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Director’s Desk

A good monsoon across 80% districts in the country was a boon to crop production leading to better crop residues and aligned co-products to expand livestock products. USDA estimates reveal milk output to surge by 4.5 per cent to reach a record 140.6 million tonnes of milk in 2014 on a normal monsoon, with increased consumer demand for dairy products.

Escalated farm-gate prices, rising demand for value-added products are stimulating livestock production. This has instilled private investment in integrated facilities goading further impetus to livestock industry. NIANP has a onerous task on issues of feed utilisation and conservation transient on physiological efficacies and we should be prepared for scarcity contingencies. The bench work at NIANP has unveiled stable laccase from a basidiomycete, isolated from decayed sylvan wood, which might traverse the channels to cleft the wedges of lingo-cellulose bonds. To formulate wide screen least cost ration balancing for dairy livestock, the institute has developed a web based expert system-Feed Assist, which has a multilingual and farmer friendly graphic user interface (GUI) module, using locally available feed resources.

Team work with dedication is always a step towards success. Each staff of this premier institute has his share of cake, when the coveted ‘Sardar Patel outstanding ICAR institute award for the year 2012-13’ was bequeathed on NIANP. The ISO-9001:2008 certificate by German cert for quality management system has domained further in our spirit of diligence and excelling in our research work. Our commitment in knowledge enriching and capacity building witnessed trainers’ training, winter school, short course and field programmes. We glittered in the international arena, with NIANP’s deliverance from Goettingen to Reunion islands, France.

The altered global food consumption patterns show an increasing demand for livestock products, while increasing variability of rainfall is associated with climate change impacting crop production. Rightly thus, livestock production and management will therefore most prominently features in future rural livelihoods. This will require a better understanding of the resource utilization in terms of feed-fodder and production physiology. Thus, the role of NIANP shall be perpetual and all-pervading. With firm conviction, I affirm this belief to be shared by its family as I dream its deluge of prolificacy midst knowledge institutions. NIANP is organising a global event, Glance 2014 on the theme “Climate Resilient Livestock Feeding Systems for Global Food Security” from 20-22 April 2014 and I on behalf of the organisers extend you all a very warm invitation.
Research Achievements

Novel white rot fungal isolate identified

A white rot basidiomycete, isolated from decayed wood from Dubare forests (Karnataka, India) and designated as NI-07 was identified as *Schizophyllum commune*, by the Microbial Type Culture Collection (Institute of Microbial Technology, Chandigarh). The isolate was observed to be a hyper producer of laccase enzyme.

The enzyme produced from *S. commune* through immobilization showed greater thermo and pH stability as compared to the native enzyme produced through submerged cultivation without immobilization. The produced laccase was completely active up to 60°C and retained more than 25% of residual activity at a temperature of 85°C. With regard to pH this laccase was highly active between pH 3.0 to 8.5 retaining 40 to 50% residual activity even at pH 10.0. A laccase of such stability has not been reported earlier.

It has been given a GenBank accession number BankIt1679236 *Schizophyllum* KF911323. Being a novel isolate the strain is deposited with MTCC.

Plate 1: Various stages of fruiting body formation in the novel isolate *S. commune*

Development of Feed Assist: Expert system for formulation of balanced ration for dairy cattle

A web based expert system namely *Feed Assist* is developed by the institute for the computation of balanced ration for dairy animals. The expert system enable the selection and use of locally available feed ingredients. Feed Assist is a very simple, effective, self guided tool for making balanced feed for cattle and buffaloes to augment the productivity in a cost effective manner.

Locally available feed resources with their composition and requirement of different categories of cattle and buffaloes viz. calf, heifer, pregnant, lactating, dry and working in terms of DM, DCP and TDN were screened from literature. Other parameters such as body weight, average growth rate and milk yield etc. were also taken into consideration during the computation of balance diet. The collected data were standardized, compiled to non-redundant data set and elicited a standard formula to calculate feed requirements.

Further, a multi-lingual and farmer friendly graphic user interface (GUI) module has been developed by using Visual BASIC and filling the required information such as body weight, average daily gain, milk yield, and available feed ingredients at the farmers doorstep. The least cost optimization program based on Linear Programming Problem (LPP) for optimizing the least cost ration was developed. Based on the information filled for a particular category of animal and other parameters, the module calculates and provides the information for DM, DCP and TDN requirement for maintenance, growth and production. This frontend module has a provision to change price of feeds stuffs and also to add, delete and modify feed master database based on locally available feed and fodder resources. Inbuilt provision is also been given for the user to change ratio of feed components as per the availability and seasonal variation. User can set constraints for fitting maximum and minimum quantity to a particular category of animal and feed ingredient. After providing animal details and selecting feed ingredients user can find solution by clicking on “Formulation” that gives details of ingredients with its proportion and cost of balance diet.
Awards / Recognitions

- NIANP received the Sardar Patel Outstanding ICAR Institute award of ICAR for the year 2012-13 from Honorable President of India on 16th July 2014.
- NIANP awarded ISO 9001:2008 certificate by German cert for quality management system.
- C. S. Prasad, Director, NIANP conferred fellow of the National Academy of Agricultural Sciences.
- P. K. Malik awarded by Australian Government’s "Endeavour Research Award" for the year 2014 to take up post doctoral research at University of Queensland, Australia.
- S. Mondal received G. K. Pal Award for the best research paper entitled "Isolation and characterization of luteal cells in buffalo" and also awarded the Fellow Member by Indian Chemical Society.
- Manpal Sridhar awarded second and third prize for the best oral presentation in National Conference Organised by CFTU, Kattupakkam, TANUVAS.
- K S Roy re-elected as Joint Secretary (South Zone) of SAPI and also elected as Associate Editor and Editorial Board Member of Indian Journal of Animal Physiology.

Trainings

- Trainer’s training programme titled “Value addition of feed and fodder for dairy cattle” for the central and state animal husbandry officials was organised in collaboration with DADF, Delhi from 27th June to 6th July 2013.
- ICAR sponsored Short course on “Precision Feeding and Nutrigenomic Modulation of Underlying Physiology to Ameliorate Stress and Promote Production in Livestock” was organised from September 4-13, 2013.
- Organised ICAR sponsored Winter school on "Climate Change and abiotic stress management in livestock: Basic concepts and amelioration measures" from 5-25 November 2013.
- Field workshop on "Validation and Popularisation of Feed Assist" were held on 19/07/2014 and 12/08/2014 at Sriramahanalli and Sadenanahalli, respectively to familiarize the livestock keepers with feed computation software.

The training cum health camp was conducted on 1st August, 2013 under the NAIP project at Heggere village in Chitradurga district. Director, NIANP, inaugurated the training cum health camp, wherein almost 100 farmers actively participated and sought clarifications in respect of livestock production. On the occasion, Director emphasized the need and importance of area specific mineral mixture and concentrate feeding to high yielding cows and also addressed the issues like fodder cultivation, chaffing of fodders and timely health care for maximising productivity. During the program, mineral mixture packets, guinea grass root slips, Jowar fodder seed, hybrid napier and bajra stem cuttings were distributed among the farmers. Deworming and reproductive examinations were also carried out with the help of Veterinary hospital, KVK-Babbur farm, GKV- Bangalore and MYRADA staff.

Preceding to the health camp, Director, NIANP also addressed the sheep and goat farmers of Gollarahatti village and envisaged the benefits of feeding sheep & goat specific mineral mixture developed by NIANP. He also visited some of the farmers’ fields to visualize the impact of the technologies transferred.
Visits abroad

- Arindam Dhali, Senior scientist visited AgResearch Limited, Ruakura Research Centre, Hamilton, New Zealand from 12-08-2013 to 05-11-2013
- Ragahvendra Bhatta, Principal scientist participated in FAO workshop on Life–cycle Assessment on Animal Feeds at Chinese Academy of Agricultural Sciences, Beijing, China from 08.07.2013 to 10.07.2013
- C.S. Prasad, Director visited Gottingen university, Germany for attending a workshop on India-CRC Consortium “Methodological approaches to social-ecological system research” on 6th November, 2013

Events

The Rajbhasha Anubhag organised Hindi Fortnight from 14th to 28th Sept 2013 during which many celebration and competitions were organized for the institute staff to boost up their work culture for Hindi. Dr Amjad Ali Khan, an eminent scholar and public speaker was the chief guest for valedictory function organized on 30th September, 2013. He enthralled the gathering with his hilarious and thought provoking talk and distributed prizes to the winners of the competitions. Hindi workshop was organised on 16th September and 23rd December 2013 for the benefits of staff to popularize the use of Hindi in scientific and administrative work. The meetings of the official Language implementation Committee of the institute were held on 11th Sept. and 30th Dec. 2013 to review the progress of RajBhasha Implementation in the Institute.

Sri Siddaramaiah, Hon’ble Chief minister, Karnataka, visited NIANP stall during National conference of KVKs at GVKK, Bangalore

Ayudha pooja organised at NIANP on 14-10-2013

Ganesh pooja organised at NIANP on 09-09-2013

Flag hoisting on Independence day

Dr. P.G. Chengappa, National professor, ISEC and Dr. A.K. Mishra, VC, MAFSU inaugurating 18th Foundation day celebrations on 25-11-2013

National integration day and Kannada Rajyotsava organised at NIANP on 26-11-2013

Personnel

Dr. U.B. Angadi, Scientist, joined as senior scientist, at IASRI, New Delhi in August 2013

Mr. Riyaz Ahmed, AO transferred to PDADMAS, Bangalore in August 2013

Mr. Athimoollam joined as Administrative Officer in August 2013

Publications

2 Vol. 2  |  No. 2  |  Jul. - Dec., 2013

NIANP News & Views
### Seminars/ lectures

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<td>1st July 2013</td>
<td>Dr Ram Kasimanickam Associate Professor, College of Veterinary Medicine, Washington State University, Pullman, USA</td>
<td>Sperm protein biomarkers in cattle</td>
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<td>2nd August, 2013</td>
<td>Luna Baruah, PhD Scholar</td>
<td>Antisense therapeutics and its challenges</td>
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<td>3</td>
<td>3rd September, 2013</td>
<td>Mrs Vidya Pradeep Kumar, Women Scientist, DST</td>
<td>Fungal laccases and their application in Industry</td>
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<td>3rd October, 2013</td>
<td>Dr S. Selvaraju, Scientist (SS)</td>
<td>Role of spermatozoa RNAs in sperm function and fertility.</td>
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<td>5</td>
<td>22nd Nov 2013</td>
<td>Dr A. Dhali, Sr Scientist</td>
<td>Screening pluripotency-promoting signal inhibitors on bovine embryonic stem cells</td>
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## Forthcoming events

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<tr>
<td>1</td>
<td>New Year’s Day</td>
<td>1 day</td>
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<td>Pongal/ Sankranti</td>
<td>1 day</td>
<td>Jan 2014</td>
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<td>3</td>
<td>Republic Day</td>
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<td>PMC meeting</td>
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<td>5</td>
<td>RAC meeting</td>
<td>2 days</td>
<td>Feb 2014</td>
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<td>6</td>
<td>IMC meeting</td>
<td>1 day</td>
<td>Feb 2014</td>
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<td>7</td>
<td>IRC Meeting</td>
<td>3 days</td>
<td>March, 2014</td>
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<td>8</td>
<td>Glance 2014</td>
<td>3 days</td>
<td>20-22 April, 2014</td>
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## Laboratory Profile

### Energy Metabolism Laboratory

#### Concept
- Energy is an important nutrient in livestock feeding
- Major portion of the biological energy is wasted in ruminants while chewing dry fodder and also through anaerobic fermentation in the rumen
- Methane, a potent greenhouse gas, is produced during anaerobic fermentation in the rumen
- Adult cattle produce about 200-250 l/day methane while sheep and goat produce about 20-25 l/day methane/d
- Reducing methane emission therefore, not only prevents loss of biological energy, but also prevents global warming

#### Approach
- Studying the energy budgeting and preventing wastage of biological energy of crop residues
- Estimation of enteric methane emission from animals under different production systems to develop quality database
- Use of plant secondary metabolites to reduce methane emission
- Methane production decreases with increase in the concentrate (grain/cake) proportion in the ration
- Incorporating Jack, Neem and Banyan leaves (10 to 15%) in the ruminant ration reduces methane production (25 to 30%)
- Patent filed on the methane reduction properties of tree leaves containing tannins

#### Findings
- Established that chaffing of poor quality roughages improves DM intake up to 30% by decreasing the time taken for ingestion and also in reducing the energy cost of chewing by 15 to 20% 
- Catalogued feed ingredients based on their methane production potential
- Established that green fodder produce less methane than dry fodder such as paddy straw, ragi straw and maize stover in the rumen

#### Work contemplated
- Development of an inventory on the enteric methane production from livestock
- Strategic feeding to reduce methane emission
विदेश दौरा

- अरिदम थाली, वरिष्ठ वैज्ञानिक ने एग्रिसर्च लिमिटेड, सहायक सरकारी सेंटर अंडमन सेंटर, हैमिल्टन, न्यूजीलैंड का अनुसंधान कार्य के लिए २२.०८.२०१३ से ०६.१४.२०१३ तक प्रमाण किया।
- रविवार गुड़, प्रभाव वैज्ञानिक ने खासि एवं कृषि संस्थान (ड्राइवर्स) द्वारा आयोजित कार्यशाला "स्लाइड साइडेशन अरेरोनेटेड एंड एनिमल कीड" में सहभागिता हेडू चाइफा कृषि विभाग अफसर के ०६.०७.२०३ से १०.०७.२०३ तक विदेश दौरा किया।
- सी एस प्रसाद, विदेश दौरा के पीटिंग यूनिवर्सिटी, जम्मू ने आयोजित कार्यशाला "मेथोडोलॉजिकल अप्प्रैच टू सोसिलिक्स-युक्तिशैलीसिस्टम रिसर्च" में मान सिया।

कार्यक्रम:

- डॉ. डू. की अंग्रेजी, वैज्ञानिक ने प्रस्तुत चरण के बाद भारतीय कृषि सार्धिक की अनुसंधान संस्थान, नई दिल्ली में वरिष्ठ वैज्ञानिक के पद पर पदभार प्रहण किया।
- श्री रिशाज आहमद, प्रशासनिक अधिकारी ने स्वातंत्र्य युग से पीढ़ीअधिकार, पैलेस में कार्यकारी पहुँच किया।
- शसी अधिमूलम ने संस्थान में प्रशासनिक अधिकारी के तौर पर कार्यभार प्रहण किया।