Mithun Digest

NATIONAL RESEARCH CENTRE ON MITHUN

Vol. 2, No. 1 Jan - Jun, 2005

INSTITUTIONAL ACTIVITIES

Inauguration of the New Laboratory Cum Office Building

The new laboratory cum office building was inaugurated on 16th May, by Honourable DDG (Animal Science) Dr. V. K. Taneja in presence of Dr. K. M. Bujarbaruah, Ditector, ICAR Research Complex for NEH Region, Barapani and DR. C. Rajkhowa, Director, NRC Mithun.

Dr. V. K. Taneja is addressing the gathering on the occasion of inaugural ceremony

Visit of Dr. V. K. Taneja and Dr. K. M. Bujarbaruah to the mithun farm

Institute Management Committee Meeting

The 8th IMC meeting was held on 12th March under the chairmanship of Dr. C. Rajkhowa, Director, NRC Mithun. The committee discussed about the different activities of the institute. The committee suggested to adopt villages for mithun rearing in Arunachal Pradesh in addition to the present adopted villages of Nagaland. The committee also suggested to take up initiative to fill up the vacant posts for fulfilling the objectives of the institute.

Staff Research Council Meeting

The annual SRC meeting was held on 12th March under the chairmanship of Dr. C. Rajkhowa, Director, NRC Mithun. The committee evaluated the progress of various on-going research projects. Eight new projects have been approved by the SRC.

Republic Day Celebration

The institute has celebrated the republic day with all the staff numbers. There was a cultural evening on that day, where children of the staff members' have presented many interesting cultural items.

Celebration of the Republic Day

RESEARCH HIGHLIGHTS

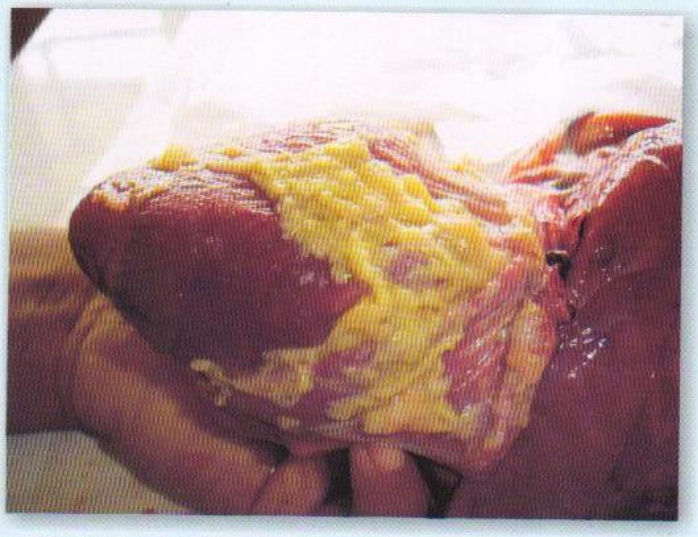
Incidence of Dermatophytosis in Mithun

This disease was recorded in a 4-year-old mithun of Nagaland strain in the month of February. The lesions were detected only on back and lumber regions of the animal. The typical lesions were grey-white crust raised perceptibly above the skin. Majority of the lesions were roughly circular but some were irregular in shape and sizes of the lesions were varied from 2.5- 4 cm in diameter. In the early stages, the surface below the crust was moist, in older lesions the scab becomes detached and alopecia was very common. The causative agent was identified to be the *Trichophyton verrucosum*.

Typical lesion observed in *Trychophyton verrucosum* infection

Incidence of Fibrinous Pericarditis in Mithun

The fibrinous pericarditis was recorded in a 15 day old mithun calf. Initially the calf was showing the symptoms of yellowish diarrhoea during the first week. The calf was died on day 15 even though it was treated with the enrofloxacin oral suspension. During the post mortem examination serous fluid was found in the knee joint. The post mortem study also revealed the petechial haemorrhages in both small and large intestine and fibrin deposits in pericardial sac. The pure culture of E coli was isolated from the fibrinous materials.



Fibrinous pericarditis (fribin deposits) due to *E. coli* infection

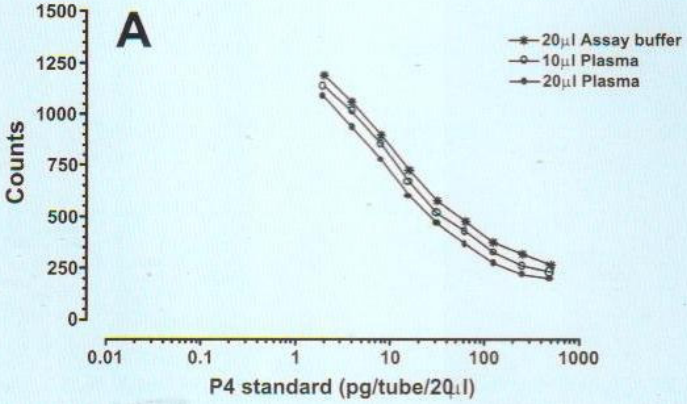
Effect of Different Fodders and Concentrate Based Total Mixed Rations on Nutrient Utilization and Growth in Mithun Calves

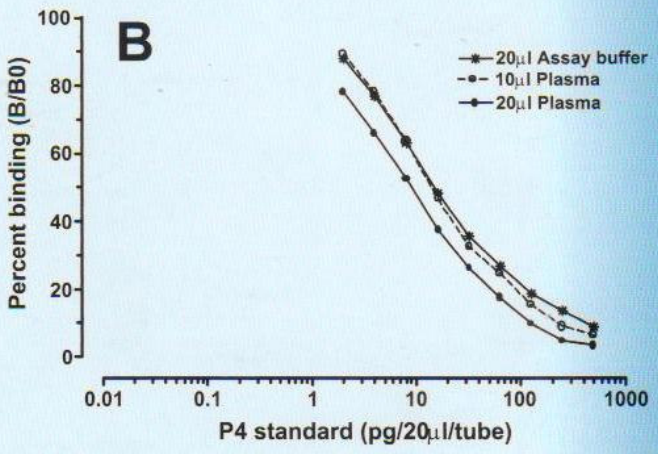
The mithun calves were fed with three different isonitrogenous diet of Napier, paddy straw and concentrate (60:40) T1; Napier, paddy straw and concentrate (60:40) T2; Tophala (*Borrena hirticulata*), paddy straw and concentrate (60:40) T3. The average DMI (kg/ day) was found 4.88 ± 0.10, 3.95 ± 0.98 and 4.42 ± 1.01, respectively in T1, T2 and T3 groups. The apparent digestibility of DM, CP, EE, CF and NFE was found to be higher ($P<0.01$) in T1 and T3 groups. The DCP and TDN values were found to be higher ($P<0.01$) in T_1 than T_2

and T_3. The apparent biological value was found to be higher in T1 than T2 and T3 groups. The average daily body weight gain (g/ day) was found to be higher ($P<0.01$) in T1 (512) and T3 (436) groups in comparison to the T2 (384) group.

Development and Validation of a Sensitive Radioimmunoassay for Progesterone Estimation in Un-extracted Mithun Plasma

The RIA was carried out in 20µL unextracted mithun plasma. The progesterone standards ranging form 2 to 500pg/20µL/tube were prepared in charcoal-treated hormone-free plasma. The sensitivity of RIA procedure was 2pg progesterone/20µL/tube, which corresponds to 0.1ng/mL; the 50 percent relative binding sensitivity was seen at 32pg/20µL/tube. Plasma volumes for the RIA viz. 10 and 20µL did not influence the shape of standard curve even though a slight drop in the counts was seen with higher plasma volumes.

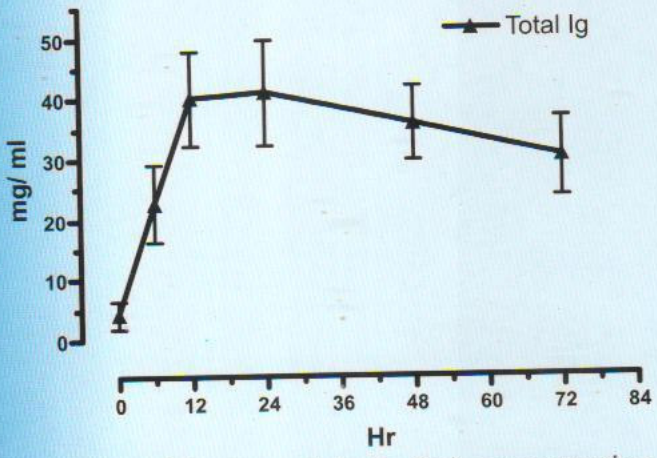




Influence of different volumes viz., 0, 10 and 20µL of mithun plasma on counts displacement (A) and on percent binding (B) in progesterone (P4) standard curve. Counts were taken using a liquid scintillation counter.

Absorption efficiency of colostral Immunoglobulin in Neonatal Mithun Calves

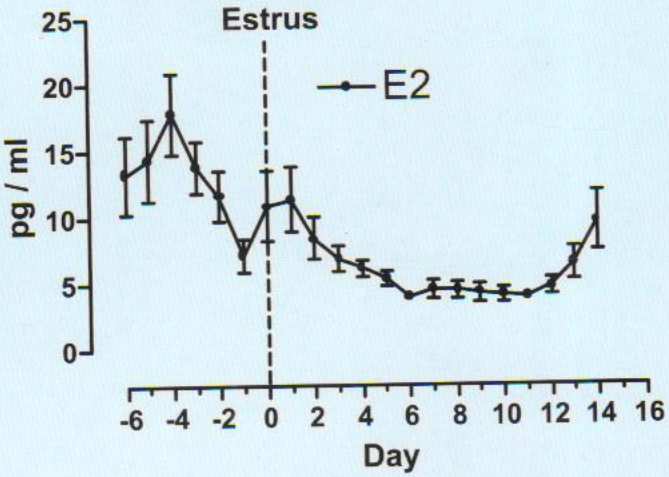
After colostrum feeding a progressively increasing trend in total serum immunoglobulin concentration (mg/ ml) was observed from 6 h (22.7) and it attained peak concentration at 24 h (40.9) and decreased at 72 h (30.2). The serum level of different immunoglobulin fractions, the IgG, IgG1, IgA and IgM showed a similar trend like total serum immunoglobulin. The highest level (mg/ ml) of IgG, IgG1, IgA and IgM were found 39.0, 18.1, 0.95 and 0.92, respectively. But a different trend was observed in serum IgG2 level (mg/ ml), which attained biphasic peak at 24 h (4.89) and 72 h (4.18)



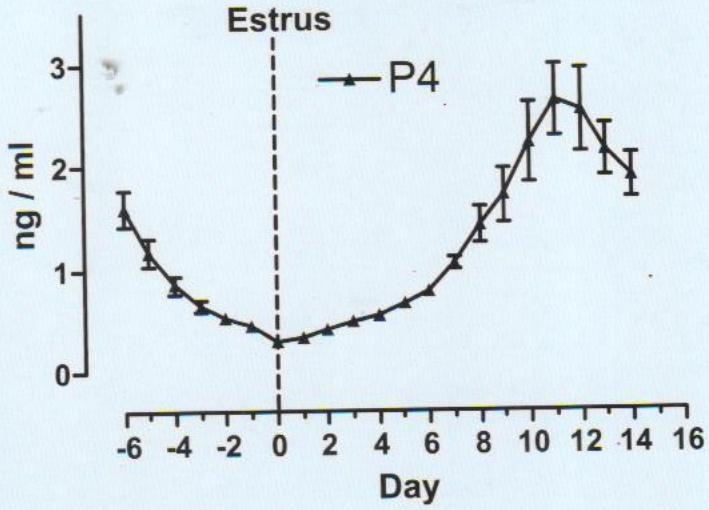
Serum total immunoglobulin (Ig) concentration (mg/ml) in mithun calves from birth (0 h) to 72 h

Endocrine Control of Estrous Behaviour in Mithun

The estrous behaviour was studied in post partum mithun cows. From the onset, estrus was detected by mithun bull in every two hours to record the duration of estrus and standing heat. The behavioural observations were recorded during entire estrous period. Estrous intensity score (EIS) was assigned to each animal (3 highest and 1 lowest) according to the visible signs and bull activities. Jugular vein blood samples were collected daily for entire cycle to monitor plasma estradiol 17-β (E2) and progesterone (P4) through ELISA. Typical estrous signs of cattle like vaginal mucous discharge, homosexual interaction, reduced feed intake, frequent urination and vocalisation were not observed in mithun. The visible signs recorded during study were slight restlessness, reddening and swelling of vulva and standing to be mounted. The average duration (h) of estrus and standing heat recorded were 67.2±7.2 and 10.5±2.7, respectively. In 40% experimental animals, standing heat was absent. The nearly significant close associations were observed between EIS and basal concentrations of E2, P4 and E2:P4 ratio of cycle.



Mean concentrations of estradiol 17-β (E2) on different days of estrous cycle in mithun



Mean concentrations of progesterone (P4) on different days of estrous cycle in mithun

LIST OF THE NEW RESEARCH PROJECTS - 2005

Institutional Projects

- Studies on production deficiency diseases in mithun
- Studies on natural estrous cycle in mithun
- Studies on milk production performances of mithun under semi-intensive system
- Studies on the role of colostrum on neonatal immunity and its effect on growth performance in mithun claves
- Association of single nucleotide polymorphism (SNP) in growth hormone (GH) and GH receptor gene with blood GH and & IGF-1 concentrations and growth traits in mithun
- Studies on endocrine status of mithun during different stages of pregnancy, peri-parturient period and lactation
- Effect of feeding locally available feedstuff based ration on nutrient utilization and growth in mithun
- Studies on rumen ecology and its manipulation

AP Cess Fund Projects

- Development of estrus synchronization protocols in mithun for fixed-time insemination
- A comparative study on survey, nutritional evaluation, nutrient requirements and development of improved agronomic practices for year round availability of green fodders for mithun (*Bos frontalis*) under north eastern hill region of India
- Microbial and parasitic causes of calf mortality in mithun (*Bos frontalis*) and possible control

An adult mithun breeding bull maintained at Porba research station

Nagaland mithuns in Kohima District

VISIT OF DIGNITARIES

- Dr. K. M. Bujarbaruah, Director, ICAR Research complex for NEH Region, Barapani, has visited the Institute and Porba Research Station on 19 to 20 th Feb, 05.

- Dr. S. P. S. Ahlawat, Director, NBAGR, Karnal, has visited the Institute and mithun farm on 23 rd Feb, 05.

- Mr. Tim Harris, British Deputy High Commissioner, Chennai, has visited the mithun farm on 13 th Mar, 05.

- Dr. S. Sanyal, Reader, W.B.U.A.F.Sc., Calcutta has visited the institute on 13 th Apr, 05.

- Dr. V. K. Taneja, DDG (AS), I.C.A.R, and Dr. K. M. Bujarbaruah, Director, ICAR Research complex for NEH Region, Barapani, have visited the institute on occasion of the inaugural ceremony of newly constructed office cum laboratory building on 16 th May, 05.

- Dr. B. S. Hansra, ADG (AE), I.C.A.R, has visited the institute on 18 th May, 05.

- Dr. B. C. Sharma, Professor and Head, C.V.Sc., Khanapara, A.A.U, has visited the institute on 30 th May, 05.

Visit of Dr. S. P. S. Ahlawat to the mithun farm

Visit of Dr. V. K. Taneja to the Laboratory

Visit of Dr. Dr. B. S. Hansra to the institute

PERSONALIA

Participation in Training Programme

- Dr. Mohan Mondal has participated in the 21 day training programme "Recent techniques in reproductive physiology" organized by the CAS, Division of Animal Physiology and Climatology, Indian Veterinary Research Institute, Barriely, from Jan 14 to Feb 3, 05.

- Dr. Arindam Dhali has participated in the 21 day training programme "Scope of feeding Agro-Forest Based Unconventional Feeds and Assessment of Microbial Protein Production in Ruminant" organized by the CAS, Division of Animal Nutrition, Indian Veterinary Research Institute, Barriely, from Feb 19 to Mar 11, 05.

Joining of RA and SRF

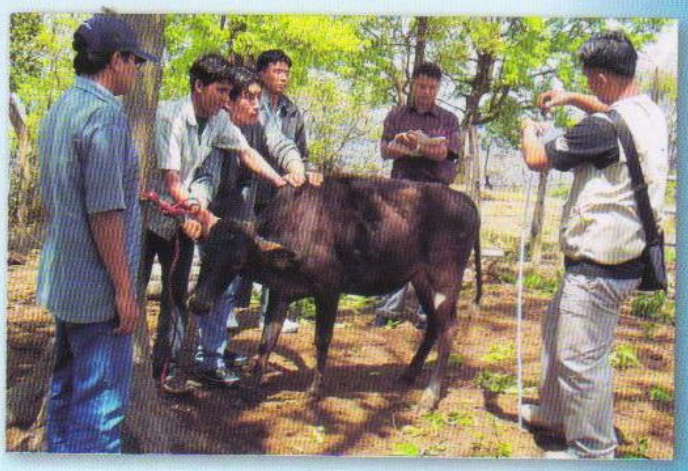
- Dr. Nikhil C. Nath has joined as RA under the project "Development of Estrus Synchronization Protocols in Mithun for Fixed-Time Insemination"

- Dr. (Miss) Ruokuobeinno Houzha has joined SRF under the project "Development of Estrus Synchronization Protocols in Mithun for Fixed-Time Insemination"

- Miss Hannah K. Asangla has joined as SRF under the project "A Comparative Study on Survey, Nutritional Evaluation, Nutrient Requirements and Development of Improved Agronomic Practices for Year Round Availability of Green Fodders for Mithun (Bos frontalis) Under North Eastern Hill Region of India

Visit of Mr. Tim Harris, British Deputy High Commissioner to the mithun farm

Fodder tree cultivation at Porba Research Station



Characterization of the Tho Tho cattle in Kohima District

From The Director's Desk

It is my great privilege to place the second issue of the news letter which is highlighting the achievements, activities and development of the institute. During the reported period there were lots of activities which have given us inspiration and zeal to work more and more for this unique species of animal. This institute could bring awareness among farmers and other members of the society of mithun rearing states about the potential of this animal as a vital component of hill animal husbandry system. Many farmers and NGOs are approaching our institute for guiding them to keep the animals in community rearing areas. This has also become a source of inspiration for all of us.

The new office cum laboratory building which has been handed over by construction agency has recently been inaugurated by honourable DDG (AS) Dr.V.K.Taneja on 16th of May, 2005. His presence with inspiring words and advice has already generated passion among all of us to dedicate more and more for this animal. Now, with almost all the physical facilities in hand this institute will be able to function with full vigour.

This year, we could procure many sophisticated instruments for many precision studies. We are also happy to inform that due to precision scientific studies in different field many valuable information could be generated and documented in reputed national and international journals. During last few months many scientific dignitaries of national and international organization visited our institute and interacted with us. This has given us an opportunity to review our work in proper perspective.

Due to hard work and zeal to dedicate more, the three AP cess fund projects (one each in Animal Nutrition, Animal Health and Animal Physiology) have been approved by ICAR, New Delhi. The works under two of these schemes have already been started. I hope that through these schemes, we will be able to generate many path breaking information in many areas related to Mithun.

I must congratulate the editorial staff for bringing this issue in proper time and could bring our activities to a wider group of people so that we can get feedback for future amendments in a positive direction.

(C. Rajkhowa)

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