National Institute of Animal Nutrition and Physiology

NIANP News & Views

Vol. 2 | No. 1 | Jan. - Jun., 2013

In this issue

MoU signed between NIANP & Nandi Agro Vet Ltd., for commercialization of sheep & goat mineral mixture on 15-02-2013

Technology commercialisation: mineral mixture for small ruminants

Commercial mineral mixtures comprising the essential minerals are available for large ruminants like cattle and buffalo. Small ruminants like sheep and goat have specific mineral requirements, which is quite different from the large ruminants. Specific mineral mixture formulations for small ruminants are commercially not available. Of late, sheep and goat rearing is transforming from extensive to semi-intensive in some regions. Realising this, a research project was undertaken at NIANP, Bangalore to formulate specific mineral mixture for sheep and goat and test their efficacy to improve growth and health. Depending on the mineral requirement of sheep and goat, their feeding habits, mineral status of feeds and fodders used and identify the most limiting minerals, specific mineral mixture formulations were made for sheep and goat. These formulations were tested in sheep and goat in organised farms and found to improve growth and immunity. Based on the findings, the technology was commercialized popularise the with NANDI Agrovet Private Ltd., the technology could be upscaled and meet the demands of farmers.

Research Highlights

Protein marker for detecting putative motility in buffalo and cattle semen

In the process of developing a suitable assay to screen sub-fertile buffalo bulls, an attempt was made to characterize the fertility associated proteins namely CatSper (a pH-dependent sperm-specific calcium ion channel of human and mouse sperm) and TIMP-2 (tissue inhibitor of metalloproteinase-2) in buffalo semen. In both buffalo and cattle spermatozoa, CatSper-1 of approx. 22.2 kDa was detected. Specifically in buffaloes, CatSper1 proteins were found to be localized at the post-acrosomal and principal piece regions of spermatozoa.

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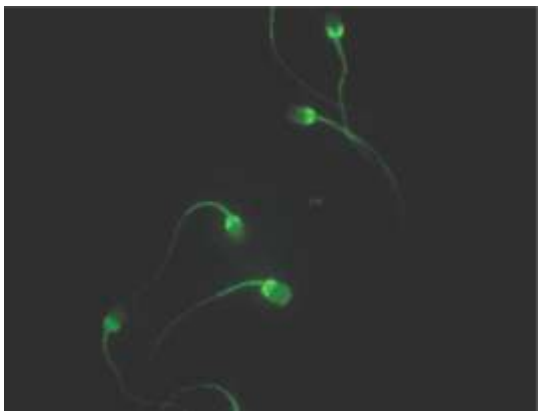
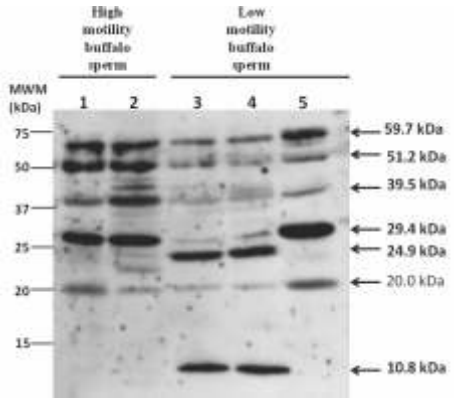
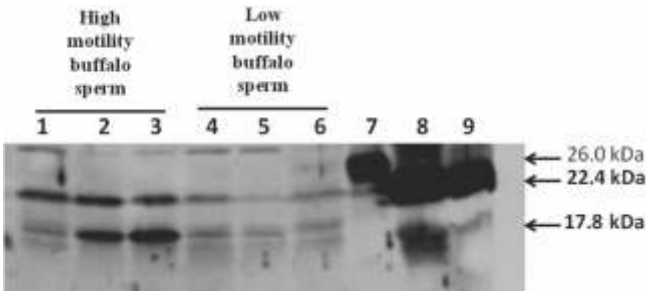
Besides, five CatSper3 immunoreactive protein bands of 59.7, 51.3, 39.5, 29.5 and 20.0 kDa were detected in buffalo sperm extracts. The low motility of buffalo spermatozoa were associated with aberrant expression of CatSper-3 ion channel proteins. In both buffalo and cattle, two molecular weight forms of TIMP-2 (22.4 and 17.8 kDa) were detected in seminal plasma and significantly lower expression of TIMP-2 were found to be associated with low sperm motility. Thus, TIMP-2 protein was identified as a putative motility marker for buffalo and cattle semen. Which could help in enhancing fertility in buffaloes at farm gate level.



Immunolocalization of CatSper1 proteins in buffalo spermatozoa



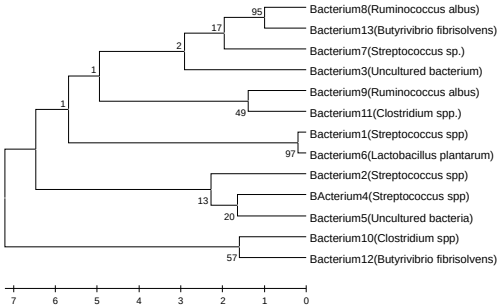
Aberrant expression of CatSper3 immunoreactive proteins in low motility buffalo sperm extracts. Lanes 3-4 displayed abnormal presence of 24.9 kDa and 10.8 kDa CatSper3 immunoreactive bands in low motility spermatozoa



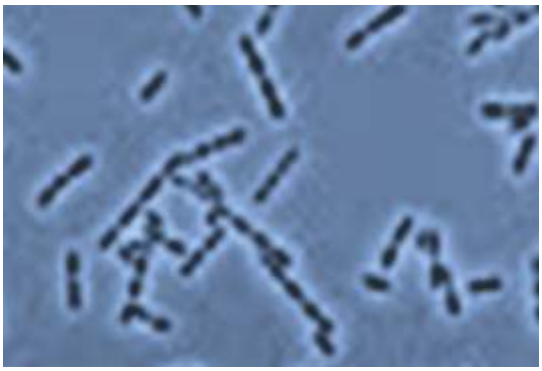
Western blot detection of TIMP-2 protein in buffalo and cattle seminal plasmas. Approximately 20 g of proteins/lane were separated using a uniform 15% polyacrylamide gel. Two molecular forms (22.4 and 17.8 kDa) of TIMP-2 proteins were detected in buffalo and cattle seminal plasmas using polyclonal rabbit anti-human TIMP-2 antibody. Lanes 1-3: seminal plasmas from high motility (70% motility) buffalo spermatozoa; Lanes 4-6: seminal plasmas from low motility (40% motility) buffalo spermatozoa; Lane 7: buffalo serum; Lane8: seminal plasma from high motility (70% motility) cattle spermatozoa; Lane 9: seminal plasma from low motility (40% motility) cattle spermatozoa.

Developing repository of rumen bacteria

Rumen bacteria from domestic ruminants viz; cattle, buffalo, sheep and goats were isolated and characterized microbiologically and biochemically. Eighteen bacterial isolates from sheep was cultured and further processed for DNA extraction, amplification, cloning in suitable vectors, transformation positive clones selection and then sequencing. These cultures were belong to *Streptococcus sp.* The bacteria that have been identified and added to repository are: *Streptococcus infantarius subsp. infantarius, Streptococcus lutetiensis, Streptococcus bovis, Streptococcus equines, Clostridium bifermentans, Escherichia coli, Clostridium botulinum A3 and Clostridium sp.* Additionally three more gram positive live anaerobic cultures namely *Bacilllus nealsonii* (VTCCRM000020B), *Clostridium beijerincki* (VTCCRM000021B), *Clostridium sartagoforme* (VTCCRM000022B) were submitted to the repository by Anand Agricultural University. The phylogenetic analysis of few bacterial isolates obtained have been studied.



Phylogenetic analysis (MEGA 4) of bacteria isolated in the present study



Streptococcus bovis

Effect of dietary fungal phytase supplementation on the performance of broiler chicken

Effect of fungal phytase supplementation on the performance of broiler chicken fed on maize- soybean based diet was evaluated. Two fungal isolates *Aspergillus awamori* (NCIM 885) and *Aspregillus foedidus* (isolated from soil) showed good phytase activity and therefore finally selected for the bulk production of phytase in laboratory using

immobilization technique. Through immobilization of fungus, phytase activity of 80-100 FTU/ml was obtained within 6-10 days of incubation at a regular interval. Activity of phytase enzyme produced in lab was stable over wide range of temperature (30-70°C) and pH (3.5-6.5). 192 birds divided into 4 groups were fed on maize-soybean based diet supplemented with inorganic P (positive control, T-1), low P (0.45% available, negative control, T-2), lab phytase (T-3) and commercially available phytase (T-4). Supplementation of phytase enzyme @ 500 FTU/ml from both the commercial and lab sources could replace 0.12% of the available or non-phytin P in broiler diet. However, feed intake, body weight gain and meat yield was lower in the broilers receiving lab produced phytase enzyme as compared to birds receiving commercially available phytase. Supplementation of both lab phytase and commercial phytase reduced the excretion of P by 30%. It may be concluded that lab phytase produced by immobilization can replace phytin P up to 0.12% in the diet of broiler chicken.

Awards / Recognitions

Dr. S. B. N. Rao, Principal Scientist, was conferred the Fellow Award of Society for Applied Biotechnology for the year 2012.

Dr. A. Thulasi, Senior Scientist was conferred the Fellow Award of Society for Applied Biotechnology for the year 2012.

Dr. P. K. Malik, Senior Scientist was conferred the Fellow Award of Society for Applied Biotechnology for the year 2012.

Trainings

Valedictory function of Model Training Course on 21-02-2013

Valedictory function of VTC Hands on Training Programme on 18-03-2013

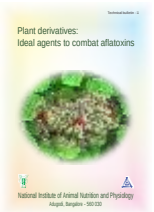
Valedictory function of Trainers Training Programme on 06-06-2013

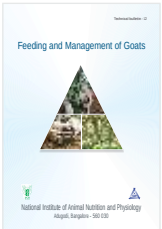
Personnel

Dr. C.S. Prasad, Director felicitating Sri Basavaraja, T.O (T-9) on his superannuation on 31-01-2013

Publications

Technical bulletins/Folders





Events

New year celebration on 01-01-2013

Sports events held on 15-01-2013

Pongal celebration on 15-01-2013

IMC meeting held on 17-01-2013

RAC Meeting held on 15-02-2013

Republic day celebration on 26-01-2013

2nd Innovative and Progressive Farmers Meet

The Second Innovative and Progressive Farmers Meet was held on 24th January, 2013. Dr. S. Ayyappan, Secretary DARE & DG, ICAR was the chief guest of this function. Padmashree Dr. M Mahadevappa, Former VC, UAS, Dharwad and Former Chairman, ASRB, presided over the function. Dr. K D Kokate, DDG (Ag Ext.), ICAR; Dr. K M L Pathak, DDG (AS), ICAR; and Dr. Renuka Prasad, VC, KAFSU, Bidar were the guests of honour. Ten selected progressive farmers were felicitated on this occasion. They shared their experiences and innovations with the fellow farmers. About 150 farmers attended the meet. In the scientist-farmer interaction session, a panel discussion was held under the chairmanship of Dr. Narayangowda, VC, UAS, Bangalore, wherein queries of farmers in relation to livestock farming were answered by the experts from different departments. The dignitaries released several technical bulletins and 'Feed Assist': a farmer friendly ration formulation program was also launched by chief guest.

Distinguished Visitors

Dr. M. M. Pandey, DDG (Engg), interacting with scientists on 19-01-2013

Sri G.C. Pati, Secretary, DAHD & F, GoI interacting with scientists on 31-01-2013

Dr. T.G. Nagaraja of KANSAS state university interacting with scientists on 07-02-2013

Dr. P. Redanna, Director, NIAB interacting with scientists on 22-02-2013

Sri Tariq Anwar, Honorable MoS (Agriculture), GoI visited NIANP on 29-05-2013

Dr. Devakumar, ADG (Education), interacting with scientists on 07-06-2013

Seminars/ lectures

Sl No	Month	Presenter	Topic
1	Feb 2013	Prof. Dr T G Nagaraja of Kansas State University, USA	Feed safety
2	Feb 2013	Dr. PSP Gupta, Principal Scientist, Animal Physiology	Role of WNT signaling in granulosa cell estradiol synthesis in cattle
3	Mar, 2013	Dr. K Giridhar, Senior Scientist, Animal Nutrition	Crop Simulation Modelling
4	May, 2013	Mrs Sreja Ajith, PhD Scholar, Microbiology	Use of Microbes for Environmental Management.
5	May, 2013	Dr Sumanta Nandi, Senior Scientist, Animal Physiology	Mechanistic insights of wound healing (tissue repair)
6	June, 2013	S Parthipan, PhD Scholar Biochemistry	Next Generation Sequencing Technology: Application in Animal Reproduction

Laboratory Profile

Molecular biology lab

The Molecular Biology Laboratory of the institute was established in 1998 with the vision of creating a state-of-the-art facility for conducting research in the advanced area of functional genomics such as proteins, transcripts, and regulatory small molecules. Some of the research facilities include ultracentrifuge and other refrigerated and non-refrigerated centrifuges, ultrasonic processor, tissue homogenizers, gel electrophoresis system for proteins and nucleic acids, imaging systems for chromogenic, fluorescence and radio-labelled gels, fast pressure liquid chromatography system, *in vitro* prokaryotic and eukaryotic cell culture facilities for recombinant protein production and other in vitro experiments, DIC and fluorescent microscopes, shaking incubators, gradient and real-time PCR systems, micro-plate reader, isoelectric focussing system etc.

Salient achievements

- Characterized and identified several estrous cycle and pregnancy-specific uterine luminal fluid and endometrial proteins that may play a role in conception, establishment and maintenance of pregnancy in buffaloes.
- Identified proteins relating to regression of corpus luteum
- Characterized the status of several antioxidant enzymes of buffalo oviduct and endometrium and the mechanism of their modulation during estrous cycle and early pregnancy. Submitted several cDNA sequences of buffalo reproductive tract antioxidant genes to NCBI (GenBank)
- Cloned and confirmed the sequence of major buffalo PAG transcript of fetal cotyledon and caruncular tissues.
- Identified a putative motility marker for buffalo and cattle semen

Current focus of research

- Development of pregnancy diagnosis assay for buffaloes based on already available marker
- Exploring the newer markers of pregnancy in cell free body fluids of buffaloes
- Identification of sub-fertile buffalo bulls using molecular markers
- Development of suitable semen extender for improved post-thaw motility of buffalo semen.

Forthcoming events

Sl No	Name of the event	Duration	Dates/period
1.	Independence Day	-	15. 08. 2013
2.	IMC meeting	1 day	August 2013
4.	Hindi Fortnight	-	14. 09. 2013- 28. 09. 2013
5.	Short course on 'Precision feeding and nutrigenomic modulation of underlying physiology to ameliorate stress and promote production in livestock'	10 days	04. 09. 2013 - 13. 09. 2013
6.	Ganesh Chaturthi	-	09. 09. 2013
7.	PMC meeting	1 day	28. 09. 2013
8.	Midterm Expert Committee meeting for research projects evaluation 2012-13	1 day	29. 09. 2013
9.	Ayudha Puja	-	14. 10. 2013
10.	Winter School on 'Climate change and Abiotic stress management in livestock: Basic concepts and amelioration measures'	21 days	05. 11. 2013 - 25. 11. 2013
11.	Agricultural Education day	-	November 2013
12.	National Integration & Kannada Rajyotsava	-	19. 11. 2013
13.	Institute Foundation Day & Scientist-Farmer interaction meet	1 day	24. 11. 2013

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ÂqÉlÉ eÉÏuÉÉhÉ MüÉWÉ MüÉ xjÉÉmÉlÉ LuÉ ÌuÉxiÉÉU :

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AlÉ¢üíqÉiÉ ÌMürÉÉ aÉrÉÉ | 18 pÉQÉ xÉ mÉjÉMü ÌMürÉ aÉrÉ eÉÏuÉÉhÉAÉ MüÉ ÌuÉzÉÌWÉiÉ MüUlÉ Mü EmÉUÉiÉ xOïmOÉMüÉYxÉ ClÉTülÉOÌÉUrÉxÉ, EmÉmÉeÉÉÌiÉ ClÉTülÉOÌÉUrÉxÉ, xOïmOÉMüÉYxÉ srÉÌOÍxÉlÉÉÍxÉxÉ, xOïmOÉMüÉYxÉ oÉÉÌuÉxÉ, xOïmOÉMüÉYxÉ CMüuÉÉCIxÉ, YsÉÉÎxOÌÌQrÉqÉ oÉÉCTüqÉlÉOÉxÉ, LxÉcÉÏÉUÍCÉrÉÉ MüÉsÉÉD, YsÉÉÎxOÌÌQrÉqÉ oÉÉOÍÍsÉlÉqÉ A3, YsÉÉÎxOÌÌQrÉqÉ xmÉxÉÏxÉ Mü ÃmÉ qÉ ÍcÉÎlWíÉ MüUMü eÉÏuÉÉhÉ MüÉWÉ qÉ xÉÎqqÉÍsÉiÉ ÌMürÉÉ aÉrÉÉ | CxÉMü AsÉÉuÉÉ AÉlÉS MüÌWÉ ÌuÉµÉÌuÉkÉÉsÉrÉ ²ÉUÉ ÌlÉuÉÌSiÉ ÌMürÉ aÉrÉ 3 aÉÉqÉ mÉÉÎeÉÌOuÉ AuÉÉrÉuÉÏrÉ eÉÏuÉÉhÉ oÉxÉÏsÉxÉ ÌlÉrÉsÉxÉÉlÉÏ, YsÉÉÎxOÌÌQrÉqÉ oÉeÉUÏCMüÐ, iÉjÉÉ YsÉÉÎxOÌÌQrÉqÉ xÉÉUOÉaÉÉÌüÉÍqÉ MüÉ pÉÏ MüÉWÉ qÉ zÉÉÍqÉsÉ ÌMürÉÉ aÉrÉÉ |

MüuÉMüÐrÉ **TüÉCOleÉ** mÉUhÉ oÉÉrÉsÉU qÉÌaÉrÉÉ MüÐ EimÉÉSMüiÉÉ mÉU mÉpÉÉuÉ :-

MüuÉMüÐrÉ TüÉCOleÉ mÉUhÉ MüÉ oÉÉrÉsÉU qÉÌaÉrÉÉ MüÐ EimÉÉSMüiÉÉ mÉU mÉpÉÉuÉ MüÐ eÉÉcÉ xÉxjÉÉlÉ Mü uÉ¥ÉÉÌlÉMüÉ ²ÉUÉ MüÐ aÉrÉÏ | SÉ MüuÉMüÐrÉ TüÉCOleÉ LxmÉUÎeÉsÉxÉ AuÉÉqÉÉUÏ (LlÉxÉÏAÉUlqÉ 885) AÉU LxmÉUÎeÉsÉxÉ MüÉDQÏÍQlxÉ (ÍqÉ–Ï xÉ mÉjÉMü ÌMürÉÉ WÌAÉ) MüÐ ElÉMü Ac¬ TüÉCOleÉ xÉÌ¢ürÉiÉÉ mÉSÉÍzÉiÉ MüUlÉ Mü AÉkÉÉU mÉU mÉrÉÉaÉzÉÉsÉÉ qÉ jÉÉMü EimÉÉSlÉ Mü ÍsÉL cÉrÉÌlÉiÉ ÌMürÉÉ aÉrÉÉ | ÎxjÉUÏMüUhÉ iÉMülÉÏMü MüÉ mÉrÉÉaÉ MüUiÉ WlL, EmÉUÉ£ü SÉlÉÉ MüuÉMüÐ xÉ sÉaÉpÉaÉ 80-100 LTüÌOrÉ/ÍqÉÍsÉ. xÉÌ¢ürÉiÉÉ MüÉ TüÉCOleÉ LIeÉÉCqÉ EwqÉÉrÉlÉ Mü 6-10 ÌSlÉÉ Mü AISU mÉÉmiÉ WÉ eÉÉiÉÉ Wi | mÉrÉÉaÉzÉÉsÉÉ qÉ EimÉÉÌSiÉ TüÉCOleÉ MüÐ xÉÌ¢ürÉiÉÉ mÉU iÉÉmÉqÉÉlÉ (30 – 70°C) LuÉ mÉÏLcÉ (3.5 – 6.5) MüÉ pÉÏ MüÉD mÉÌlíÉMüsÉ mÉpÉÉuÉ lÉWÏ SìZÉÉ aÉrÉÉ | 192 oÉÉrÉsÉU qÉÌaÉrÉÉ MüÉ 4 xÉqÉW qÉ ÌuÉpÉÉÎeÉiÉ MüUMü, AMüÉoÉÌlÉMü TüÉxTüÉUxÉ (xÉMüÉUÉiqÉMü ÌlÉrÉÌ§ÉiÉ xÉqÉW, T1), qÉÉaÉ xÉ MüqÉ TüÉxTüÉUxÉ EmÉsÉokÉiÉÉ (0.45 % EmÉsÉokÉiÉÉ, lÉMüÉUÉiqÉMü ÌlÉrÉÌ§ÉiÉ xÉqÉW, T2), mÉrÉÉaÉzÉÉsÉÉ EimÉÉÌSiÉ TüÉCOleÉ (T3) LuÉ urÉuÉxÉÉÌrÉMü TüÉCOleÉ (T4) MüÉ mÉUhÉ qÉ, uÉ-xÉÉrÉÉoÉÏlÉ AÉkÉÉÉUiÉ UÉzÉlÉ Mü xÉÉjÉ 500 LTüÌOrÉ/ÍqÉÍsÉ MüÐ SU xÉ ÌMürÉÉ aÉrÉÉ | mÉrÉÉaÉzÉÉsÉÉ LuÉ urÉuÉxÉÉÌrÉMü xÉÉiÉÉ xÉ mÉÉmiÉ TüÉCOleÉ LIeÉÉCqÉ MüÉ 500 LTüÌOrÉ/ÍqÉÍsÉ mÉUhÉ MüUlÉ mÉU oÉÉrÉsÉU qÉÌaÉrÉÉ qÉ 0.12 mÉÌliÉzÉiÉ EmÉsÉokÉ AjÉuÉÉ A-TüÉCÌOlÉ TüÉxTüÉUxÉ MüÉ mÉÌliÉxjÉÉÌmÉiÉ ÌMürÉÉ eÉÉ xÉMüiÉÉ Wi | pÉÉeÉlÉ aÉÉ½ÉiÉÉ, pÉÉU uÉÌ¬ AÉU qÉÉxÉ EimÉÉSlÉ mÉrÉÉaÉzÉÉsÉÉ qÉ EimÉÉÌSiÉ TüÉCOlxÉ mÉUhÉ uÉÉsÉ xÉqÉW qÉ urÉuÉxÉÉÌrÉMü TüÉCOleÉ uÉÉsÉ xÉqÉW MüÐ iÉsÉlÉÉ qÉ MüqÉ SìZÉÏ aÉrÉÏ | mÉrÉÉaÉzÉÉsÉÉ LuÉ urÉuÉxÉÉÌrÉMü TüÉCOleÉ Mü mÉUMüÐMüUhÉ xÉ TüÉxTüÉUxÉ Mü qÉsÉÉixÉeÉlÉ ²ÉUÉ WÉlÉ uÉÉsÉ AmÉurÉrÉ MüÉ 30% iÉMü MüqÉ ÌMürÉÉ eÉÉ xÉMüiÉÉ Wi | AiÉiÉ: rÉW ÌlÉwMüWÉ ÌlÉMüÉsÉÉ eÉÉ xÉMüiÉÉ Wi ÌMü mÉrÉÉaÉzÉÉsÉÉ EimÉÉÌSiÉ TüÉCOleÉ Mü mÉUhÉ xÉ TüÉCÌOlÉ TüÉxTüÉUxÉ MüÉ 0.12 mÉÌliÉzÉiÉ Mü xiÉU iÉMü oÉÉrÉsÉU qÉÌaÉrÉÉ qÉ mÉÌliÉxjÉÉlmÉiÉ ÌMürÉÉ eÉÉ xÉMüiÉÉ Wi |

Ì²iÉÏrÉ AÍpÉlÉuÉ AÉU mÉaÉÌliÉzÉÏsÉ ÌMüxÉÉlÉ xÉqqÉsÉlÉ

Ì²iÉÏrÉ AÍpÉlÉuÉ LuÉ mÉaÉÌliÉzÉÏsÉ ÌMüxÉÉlÉ ÍqÉsÉlÉ xÉqÉÉUÉW MüÉ AÉrÉÉeÉlÉ 24 eÉlÉuÉUÏ 2013 MüÉ ÌMürÉÉ aÉrÉÉ | CxÉ AÉrÉÉeÉlÉ mÉU qÉZrÉ AÌiÉÍjÉ Mü ÃmÉ qÉ QÉ LxÉ ArÉmmÉlÉ, xÉÍcÉuÉ, MüÌWÉ AlÉxÉkÉÉlÉ AÉU ÍzÉ¤ÉÉ ÌuÉpÉÉaÉ LuÉ qÉWÉÌlÉSìzÉMü, pÉÉUiÉÏrÉ MüÌWÉ AlÉxÉkÉÉlÉ mÉÉUWÉS, lÉD ÌSssÉÏ EmÉÎxjÉiÉ jÉ. xÉqÉÉUÉW MüÐ AkrÉ¤ÉiÉÉ mÉSqÉ´ÉÏ QÉ. LqÉ qÉWÉSluÉmmÉÉ, mÉuÉ MüsÉmÉÌlÉ, MüÌWÉ ÌuÉµÉÌuÉ±ÉsÉrÉ, kÉÉUuÉÉQÌ AÉU mÉuÉ AkrÉ¤É, MüÌWÉ uÉ¥ÉÉÌlÉMü cÉrÉlÉ qÉQìsÉ, ÌSssÉÏ ²ÉUÉ MüÐ aÉrÉÏ| CxÉ AuÉxÉU mÉU QÉ Mü QÏ MüÉMüÉOÌ, EmÉ qÉWÉÌlÉSìzÉMü (MüÌWÉ ÌuÉxiÉÉU), pÉÉUiÉÏrÉ MüÌWÉ AlÉxÉkÉÉlÉ mÉÉUWÉS; QÉ Mü LqÉ LsÉ mÉÉPMü, EmÉ qÉWÉÌlÉSìzÉMü (mÉzÉ ÌuÉ¥ÉÉlÉ), pÉÉUiÉÏrÉ MüÌWÉ AlÉxÉkÉÉlÉ mÉÉUWÉS; QÉ UhÉMüÉ mÉxÉÉS, MüsÉmÉÌlÉ, MülÉÉOMüÉ LÌlÉqÉsÉ LìQÌ ÌTüzÉUÏ xÉÉCxÉ rÉÌlÉuÉÍxÉOÏ, oÉÍSU ÌuÉÍzÉ¹ AÌiÉÍjÉaÉhÉ Mü ÃmÉ qÉ EmÉÎxjÉiÉ jÉ. CxÉ AuÉxÉU mÉU SxÉ cÉrÉÌlÉiÉ ÌMüxÉÉlÉÉ MüÉ xÉqqÉÉÌlÉiÉ pÉÏ ÌMürÉÉ aÉrÉÉ ÎeÉlWÉlÉ AmÉlÉ AlÉpÉuÉÉ AÉU lÉuÉ ÌuÉcÉÉuÉ MüÉ xÉÉjÉÏ ÌMüxÉÉlÉÉ Mü xÉÉjÉ MüÉrÉ¢üqÉ Mü SÉuÉlÉ xÉÉfÉÉ ÌMürÉÉ | ÌMüxÉÉlÉ ÍqÉsÉlÉ xÉqÉÉUÉW Mü CxÉ AÉrÉÉeÉlÉ qÉ sÉaÉpÉaÉ 150 ÌMüxÉÉlÉÉ lÉ ÌWxxÉÉ ÍsÉrÉÉ| uÉ¥ÉÉÌlÉMü-ÌMüxÉÉlÉ cÉcÉÉ xÉ§É MüÉ AÉrÉÉeÉlÉ QÉ lÉÉUÉrÉlÉaÉÉQÉ, MüsÉmÉÌlÉ, rÉLLxÉ, oÉaÉsÉÉU MüÐ AkrÉ¤ÉiÉÉ qÉ ÌMürÉÉ aÉrÉÉ ÎeÉxÉMü SÉUÉlÉ ÌMüxÉÉlÉÉ Mü mÉzÉkÉlÉ xÉoÉkÉÏ mÉzlÉÉ Mü eÉUÉÉoÉ ÌuÉÍpÉ³É ÌuÉpÉÉaÉÉ Mü ÌuÉzÉWÉ¥ÉÉ ²ÉUÉ ÌSL aÉrÉ | CxÉ AÉrÉÉeÉlÉ Mü SÉUÉlÉ WÏ MüD iÉMülÉÏMüÐ oÉsÉÌOlÉ MüÉ ÌuÉqÉÉcÉlÉ aÉhÉqÉÉlrÉ urÉÌ£ürÉÉ ²ÉUÉ ÌMürÉÉ aÉrÉÉ eÉoÉÌMü " TüÐQ AÍxÉxO" lÉÉqÉMü ÌMüxÉÉlÉ ÍqÉ§ÉuÉiÉ UÉzÉlÉ iÉrÉÉU MüUlÉ uÉÉsÉ LMü xÉÉnOuÉU MüÉ zÉpÉÉUpÉ QÉ LxÉ ArÉmmÉlÉ, qÉZrÉ AÌiÉÍjÉ Mü MüQ MüqÉsÉÉ ²ÉUÉ ÌMürÉÉ aÉrÉÉ|

mÉrÉÉaÉzÉÉsÉÉ ÃmÉUZÉÉ

AÉhÉÌuÉMü eÉÏuÉÌuÉ¥ÉÉlÉ mÉrÉÉaÉzÉÉsÉÉ

MüÉrÉÉiqÉMü eÉÏlÉÉÍqÉYxÉ Mü AÌaÉqÉ ¤É§É eÉxÉ ÌMü mÉÉOÏÍlxÉ, OÉxÉÌ¢ümO AÉU ÌuÉÌlÉrÉÉqÉMü NÉOÌ AhÉAÉ Mü ¤É§É qÉ E³ÉiÉ AlÉxÉkÉÉlÉ MüÉrÉ xÉcÉÉÍsÉiÉ MüUlÉ Mü ESìzrÉ xÉ xÉxjÉÉlÉ qÉ uÉWÉ 1998 qÉ LMü AirÉÉkÉÌlÉMü xÉÌluÉkÉÉ rÉ£ü AÉÎhuÉMü eÉÏuÉÌuÉ¥ÉÉlÉ mÉrÉÉaÉzÉÉsÉÉ MüÐ xjÉÉmÉlÉÉ MüÐ aÉrÉÏ| AsOÉ xÉOÌÍnrÉeÉ, mÉzÉÍÌiÉiÉ xÉOÌÍnrÉeÉ, aÉU mÉzÉÍÌiÉiÉ xÉOÌÍnrÉeÉ, AsOÉxÉÉÌlÉMü mÉÉxÉxÉU, FiÉMü WÉqÉÉÎeÉlÉÉCeÉU, mÉÉOÏÍlÉ AÉU IrÉÎYsÉMü LÍxÉQ Mü ÍsÉrÉ eÉsÉ uÉ±iÉMühÉxÉcÉsÉlÉ, uÉhÉeÉlÉMü, mÉÌliÉSÌÎmiÉ UÌQrÉÉ sÉoÉsÉ eÉsÉ Mü ÍsÉL CqÉÎeÉaÉ ÍxÉxOqÉ, iÉeÉ SoÉÉuÉ iÉUsÉ ¢üÉqÉOÉaÉÉTüÐ mÉhÉÉsÉÏ, mÉlÉÉ xÉrÉÉeÉMü mÉÉOÏÍlÉ Mü EimÉÉSlÉ Mü ÍsÉL ClÉ ÌuÉOÉ mÉÉMüÉrÉÉÌOlMü AÉU rÉMüÉUrÉÉÌOlMü xÉsÉ MüscÉU xÉÌluÉkÉÉrÉ, QÏAÉDxÉÏ AÉU nsÉÉUÉxÉÒ qÉÉC¢üÉxMüÉmÉ, mÉÏxÉÏAÉU, ÊUrÉsÉOÉCqÉ mÉÏxÉÏAÉU, xÉ¤qÉ msÉO UÏQlU mÉrÉÉaÉzÉÉsÉÉ qÉ EmÉsÉokÉ xÉÌluÉkÉÉAÉ qÉ xÉ MüNìMü Wi |

mÉrÉÉaÉzÉÉsÉÉ MüÐ qÉZrÉ EmÉsÉÎokÉrÉÉ

- qÉS cÉ¢ü LuÉ aÉpÉÉuÉxjÉÉ ÌuÉÍzÉ¹ aÉpÉÉzÉrÉ sÉrÉÍqÉlÉÉ AÉU AlíÉaÉpÉÉzÉrÉMüsÉÉ mÉÉOÏÍlÉ eÉÉ ÌMü pÉxÉÉÌ Mü aÉpÉkÉÉUhÉ, xjÉÉmÉlÉ LuÉ ÌlÉuÉWlÉ qÉ LMü qÉZrÉ pÉÍqÉMüÉ ASÉ MüUlÉ Wi MüÉ mÉWcÉÉlÉlÉ LuÉ ÌuÉzÉÌWÉiÉ MüUlÉ MüÉ MüÉqÉ mÉrÉÉaÉzÉÉsÉÉ ²ÉUÉ ÌMürÉÉ aÉrÉÉ Wi.
- MüÉmÉxÉ sÉrÉÌOlrÉqÉ Mü mÉÌliÉaÉqÉlÉ xÉoÉkÉÏ mÉÉOÏÍlÉ MüÐ mÉWcÉÉlÉ
- pÉxÉÉÌ Mü mÉeÉlÉlÉ pÉpÉÉaÉ Mü LOÏ B YxÉÏQlO eÉÏlÉ Mü MüD c DNA AlÉ¢üqÉMü MüÉ LlÉxÉÏoÉÏAÉD MüÉWÉ qÉ eÉqÉÉ ÌMürÉÉ Wi.
- pÉxÉÉÌ qÉ pÉlhÉ MüÉOÉDsÉÏQlÉ AÉU MüUlÉMüsÉU FiÉMüÉ Mü mÉÏLeÉÏ (PAG) OÉxÉÌ¢ümO MüÐ YsÉÉÌlÉaÉ LuÉ AlÉ¢üqÉ ²ÉUÉ mÉÌ¹
- aÉÉrÉ LuÉ pÉxÉÉ Mü uÉÏrÉ MüÐ eÉÉcÉ Mü ÍsÉrÉ ZrÉÉiÉ aÉlíÉzÉÏsÉiÉÉ qÉÉMüU MüÐ ZÉÉeÉ
- mÉWsÉ xÉ EmÉsÉokÉ qÉÉMüU mÉU AÉkÉÉÉUiÉ ÌlÉSÉlÉ mÉUZÉ MüÉ ÌuÉMüÉxÉ pÉxÉÉÌ qÉ aÉpÉÉkÉÉUhÉ MüÐ eÉÉcÉ Mü ÍsÉrÉ MüUlÉÉ.
- pÉxÉÉÌ qÉ zÉUÏU Mü MüÉÍzÉMüÉ qÉ£ü iÉUsÉ mÉSÉjÉ Mü AÉkÉÉU mÉU aÉpÉÉuÉxjÉÉ eÉÉcÉ Mü ÍsÉrÉ lÉrÉ qÉÉMüUÉ Mü ZÉÉeÉ.
- pÉxÉÉÌ qÉ AÉhÉÌuÉMü qÉÉMüUxÉ MüÉ EmÉrÉÉaÉ MüUMü MüqÉ mÉeÉlÉlÉ uÉÉsÉ xÉÉQÉ MüÐ mÉWcÉÉlÉ MüUlÉÉ|

mÉÜxMüÉU / xÉqqÉÉlÉ :

QÉ. LxÉ.oÉÏ.LlÉ. UÉuÉ, mÉkÉÉlÉ uÉ¥ÉÉÌlÉMü MüÉ xÉÉxÉÉCOÏ TüÉU LmÉsÉÉCQ oÉÉrÉÉOMüÌlÉÉsÉÉeÉÏ Mü ²ÉUÉ TüsÉÉ AÉuÉÉQ, 2012 xÉ xÉqqÉÉÌlÉiÉ ÌMürÉÉ aÉrÉÉ |

QÉ. L. iÉsÉxÉÏ, uÉÉU¸ uÉ¥ÉÉÌlÉMü MüÉ xÉÉxÉÉCOÏ TüÉU LmÉsÉÉCQ oÉÉrÉÉOMüÌlÉÉsÉÉeÉÏ Mü ²ÉUÉ TüsÉÉ AÉuÉÉQ, 2012 xÉ xÉqqÉÉÌlÉiÉ ÌMürÉÉ aÉrÉÉ |

QÉ. mÉÏ. Mü. qÉÍsÉMü, uÉÉU¸ uÉ¥ÉÉÌlÉMü MüÉ xÉÉxÉÉCOÏ TüÉU LmÉsÉÉCQ oÉÉrÉÉOMüÌlÉÉsÉÉeÉÏ Mü ²ÉUÉ TüsÉÉ AÉuÉÉQ, 2012 xÉ xÉqqÉÉÌlÉiÉ ÌMürÉÉ aÉrÉÉ |

Director's Desk

Though the stake of agriculture to the National Gross Domestic Product (NGDP) has receded from 30 percent in 1990-91 to 14.5 percent in 2011-12, a trend that is expected in the development process of any economy, it still forms the backbone of development. Structural change in the composition of agriculture leading to a diversification of Indian agriculture into livestock, horticulture and fisheries since the 1990s is a landmark development with great challenges and unlimited opportunities. The share of livestock in total output from the agriculture and allied sectors has increased from 20% in Triennium Ending (T.E.) 1990-91 to 25% in T.E. 2009-10 (at 2004-05 prices). Currently food-grains constitute about one fifth of the total value of output from the agriculture & allied sector which is less than the contribution from the livestock sector. Being the unique transformer of natural vegetation to product, livestock is the primal theme of ecological trans-equilibrium. It creates all the year round diverse employment cushion leveraging an average 35 million human years per annum. This rainbow lining of livestock sector looms a dream canvas for the Indian agriculture.

With its predicament of 'Agrisearch with a human touch', the Indian Council of Agricultural Research (ICAR) has translated myriads of farmer friendly technologies in the area of agriculture and livestock farming. Ensembled under its canopy and embellished with the 'Sardar Patel Best Institute Award-2012', the National Institute of Animal Nutrition and Physiology, has delivered its share of technologies in the area of livestock feed and reproduction. These include - area specific mineral mixture, bypass nutrients, complete feed block, adaptation of azolla, use of areca sheath as feed, sheep and goat mineral mixture, efficacy of red spectra in egg production and development of kits for early pregnancy detection.

These 'discoveries' blossomed the Second Innovative and Progressive Farmers Meet at NIANP on January 24, 2013, with indelible impressions from a spectrum of stakeholders. The translation of such themes summons wider projection and knowledge transmittance. At the behest of the Department of Animal Husbandry, Dairying and Fisheries, MoA, GoI,) one Model Training Course (Feb 14-21, 2013) and two 'trainers training programme' (May 28-June 6 & June 27-July 6, 2013) were organized for the field officers of state animal husbandry departments to equip them with nascent advances in livestock feed quality for its dissemination to the farm clientele. The institute had also organized a 'Hands on training programme on isolation and characterization of rumen microbes ' (March 12-18, 2013) to vent the cutting edge technologies in fibre degradation.

The expectations from the institute fuel us to strive continually through quality research, propped on 'motivated multi-disciplinary team effort' and a 'demand-driven, responsive, and vibrant ' stakeholders. The institute would facilitate need based research in ongoing and emerging areas of livestock farming to denote productivity increase, reduce gap between potential and actual yield, and to prepare the country for the challenges of green globalization.

C.S. Prasad

हर कदम, हर डगर
किसानों का हमसफर
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