

NIANP News & Views



Director's Desk

Research News

Training

Events

Award

Other

Laboratory Profile

Editorial Board

Arindam Dhali
Ravikiran G
Ashish Mishra
Atul P Kolte
Anjumoni Mech
Letha Devi G

Published by

Raghavendra Bhatta
Director, ICAR-NIANP

Dear Readers,

In India, animal husbandry has remained as an integral part of agriculture since time immemorial. Substantial diversity exists in the population of the Indian livestock and the potential is yet to be exploited fully. The contributions of the livestock sector to the national and agricultural GDP are approximately 4 and 30 percent respectively. The livestock sector provides livelihood security and employment to millions of small, marginal and landless farmers. Remarkable growth in the total production of different livestock products has been witnessed in the country over the last 50 years. Nevertheless, the per capita availability of many of the livestock products is less in India as compared to that of the developed countries. At this context, the basic and fundamental research in the area of animal nutrition and physiology is highly critical and can provide solutions to the problems related with low performance level of Indian livestock and feed and fodder scarcity.

Our country will definitely be a much different place by next two to three decades in terms of population, economy, climate and consumer preferences as evident from the fast changing scenarios at the national as well as global level. Therefore, conscious efforts will be required to meet the demand in those days. It is essential to visualize the impending challenges and work hard towards achieving them.

The ICAR-National Institute of Animal Nutrition and Physiology has successfully completed 21 years since its inception and achieved excellence in catering the farmers, educationists, extension workers, policy makers and industries associated with livestock farming. The Institute is relentlessly working in understanding the various basic and fundamental aspects of animal nutrition and physiology. Since last two decades, we are primarily focussing to improve the performances of different livestock species through basic nutritional and physiological approaches and to develop appropriate user friendly technologies. Our efforts have been well recognized through publications and awards and honours. We have received the ICAR Best Annual Report Award for the year 2015-16 under the Small Institute Category. I would like to congratulate all the staff of the Institute for the achievement and put on record their untiring efforts towards transforming this Institute into a centre of excellence.

Raghavendra Bhatta



ICAR-National Institute of Animal Nutrition and Physiology
Aduodi, Bengaluru - 560030

An ISO 9001:2008 Institute

Tel: 080-25711303, 25711164; Fax: 080-25711420. E mail: directornianp@gmail.com | www.nianp.res.in

Research News

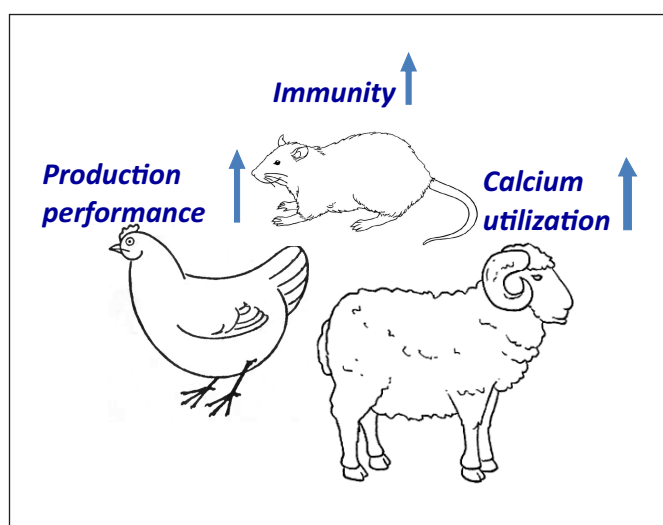
An Insight of Boron as an Essential Micronutrient for Animal and Poultry

Of late, there are increasing reports suggesting the role of Boron (B) in animals and humans. Boron has an atomic number of 5 with atomic weight of 10.81 and is the Vth element in the periodic table of Group IIIA elements which possess the property of both metal and non-metals. The compounds of B (boric acid, borax) are generally used for bleaching, as fungicide and as micronutrient supplement for plants. A study was conducted to quantify B in animal feeds and to understand its role in calcium (Ca) utilization and immunity in animals. The results indicate the presence of appreciable quantity of B in all the major categories of feedstuffs which was comparable to the levels of essential trace elements like copper and zinc.

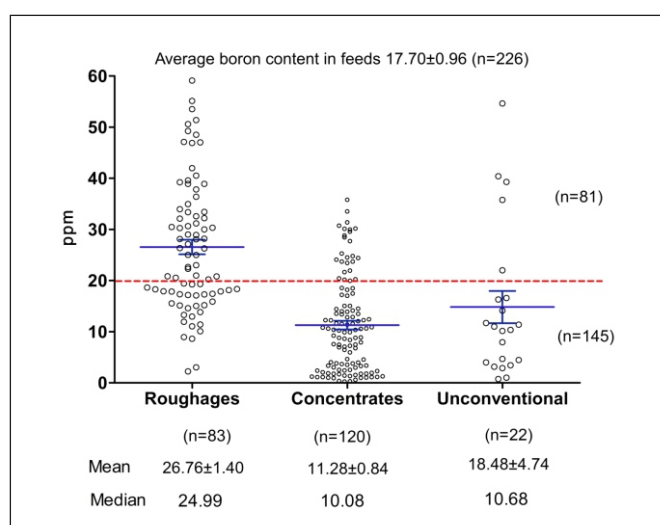
In rats, feeding of semi-purified diets supplemented with graded levels of B at normal and low levels of dietary Ca significantly increases gut absorption of Ca and reduces serum levels of triglycerides and HDL-cholesterol. The experiment reveals the role of B in promoting Ca utilization, immunity and antioxidant defense mechanism in animals.

In sheep, the dietary supplementation of B has significantly enhanced its performances in terms of improved Ca utilization, immunity and growth. In layer poultry, the supplementation of B in the diet containing inadequate level of Ca has significantly improved hen day egg production and less cracked eggs. The humoral immune response has been found better in the birds fed diet supplemented with B.

The results of our experiments and the other published research reports indicate that boron influences many enzymes, bone development, mineralization and energy metabolism. Boron supplementation can be effective in optimizing the performance of animals, treatment of bone disorders and reduction of cholesterol and triglyceride levels. Besides these effects, Boron also influences the activity of vitamin D and ameliorates some disorders connected with its deficiency. In view of these findings and reported role of Boron in the animal system, we suggest considering B as an essential micronutrient for animals and poultry.



Effect of Dietary Boron Supplementation



Distribution of Boron (ppm) in commonly used feeds

Training

Winter School on Climate Change



A 21-day ICAR sponsored winter school on “Novel Paradigms and Technologies for Augmenting Livestock Fertility Under Climate Change Scenario” was organized at ICAR-National Institute of Animal Nutrition and Physiology, Bangalore from November 4-24, 2016. A total of 25 Assistant Professors from various states such as Kerala, Andhra Pradesh, Tamil Nadu, Assam, Karnataka, Rajasthan, Uttar Pradesh, Nagaland, Maharashtra and Puducherry attended the training programme. The training programme covered the major upstream areas related to climate change impact on fertility, climate smart animal agriculture, gene silencing, oxidative stress on embryo development, early embryonic loss etc.



Technical workshop for progressive dairy farmers

A technical workshop on 'Organic Dairy Farming – Newer Innovations' for progressive dairy farmers was organized at ICAR-NIANP, Bangalore on 25-26th October 2016, in collaboration with Bangalore Milk Union. Dr Raghavendra Bhatta, Director, ICAR-NIANP inaugurated the workshop. More than 200 progressive dairy farmers and entrepreneurs participated in this workshop. Experts working in the field of organic dairy farming, feeding and management of dairy animals presented newer innovations and adoptable technologies to make dairying a profitable and sustainable enterprise. Special emphasis was given on green fodder cultivation and conservation including novel method of green sprout production using low cost inputs. Ration balancing using 'Feed Chart', demonstration of silage making, cultivation of new varieties of fodder and tree leaves were done. Problems of low reproductive efficiency, common diseases and management of mastitis in dairy animals were discussed in detail. Remedies for low milk-fat and solid-not-fat were explained to farmers. Industry representatives presented their newer products on micronutrient supplementation and strategies for promoting birth of female calves. Farmer-Experts interaction was held to address the doubts and problems of dairy farmers. Based on the inputs from participants, it was decided to conduct such workshops at district and taluk levels with the collaboration of milk unions and State Animal Husbandry department.

Events

Celebration of Hindi Fortnight



Hindi Fortnight programme was inaugurated on 14 September, 2016. On this occasion, Dr Raghvendra Bhatta, Director of the Institute stressed upon the need to carry out routine official work in Hindi and to make all efforts to meet the targets set under the Annual Programme. He requested scientists to bring out farmer oriented technologies and also to publish them in Hindi and regional languages for their popularization. During inaugural programme, Dr S Senani, In Charge Raj Bhasha, informed the house about various competitions to be organized from 14- 30 September 2016. The fortnight was concluded with a valedictory function on 30 September, 2016, where Dr Sunil Panwar IFS, Secretary, Karnataka Information Services gave away prizes to the winners and addressed the gathering. In his address, he stressed upon the need to popularize and adapt simple and easy version of Rajbhasha rather than more sanskritized version of Hindi. being an Urdu lover and poet himself, he recited a Nazm on this occasion.



Celebration of Institute Foundation Day

The Institute celebrated its 21st Foundation Day on 24 November, 2016. Shri Aravind Kaushal, Distinguished Fellow, The Energy and Resources Institute, New Delhi and former Additional Secretary, DARE and Secretary ICAR, New Delhi in the Foundation Day lecture urged the scientists to address the issue of feed and fodder scarcity and the impending effect of climate change on livestock production. He suggested making concerned effort to get funding from national and international agencies through collaborative research projects. He congratulated the Institute for its significant contribution in the field of animal nutrition and physiology for the last two decades. The Guest of Honour, Dr NV Patil, Director ICAR-National Research Centre on Camel, Bikaner speaking on the occasion reiterated the need for collaborative research in animal science especially in the basic and fundamental aspects of livestock production. He urged that the research findings of ICAR-NIANP need to be made use of in species specific Institutes to develop strategies for improving their productivity. Dr Raghavendra Bhatta, Director of the Institute highlighted some of the significant achievements including the new initiatives and vision of the Institute for the future. On this occasion, two technical books published in Hindi language on "Buffalo Reproduction" and "Animal Nutrition Technologies" were released by the dignitaries.



Celebration of Kannada Rajyotsava

The Kannada Rajyotsava was celebrated on November 2, 2016 with great spirit and fervour at the Institute. The Chief Guest for the function was Shri BP Shashikant, who highlighted the traditional system of home remedies in Karnataka called “Mane Maddu”. Our esteemed Director, Dr Raghavendra Bhatta delivered an excellent speech on the glory of Kannada and the importance of Kannada Rajyotsava. Shri BH Venkatswamy, Technical Officer, delivered a inspiring speech on the beauty of the Kannada language and its literature. He spoke in great detail about the contributions of the great Kannada litterateurs and Jnanpith awardees. The staff of the Institute presented several cultural programmes on this occasion. On a sepcial note, a docu-drama on Karnataka was presented that demonstrated the glorious history of Karnataka, emphasizing the life of various historical characters such as Kempegowda, Tippu Sultan, Onake Obavva etc. This docu-drama also showcased the various modern facets of the present day Karnataka such as the flourishing textile industry, the film industry, sports and the growth of the Bangalore metropolis.

Participation in the ICAR Zonal Sports Meet



The Institute was represented by a team of 14 members in the ICAR zonal sports held at ICAR-NAARM, Hyderabad from 22-26 August, 2016. The team participated in carrom, chess, table tennis, badminton and athletics events.



Overseas visiting scholars

Dr Yutaka Uyeno and Dr Takafumi Watanabe from Shinshu University, Japan visited the Institute during November, 2016 under the DST-JSPS funded collaborative Indo-Japan research project on “Methane mitigation using unexplored phyto sources in ruminants and their effect on rumen microbial diversity”

Award

Best Annual Report Award



Dr. Raghavendra Bhatta, Director receiving the ICAR Best Annual Report Award for the year 2015-16 under the Small Institute Category.

Others



Swachh Bharat

Institute is implementing Swachh Bharat Abhiyan programme in accordance with the instructions of Govt of India and ICAR and actively adopted the Campaign. Several swachhata awareness programmes were organized under the campaign. Tree planting programmes at the Institute campus were jointly taken up with Toyota Kirloskar Ltd Bengaluru. Awareness was created in the Institute campus regarding the Campaign. As an initiation, tilting dust-bins were erected at designated points for the effective use by the campus residents and staff. As per the guidelines of ICAR, Swachhata Programme was arranged at the Institute campus on 2 October, 2016 to clean and weed the open area in front of the staff quarter blocks. Swachhata Pakhwada was also observed from 16-31 October, 2016 successfully. Swachhata pledge was taken and display boards and banners were erected to create awareness about the campaign. Yoga awareness programme for the staff was also conducted. Housekeeping activities in sections, laboratories, and office premises were monitored regularly with due priority to the cleaning of toilets. Cleaning of drinking water and bore-well water tanks was done regularly and solid waste was managed and disposed of systematically.

Laboratory Profile

Nutrient Kinetics and Integrative Physiology Laboratory



Concept

- Unravelling the mechanisms of nutrient kinetics and the biophysical translation in integrating the homeostatic mechanism involved in the regulation of various physiological processes in livestock.

Approach

- Elucidating the cellular and molecular mechanisms of livestock adaptation to climate change.
- Regulation, integration and modulation of gastrointestinal functions in livestock.
- Nutrient-gene interactions in various physiological functions.
- Nutrition-Immune system interaction in livestock.
- Integrative response of animals to internal and external stimulants for maintaining homeostasis.

Findings

- Plasma growth hormone (GH), Insulin like growth factor-1 and leptin concentration may be considered ideal blood biochemical markers while GH and growth hormone receptor genes may act as ideal molecular markers for assembling the impact of nutritional stress in goats.
- When both heat and nutritional stresses were coupled, it had serious consequences on growth parameters, reproductive performance and rumen fermentation pattern in goats.
- The study also indicated that lying time, drinking frequency, RR, RT, plasma cortisol, HSP70, and PBMC and HSP70 gene expression may act as ideal biological markers for assessing the impact of cumulative heat and nutritional stress on the adaptive capabilities in goats.
- The higher expression of toll-like receptors TLR8 and TLR10 during heat stress indicated that these two genes may act as the immunological markers for heat stress in goats.

Work Contemplated

- Comparative assessment of adaptive capability of different indigenous goat breeds based on phenotypic and genotypic traits.
- Identification of different thermo-tolerant gene expression pattern for heat and nutritional stress in goat.
- Identification of G-Protein coupled receptors of free fatty acids in relation to fat digestion and absorption in sheep.
- Elucidating the mechanisms of different proportions of protein and energy levels influencing immune functions in goat
- Role of uric acid in alleviating oxidative stress induced mitochondrial dysfunction during different production cycle in poultry regulation by organo-sulphur compounds.



Save water

Adopt water efficient animal husbandry

ICAR-National Institute of Animal Nutrition and Physiology

Adugodi, Bengaluru - 560030

An ISO 9001:2008 Institute

Tel: 080-25711303, 25711164; Fax: 080-25711420. E mail: directornianp@gmail.com | www.nianp.res.in