016. Ms. Rasha Omar, Country Representative, India & Pacific, IFAD expressed her satisfaction with the impressive work for conservation of the species and its adaptation to the climate change. The delegation included Ms. Meera Mishra, Country Co-ordinator, India, IFAD; Ms. Lianchawii, Programme Analyst, UNDP and Mr. John Borgoyary, Head, North East, UNDP. The delegation relished mithun milk and rasgulla made from mithun milk. Mr. T. Imkonglemba Ao, APC & Commissioner Secretary coordinated the visit.



Officials of IFAD &amp; UNDP visiting the Institute

### Celebration of Hindi Week / हिन्दी सप्ताह का आयोजन

राष्ट्रीय मिथुन अनुसंधान केन्द्र में 14 से 21 सितंबर 2016 के दौरान हिन्दी सप्ताह का आयोजन किया गया। 14 सितंबर को हिन्दी सप्ताह का शुभारंभ संस्थान के निदेशक डॉ. अभिजित मित्र द्वारा दीप प्रज्वलित करके किया गया। इस अवसर पर संस्थान के समस्त अधिकारी एवं कर्मचारी उपस्थिति थे। हिन्दी सप्ताह के दौरान संस्थान में, हिन्दी भाषा को बढ़ावा देने के लिए विभिन्न प्रतियोगिताओं का आयोजन किया गया, जिसमें संस्थान के सभी अधिकारियों, कर्मचारियों एवं परिसर के बालक एवं बालिका ने उत्साह पूर्वक हिस्सा लिया।

21 सितंबर 2016 को हिन्दी सप्ताह का समापन समारोह एवं पुरस्कार वितरण समारोह आयोजित किया गया। इस

अवसर पर मुख्य अतिथि प्रोफेसर आर.सी गुप्ता (कृषि रसायन विज्ञान और मृदा विज्ञान) को आमंत्रित किया गया। संस्थान के निदेशक डॉ. अभिजित मित्र, डॉ. अखिलेश कुमार हिन्दी प्रकोष्ठ प्रभारी एवं अधिकारियों एवं कर्मचारियों आदि के उपस्थिति में मुख्य अतिथि द्वारा विभिन्न प्रतियोगिताओं के विजेताओं को पुरस्कार प्रदान किया गया। साथ ही भारत सरकार राजभाषा विभाग द्वारा आयोजित प्राज्ञ परीक्षा में उत्तीर्ण होने पर श्री अजेन लामा, प्रशासनिक अधिकारी रा.मि.अनु. केन्द्र को नगद पुरस्कार प्रदान किया गया। मुख्य अतिथि प्रोफेसर आर.सी गुप्ता जी ने संस्थान में हिन्दी प्रोत्साहन के लिए किये जा रहे प्रयासों की सराहना की।



Prize distribution by Chief Guest, Dr. R. C. Gupta, Dean, SASRD, Nagaland University to participations of Hindi Week celebration

### Brainstorming Workshop on Bankable Scheme for Mithun

A Brainstorming Workshop on Bankable Scheme for Mithun Farming and other related issues was held at ICAR-NRC on Mithun on 16<sup>th</sup> September 2016. Officers from the State Department of Science and Technology, National Bank for Agriculture and Rural Development (NABARD), Nagaland State Cooperative Bank Limited (NSCB), Nagaland Science & Technology Council (NASTEC), Department of Veterinary & Animal Husbandry, Govt. of Nagaland, School of Agriculture and Rural Development (SASRD), Nagaland University and KVKs participated in the program. Shri M. K. Mero, Commissioner & Secretary, Department of Veterinary & Animal Husbandry stressed that the availability of banking loan for mithun farming would boost the mithun project already launched in the state under Gokul Gram Mission. Mr. A. Chakraborty, General



Brain storming workshop on bankable scheme for mithun husbandry

Manager, NABARD stated that mithun farming could be bankable as it is able to generate sufficient income. After thorough deliberations, it was also agreed that mithun should not be referred wrongly as a semi-domesticated animal rather as a domestic animal being reared under free-range forest ecosystem.

### Institute Management Committee (IMC) Meeting

23<sup>rd</sup> Institute Management Committee (IMC) meeting was held on 23<sup>rd</sup> September 2016 under the Chairmanship of Dr. Abhijit Mitra, Director, ICAR-NRC on Mithun. Dr. R. S. Gandhi, ADG (AP &B); Dr. S. M. Deb, Director, ICAR-NRC on Yak; Dr. Madan Kumar Tamuli, Principal Scientist, ICAR-NRC on Pig; Mr. P. K. Nayak, F&AO, ICAR-NRC on Pig; Sh. Lachit Kachari, Progressive farmer, Dr. Nazrul Haque, Principal Scientist and Mr. Ajen Lama, AO, ICAR-NRC on Mithun attended the meeting.



Dr. R. S. Gandhi, ADG (AP&B), ICAR, New Delhi & other members during in IMC meeting

### Cleanliness Drive Under Swachh Bharat Mission

Under Swachh Bharat Mission Campaign, ICAR-NRC on Mithun organized an Awareness Programme and Cleanliness Drive at Higher Secondary School, Medziphema on 1<sup>st</sup> November 2016. More than 150 students of class XI and XII participated in the programme. Dr. Abhijit Mitra, Director, ICAR-NRCM motivated the school children to adopt the cleanliness in all the sphere of life and promote this habit to other members of the society. The students took a pledge to say **"No to Tobacco"** as well to adopt the cleanliness to make the school as one of the cleanest schools. The members of LiFENGO made deliberations on segregation and safe disposal of waste.



Cleanliness drives launched at Government Higher Secondary School, Medziphema

### Vigilance Awareness Week

The Institute observed the Vigilance Awareness Week with a nationwide theme of **"Public Participation in Promoting Integrity and Eradicating Corruption"** from 31<sup>st</sup> October to 5<sup>th</sup> November 2016. The Director, ICAR-NRC on Mithun, Dr. Abhijit Mitra highlighted the importance of Vigilance Week and also administered pledge to the staffs. Various competitive programs namely essay writing, drawing competition, extempore and slogan writing were organized for the staffs and students. Major Rahul Rana, 32 Assam Rifles, Dimapur graced the valedictory programme organised on 5<sup>th</sup> November 2016.



Prize distribution to the participants

### Agriculture Education Day

The Agriculture Education Day was observed on 3<sup>rd</sup> December 2016 to commemorate the birthday of Hon'ble Bharat Ratna Dr. Rajendra Prasad, first Union Minister of Education & First President of India. On this occasion various events such as essay writing, drawing and extempore were organized to create the awareness among the young school children.



Participation of school students in various events & Prize distribution during Agriculture Education Day

### Institute Research Council (IRC) Meeting

The Institute Research Council (IRC) meeting was held in the meeting hall of the Institute from 19-20<sup>th</sup> December 2016 under Chairmanship of the Director, ICAR-NRC on Mithun. All the Scientists of the Institute including RA/SRF/JRF and Young Professionals attended the meeting. Section-wise research achievements and progress of the ongoing projects were evaluated. The new project proposals were thoroughly discussed.

### MAJOR EVENTS PARTICIPATED

#### FIELD DAY CUM FARMER-SCIENTIST INTERACTION

The Institute participated and displayed the farmers friendly technologies in the Field Day Cum Farmers-Scientist Interaction organized by Nagaland Centre of ICAR-Research Complex for NEH on 27<sup>th</sup> October, 2016.



Institute stall at Field Day Cum Farmers-Scientist Interaction held at Medziphema

### REGIONAL AGRI-FAIR 2016-17

ICAR-NRC on Mithun, Medziphema participated in Regional Agri-Fair-2016-17 organized by Central Agricultural University (CAU), Imphal at the College of Agriculture from 10-12<sup>th</sup> November 2016 on the theme "Importance of Organic Farming and Integrated Farming System in Second Green Revolution". Shri Radha Mohan Singh, Hon'ble Union Minister of Agriculture and Farmers Welfare visited the Institute stall.



Visit of Shri Radha Mohan Singh, Hon'ble Union Minister of Agriculture and Farmers Welfare at the Institute stall

### HORNBILL FESTIVAL

In order to create the awareness about scientific mithun rearing, Institute participated in the Hornbill Festival from 1-10<sup>th</sup> December, 2016. The technologies developed by the Institute were showcased during the festival. Mithun meat products such as Muodi, Meat ball, Nuggets, Meat pickle and Smoked meat were sold. Various value added items produced from mithun leather like key chains, shoes, jackets, bags and gloves were displayed to the general public. Several dignitaries including the Hon'ble Chief Minister of Nagaland and Assam visited the Institute stall. The Institute stall was a matter of attraction among people from various parts of the country as well as abroad.



Institute stall displaying the technologies at Hornbill Festival



Visit of Shri. Sarbananda Sonowal, Hon'ble Chief Minister of Assam and Shri T. R. Zeliang, Hon'ble Chief Minister of Nagaland at the Institute stall in Hornbill Festival



Visit of Foreign guests to Institute stall at Hornbill Festival

## Extension Activities Under Tribal Sub-Plan (TSP)

A total of four programmes were organized benefitting 290 farmers. Inputs in the form of poultry birds, stationary items for school children and veterinary medicines for livestock were distributed among the beneficiaries. Mithun rearing possibilities were explored for introduction of mithun under semi-intensive farming under field condition both in Nagaland and Meghalaya.

Farmers-Scientist interaction was carried out to assess the potential as well as the problems faced by the farmers in mithun farming.

### Farmer-Scientist Interaction at Medziphema Village

In order to create the awareness about scientific mithun rearing, farmer-scientist interaction was held on 20<sup>th</sup> January, 2016 at Medziphema village. The farmers were made aware with the farmer friendly technologies developed by the Institute. The farmers were encouraged to adopt the semi-intensive system of mithun rearing as a profitable enterprise.

### Awareness Program at Hekheshe Village

Awareness Programme cum Farmers-Scientists Interaction was organized in Hekheshe village on 01.11.2016 and 08.11.2016 under Tribal Sub-Plan after preliminary visit cum meeting with village 'gaon burah' on 20.9.2016. Farmers were motivated to get information from various agricultural services available in the state and various ways to improve their productivity and livelihood. A village survey through Participatory Rural Appraisal (PRA) was conducted to get first hand information on agriculture and allied activities. Scientists of various disciplines from ICAR-NRCM, Medziphema and KVK, Phek along with farmers from Hekheshe village participated on the transit walk. As livelihood support, poultry chicks (Vanaraja) were distributed to the farmers.



Awareness programme cum farmers-scientists interaction in Hekheshe village



## Awareness Programme cum Farmer-Scientist interaction in Meghalaya

An awareness programme cum farmers-scientist interaction was organised jointly by ICAR-NRC on Mithun, Medziphema, Nagaland and KVK-East Khasi Hill District, Meghalaya with an aim to explore the possibilities of introducing mithun in Meghalaya. The programme was held in Mawphlang Village, Upper Shillong, East Khasi Hill District from 21-22<sup>nd</sup> November, 2016. The programme was formally inaugurated by the Chief Guest, Shri Kenned C. Khyriem, Honble MLA, Mawphlang Constituency & Parliamentary Secretary, Department of Tourism, Govt of Meghalaya. Altogether 150 farmers with 50 officials from various institutions participated in the programme.

Different ICAR Institutes namely ICAR-NRC on Mithun, Nagaland, ICAR-Research Complex for NEH Region, Barapani, Meghalaya; Department of Veterinary & AH, Govt of Meghalaya; Department of Agriculture, Govt of Meghalaya; KVK-East Khasi Hills District, Meghalaya had put their respective stalls to display the farmers' friendly technologies.



Awareness programme cum farmer-scientist interaction at Mawphlang, Meghalaya

## Health Camp Cum Awareness Programme in Longleng

An animal health camp cum awareness programme was jointly organized by ICAR-NRC on Mithun, Medziphema and KVK, Longleng district at Yimchong village under Longleng district of Nagaland on 16<sup>th</sup> December, 2016 under Tribal Sub-Plan. A total of 70 mithun farmers participated in the programme. The scientists performed health examination for 24 mithuns and farmers were supplied inputs such as Foot & Mouth Disease (FMD) vaccines, mineral mixture, anthelmintics and veterinary medicines.



Mithun owners along with NRCM and KVK team

## SKILL DEVELOPMENT

### A. Training Programme Attended

1	Dr. Abhijit Mitra	<ul style="list-style-type: none"> <li>Workshop on "Livelihood Security through Livestock Based Farming System for Tribal and NEH Regions" at Eastern Regional Station, Kolkata on 9<sup>th</sup> August, 2016.</li> <li>International Workshop on "Production Welfare Research" organized by ICAR and the University of Edinburgh, UK on 1- 2<sup>nd</sup> December, 2016 at NASC Complex, New Delhi.</li> <li>Attended "Global Sustainable Development Summit towards United Nations Sustainable Development Goals" on 6<sup>th</sup> December, 2016, at Guwahati, Assam organized by National Institute of Bioresource and Sustainable Development (IBSD), Govt. of India and North East Development Foundation &amp; Digital Empowerment Foundation .</li> </ul>
2	Dr. M. H. Khan	<ul style="list-style-type: none"> <li>Workshop on RTI at Institute of Secretarial Management and Training (ISTM), New Delhi from 30<sup>th</sup> June to 1<sup>st</sup> July, 2016.</li> <li>One day training for Nodal Officers, RTI related to development of RTI online web portal (RTI-MIS) held at NASC Complex, New Delhi on 21<sup>st</sup> October, 2016.</li> <li>3<sup>rd</sup> DBT Review meeting for Overseas Fellows from 29-30<sup>th</sup> November, 2016 held at Gangtok, Sikkim.</li> </ul>

3	Dr. Lalchamliani	• Professional Attachment Training in Food Technology and Food Safety with Special Reference to Milk and Milk Products from 11 <sup>th</sup> May to 10 <sup>th</sup> August, 2016 at Dairy Technology Division, ICAR-National Dairy Research Institute, Karnal, Haryana.
4	Dr. Hannah K. Asangla	• Winter School on Role of Agri-Business and Market Intelligence for Sustainable Agriculture Development from 6 -26 <sup>th</sup> September, 2016, SASRD, NU, Medziphema
5	Dr. T. Esther Longkumer	• Training on Vermiculture Technology from 29 <sup>th</sup> September to 3 <sup>rd</sup> October, 2016 at ICAR-IVRI, Bareilly, U.P. • Training on Development of Agri-Entrepreneurship Meet on 29 <sup>th</sup> September 2016 at ICAR-IVRI, Bareilly, U.P. • Workshop cum Entrepreneur/Industry Interface on Vermiculture, Animal Feed and Livestock Product Technologies on 1 <sup>st</sup> October, 2016 at ICAR-IVRI, Bareilly, U.P.
6	Dr. Rinku Bharali	• Training course on Processing, Value Addition and Entrepreneurship Development in Food Agri- Business from 14-21 <sup>st</sup> November, 2016 at ICAR-CIPHET, Ludhiana.
7	Dr. Debojyoti Borkotoky	• 33 <sup>rd</sup> Annual Conference and National Symposium of Indian Association of Veterinary Pathologists held during 09-11 <sup>th</sup> November, 2016 at C.V.Sc & AH, Chhattishgarh Kamdhenu Vishwavidyalaya, Durg, Chhattishgarh.

## B. Training Programme Organized

Conducted a three-days Training Programme for the Administrative Staffs of the ICAR Institutes of North-Eastern Region from 3-5<sup>th</sup> November, 2016. A total of 16 participants from ICAR-Research Complex for NEH, Umiam, Barapani, Meghalaya, ICAR-Research Complex for NEH, Nagaland Centre, KVK-Wokha, KVK-Phek, KVK-Dimapur and ICAR-NRC on Mithun participated. Mr. Kanhaiya Chaudhary, Director (Agri. Extension), ICAR, New Delhi and Mr. P. K. Bage, Deputy Secretary (HRM), ICAR New Delhi acted as Resource Persons.



## PUBLICATIONS

### Abstract

1. Perumal, P., Khan, M. H., Chang, S. And Khate, K. 2016. Seasonal effect on semen quality parameters in mithun bulls. National Symposium on Animal Fertility and Fecundity at Crossroads: Addressing the Issues through Conventional and Advanced Reproductive Technologies” (ISSAR), 6-8<sup>th</sup> December, 2016, College of Veterinary Science, Tirupati.
2. Debojyoti B. 2016. Pathological studies on helminth parasites infested organ of mithun (*Bos frontalis*)”.

33<sup>rd</sup> Annual Conference and National Symposium of Indian Association of Veterinary Pathologists held during 09-11<sup>th</sup> November, 2016 at C.V.Sc & AH, Chhattishgarh Kamdhenu Vishwavidyalaya, Durg, Chhattishgarh.

## PERSONALIA

### Honours and Awards

- Dr. Sabyasachi Mukherjee, Principal Scientist, Animal Genetics and Breeding has successfully completed the Post-Doctoral DBT Overseas Associateship at Center for Quantitative Genetics & Genomics (QGG), Aarhus University, Denmark and analyzed mithun genotypic and NGS data to study population parameters and genetic diversity of mithun during 27 June-26 December 2016.

### Joining/Transfer/Promotion Superannuation

- Shri. S. P. S. Negi, Assistant Administrative Officer superannuated on 31<sup>st</sup> December, 2016.



- Dr. Prakash Ranjan Dutta, ACTO, Porba Campus transferred to ICAR-Research Complex, Barapani, Umiam, Meghalaya w.e.f 20<sup>th</sup> September, 2016.

## DISTINGUISHED VISITOR

- Shri Radha Mohan Singh, Hon'ble Union Minister of Agriculture and Farmers' Welfare on 07.08.2016
- Shri T. R Zeliang, Hon'ble Chief Minister of Nagaland on 07.08.2016
- Shri S. Chuba Longkumar, Hon'ble Parliamentary Secretary Veterinary & Animal Husbandry, Government of Nagaland
- Dr. Trilochan Mohapatra, Secretary (DARE) and Director General (ICAR), New Delhi on 07.08.2016.
- Shri Chhabilendra Roul, Additional Secretary (DARE) & Secretary (ICAR), New Delhi on 07.08.2016.
- Dr. Habibar Rahman, Deputy Director General (Animal Science), ICAR, New Delhi on 07.08.2016.
- Dr. A. K. Singh, Deputy Director General (Agriculture Extension), ICAR, New Delhi on 07.08.2016.
- Prof. M. Premjit Singh, Vice-Chancellor, Central Agricultural University, Imphal on 07.08.2016.
- Dr. S. Bhaskar, ADG (AAF & CC), ICAR, New Delhi on 07.08.2016.
- Dr R. S. Gandhi (AP&B), ADG, ICAR, New Delhi on 24.09.2016
- Dr. S. V. Ngachan, Director, RCNEHR, Barapani on 07.08.2016.
- Dr. S. M. Deb, Director, ICAR-NRC on Yak on 23.09.2016
- Dr. D. R. Singh, Director, ICAR-NRC on Orchid, Sikkim on 21.07.2016.
- Dr. Bidyut Deka, Director, ATARI Zone-III on 07.08.2016.

## KVK-PHEK ACTIVITIES

The Krishi Vigyan Kendra, Porba, Phek conducted a total of 56 trainings, four vocational trainings, nine trainings under NICRA and six training under Mera Gaon Mera Gaurav. The KVK officials also organized FLD, OFT, farmers-scientist interaction and distributed soil health cards. A total of 3205 farmers have been benefitted.



Training under NICRA Project at Thipuzu village



FLD on Potato



Training under Jai Jawan-Jai Kisan at Phek OFT on Trichogramma spp for paddy management



Celebration of World Soil Health Day on 5<sup>th</sup> December, 2016



Shri Radha Mohan Singh, Hon'ble Union Minister of Agriculture & Farmers' Welfare unveiling a statue of Mithun on 7<sup>th</sup> August, 2017

## The Editorial Escapade

ICAR-NRC on Mithun, situated in the farthest corner of this wonderful country could develop a sound reputation in the local tribal community of traditional mithun rearers and owners by virtue of its service and dedication of research work for this unique species of livestock. So little else to say, every effort are made to include the research highlights, recent news and most importantly opportunity of service among the farmers and mithun keepers in this edition of Mithun Digest as well as a host of extension and technology injection programme for the overall social and economic benefits of mithun and mithun rearing communities.

Every effort is made to include the information about the Institute and the services done for the mithun and their owners. If this proves to be helpful and serves the purpose of the Institute, community, individual researchers or for that matter anybody else, then our editorial efforts would be worthy to be cited.

Editors



**Chief Editor:** Dr. Abhijit Mitra, Director, ICAR-NRC on Mithun, Medziphema, Nagaland

**Editors:** Dr. Sabyasachi Mukherjee, Dr. Meraj Haider Khan, Dr. Jayanta Chamuah and Dr. Akilesh Kumar

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