



NDRI

News

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From the director's desk



India has vast resource of cattle and buffalo, which plays very important role in national economy as well as in socio-economic development of rural people. India is the leading milk producing country in the world with the production of 114 million tonnes. The growth of Indian dairy sector is almost three times higher than the world average growth rate. With the increased demand of milk and milk products in domestic and international market due to the changed dynamics of population growth, urbanization and income level, the requirement of milk in country has been projected to be 142 million tonnes by the year 2015 and about 166 million tonnes by 2020.

Good fertility of dairy bulls is one of the major pre-requisites for increasing the reproduction, production as well as productivity in cattle and buffalo. The old saying that 'Bull is half of the herd' has now changed to 'Bull is more than half of the herd'. The research over the years has established that the bull contributes more expected genetic improvement (64 %) between generations than the female animals (36 %).

The easiest way of multiplication and genetic improvement of cattle and buffalo is through Artificial Insemination (AI), by using quality breeding bulls / superior male germplasm. It took about 123 years to demonstrate AI in farm animals by Russian

biologist Ivanov in year 1907 since the first successful AI in dog by Spallanzani in year 1784. In India, artificial insemination was first started at "Palace Dairy Farm" Mysore in 1939. The adoption of AI had reduced the indiscriminate breeding and inbreeding of farm animals, and also the chance of reproductive problems due to various sexually transmitted diseases.

Out of 122 million breedable cows and buffaloes, considering 77 million (69 %) in-milk, the minimum demand of AI in the country was about 154 million in 2009-10. Although, the semen production has increased from 22 million doses (1999-2000) to 44 million doses in 2007-2008 and the number of AIs from 20 million to 44.62 million (2009-10), the coverage of AI, was only 22.31 million (28.95 %) leaving about 54.73 million breedable cows and buffaloes uncovered in 2009-10. It has been found that in 2008, only 6.7, 2.8 and 4.4% of exotic and crossbred cattle, indigenous cattle and buffalo bulls were used for breeding purpose. Assuming that maximum of 15% animals (8.2 million) are covered through Natural Service, there are still about 46.5 million additional in-milk cows and buffaloes, which require AI to remain breedable.

One of the major reasons for the non-availability of required number of quality breeding bulls is 'infertility in dairy bulls'. Majority of buffalo bulls used under breeding programme suffers from low libido. On the other hand, the crossbred bulls are often inferior to purebred indigenous bulls in terms of freezable quality of semen with high abnormal spermatozoa. The percentage of young crossbred bulls reserved for breeding and reaching the stage of collection and freezing of their semen, is very low as compared to indigenous cattle and buffalo bulls. The delayed puberty, due to non-availability of balanced feeding to bulls and high cost of therapeutic hormones, are other important reasons for increased number of infertile bulls. The rampant use of poor pedigree, scrub and diseased non-screened bulls also contribute to increase the number of infertile bulls under field conditions.

The problem of infertility in breeding bulls could be reduced (i) by selecting the high pedigree bulls based on their body weight and conformity including the placement and biometry of testis, (ii) by providing regular training and exercise, balanced feeding including supplementation of minerals to reduce the age at maturity and increase the libido, (iii) regular vaccination against FMD, HS and BQ and (iv) yearly screening of sexually transmitted diseases (STD's). Further, during extreme climate, the infertility of bulls is to be managed by proper interventions to minimize the effect of environment on germplasm quality. For quality germplasm, the semen is to be processed properly, using antioxidant and should be evaluated based on post thaw motility and bacterial load. Sperm cell viability, acrosomal integrity and mitochondrial function of the spermatozoa should also be done regularly. In addition, the training of farmers is essentially required for the scientific management of high fertile dairy cattle and buffalo bulls.

NDRI is playing a proactive role for increasing the fertility of breeding bulls through planned research programmes on "Reproduction Management of Breeding Bulls" This includes research on (i) production, evaluation and preservation of superior male germplasm, (ii) training and consultancy to the clients on male animal reproduction and (iii) dissemination of superior germplasm of cattle and buffalo. In XII five year plan, a Flagship programme on "Integrated Fertility Management in Cattle and Buffaloes" through multi-disciplinary mode has also been proposed to address the burning problem of infertility in dairy animals.

A.K. Srivastava
(A.K. Srivastava)

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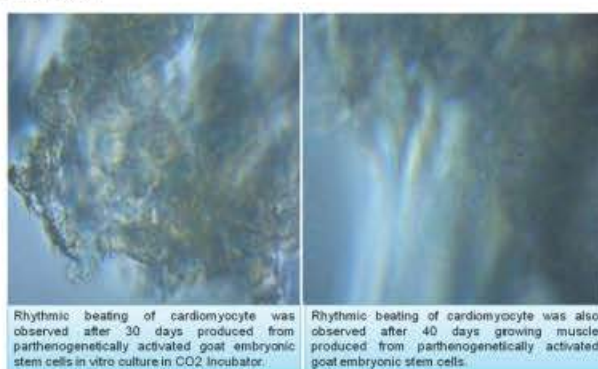


RESEARCH NEWS

Rhythmic Beating Heart Muscle Produced from Parthenogenetically Activated Goat Embryonic Stem Cells First Time in the World in Livestock Species

(Dhruba Malakar, Hrudananda Malik, Dinesh Kumar, Rahul Dutta and Mata Nagaraju)

The aim of the study was to produce Rhythmic beating heart muscle from parthenogenetically activated goat putative embryonic stem (ES) cells. Slaughter house derived oocytes were matured and activated with calcium ionophore to produce parthenogenetically goat blastocysts. Inner cell mass was isolated from blastocysts and cultured on 10 µl/ml mitomycin-C inactivated fetal fibroblast feeder layer with bovine fibroblast growth factor (bFGF) and leukemia Inhibitor factor (LIF). The ES colonies were characterized for markers like alkaline phosphatase, TRA-1-60, TRA-1-81, SSEA-1, SSEA-4 by Immunocytochemistry and Intracellular markers like Oct4, Sox2 and Nanog by RT-PCR. The embryoid bodies (EBs) were induced to differentiate using medium containing 100 ng/ml Activin A, 10 ng/ml FGF2 and 100 ng/ml BMP4. The rhythmic beating of cardiomyocytes was observed after 30 days of culture. Cardiac specific markers like α Actinin, C-Troponin and α-Myosin heavy chain were used to confirm differentiation to cardiomyocytes. It was inferred that parthenogenetic ES cells generated rhythmic beating cardiomyocytes. To best of our knowledge this is probably the first time rhythmic beating of cardiomyocytes was observed in the goat parthenogenetic embryonic stem cells in the world. Except mouse, monkey and human being, this observation was not reported till date in other domesticated animals like cattle, buffaloes, sheep and pig.



Rhythmic beating of cardiomyocyte was observed after 30 days produced from parthenogenetically activated goat embryonic stem cells in vitro culture in CO2 incubator. Rhythmic beating of cardiomyocyte was also observed after 40 days growing muscle produced from parthenogenetically activated goat embryonic stem cells.

Processed Cheese Spread with Plant Derived Functional Ingredients Developed

(Apurba Giri and S. K. Kanawjla, Yogesh Khetra and S. Mandal)

Processed cheese spread with plant derived

functional ingredients has been developed by NDRI. The annual growth rate of cheese production in India is 10-15% and about 90% cheese is consumed as processed cheese and processed cheese spread. Processed cheese spread contains not only protein and fat in pre-digested form, but also calcium, phosphorus, riboflavin and other vitamins in concentrated form. It also has health beneficial bioactive peptides, a lower amount of fat and higher amount of protein compared to any low fat table spread. Hence, cheese spread can provide nutritionally superior spread for bread and it can be incorporated with functional ingredients like inulin, phytosterol and ω-3 fatty acid.

Inulin supports a healthy circulatory (blood) system. It lowers triglycerides, total cholesterol and low-density lipoproteins (LDL), while it increases high-density lipoproteins (HDL) and acts as prebiotic, increases mineral absorption in the colon, eliminates constipation and decreases cancers of the colon. Plant derived phytosterol, being similar in chemical structure with cholesterol, reduces intestinal absorption of both dietary and endogenously produced cholesterol without any decrease in the levels of high-density lipoprotein (HDL)-cholesterol. Omega-3 fatty acid plays a crucial role in brain function as well as normal growth and development. It becomes popular because it reduces the risk of heart disease. Also it has beneficial effect on cancer, eye health, rheumatoid arthritis etc. Such a functional processed cheese spread has been developed in which the level of inulin, phytosterol and omega-3 fatty acid addition have been optimized on the basis of physico-chemical, rheological and sensory attributes by using Response Surface Methodology (RSM). The developed processed cheese spread is nutritionally and functionally very sound and superior to any fat based spread



Functional Processed Cheese Spread



Caseinophosphopeptides Enriched Ingredient from Buffalo Casein

(Prerna Saini, Bimlesh Mann and Rajesh Kumar)

The process for production of caseinophosphopeptides by hydrolyzing buffalo casein with digestive enzyme has been optimized by using response surface methodology. The new method for the enrichment of CPPs has been developed by using membrane filtration and compared with the traditional method of isolation by ethanol precipitation. It was found that the peptides separated by both the methods were having comparable Ca binding, Ca solubilising

ability and antioxidant activity. The peptides in both the products contained same phosphopeptides of buffalo casein i.e. α_s - CN(37-58), α_s -CN (35-58), α_s -CN (43-58), α_s -CN(2-21), β -CN(2-27). These sequences matched with already known sequences in the literature and identified as mineral binding and anticariogenic peptides. These caseinophosphopeptides enriched ingredient can be used in various health promoting foods for enhancing the minerals absorption. This new method developed using ultrafiltration can be scaled up for the commercial preparation of caseinophosphopeptides enriched ingredient.

ACADEMIC AFFAIRS /DEEMED UNIVERSITY NEWS

Scholars Qualified for the Award of Ph.D. Degree

SCHOLAR	GUIDE/DISCIPLINE	TITLE OF THESIS
Mr. Asit Jain	Dr. G. K. Sachdeva (Animal Genetic Breeding)	Spatio-temporal expression of cathepsin and other apoptotic cycle genes in ovarian follicular cells and development ability of oocytes in buffalo.
Ms. Ameeta Salaria	Dr. D. K. Thompkisan (Dairy Technology)	Preparation of probiotic adjunct for infant food formulation.
Mr. Shete Shankar Mohan	Dr. S. K. Tomar (Animal Nutrition)	Effect of synchronization of ruminal energy and nitrogen supply from total mixed ration on lactation performance of crossbred cows.
Ms. Mushrifa Muzaffar	Dr. R. S. Manik (Animal Biotechnology)	Effect of leukaemia inhibitory factor on self renewal and quantitative expression of pluripotency related transcription factors in putative buffalo embryonic stem cells derived from various sources.
Ms. Harsh Gurditta	Dr. A. A. Patel (Dairy Technology)	Development of a process for functional chhana-murki.
Ms. Nisha Jha	Dr. S. S. Kundu (Animal Nutrition)	Dietary manipulation of reductive acetogenesis and methane oxidation in the buffalo calves.

TRANSFER OF TECHNOLOGY

Krishi Vigyan Kendra (KVK)/Dairy Training Center (DTC)

Training Programmes Organised

During the period under report, in all 34 training programmes (On-campus and off-campus & training-cum-visits) on different aspects of dairy production and processing, crop & vegetable production, vermi-culture, bee-keeping and home science were organized in which 852 farmers, women, rural youth and extension functionaries were imparted training.

Out of the total courses, KVK organized 11 sponsored training programmes on scientific dairy farming for 342 farmers, rural youth and extension functionaries. In these training programmes, 126 trainees from Rajasthan, 91 trainees from Jharkhand, 30 from Uttarakhand, 30 from Bihar, 30 from Manipur and 35 trainees from Gujarat state were imparted training

During the period, KVK also organized 39 exposure

and study visits for 1343 farmers and farm women from different districts of Uttar Pradesh, Madhya Pradesh, Gujarat, Maharashtra, Uttaranchal, Assam, Bihar, Jammu & Kashmir, Rajasthan, Punjab, Haryana & Himachal Pradesh states.

Animal Health Management Activities

Various animal health management activities were organized through stockman centers in adopted villages of KVK. At these centers, 340 cattle and 366 buffaloes were artificially inseminated and as a result 460 calves were born. Besides these, 39 animals were treated, 38 calves were dehorned and 14 animals were given infertility treatment.

Front Line Demonstrations (FLDs)

Oilseeds & Pulses: To encourage farmers to grow oilseeds and pulses, KVK organized FLDs in various villages of Karnal district. During the rabi season 2011-12, total 27 FLDs of mustard (variety



Pusa Jai Kisan, Pusa Bold and CS-56) were laid in 10 hectare area under irrigated condition. Also 9 FLDs on gram (variety HC-1 and BG-1103) were laid in 2.42 hectare area under irrigated condition.

On Farm Trials (OFTs)

Wheat and Berseem: During the rabi season (2011-12), total 6 on farm trials on wheat varieties i.e. HD-2851, HD-2932 and HD-2733 were laid in 2.42 ha. area in 6 locations under irrigated conditions. Also 18 on farm trials on berseem varieties i.e. BL-42, Mescavi were laid in 4.45 ha area in 18 locations under irrigated conditions.

Horticultural Crops: KVK organized 4 OFT on capsicum in 1.62 hectares area in different villages of Karnal district.

Revenue Generation in KVK

Source	Amount (Rupees)
Training fee from KVK courses	11800
Training fee from sponsored courses	243760
Tuition fee from visits conducted	19000
Room rent from farmers' hostel	101310
Vermicompost unit	550
Bee-keeping unit	8620
Fisheries unit	67050
Crop production	268320
Dairy vikas kendras	18720
Horticulture unit	25000
Total	764130

DAIRY EXTENSION DIVISION

Dairy Education at Farmers' Door

Dairy Extension Division continued with the extension education programme "Dairy education at farmers' door" to strengthen the effective dissemination of dairy production and processing technologies among farming community.

The main issues in cluster of villages which emerged during the discussion with farmers were:

Parasite Control Problem: Parasites infestation was a serious problem in this village. However, since this problem had also been reported by the preceding teams under this programme, due action had been taken by the Dairy Extension Division and tick control treatment had been administered on the animals. This was highly appreciated by the farmers of the village.

Repeat Breeding: The scientists educated the farmers on recommended breeding and feeding practices so that this problem could be resolved.

Field/Farm Technician (FFT) Activity

The Field/Farm Technician (FFT) laboratory being operated through stockman centres, provides a base for extension work in the adopted villages

around Karnal and keeps the records of all extension activities of the Division.

Activity Conducted in Adopted Villages from October – December, 2011

Activities Conducted	Nos. of Cases
A.I. in cows	534
Conception rate	40.00%
A.I. in buffaloes	465
Conception rate	20%
Nos. of X- breed calf born	116
Nos. of buff. calf born	104
General treatment	535

During the 13 campaigns, 1371 cases were treated for reproductive disorders and various veterinary ailments. Deworming and tick control programmes were conducted for ecto and endo-parasites. Special attention was given to improve the productive and reproductive problems of farm animals by diagnosis and proper treatment.

Activities Conducted	Nos.
Infertility and veterinary aid campaign	13
Anoestrus and late maturity	112
Repeat breeding (Conception failure)	35
Metritis & endometritis	37
Pyrexia	22
Wound	18
Eye infection	11
Indigestion	27
Diarrohea	16
Mastitis	14
Retain placenta	26
Prolapse of uterus	19
Cystic ovarian condition	05
Blood protozoan diseases	10
Tick control campaign	514
Deworming (Endo- parasite)	505
Total Cases	1371

Kisan Sangosthi

Thirteen kisan sangosthies were organized on the following topics:

1. Prevention and control of infertility of dairy animals.
2. Clean milk production practices in rural areas.
3. Role of reducing inter-calving period in lactating animals.
4. Endo and ecto-parasite control of dairy animals.
5. Importance of animal vaccination against



contagious diseases.

6. Role of mineral mixture in animal diet.
7. Balance diet of lactating animals.
8. Awareness of vaccination programme.

Empowerment of Women and Mainstreaming of Gender Issues:

The women empowerment training and campaigns were organized with the objective to create awareness in the field of dairying and home science and also to impart skill in these areas so that farm women could generate more income from dairying and maintain healthy atmosphere in their respective families.

Programme	Village	No. of Courses	Participants
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Capacity building on scientific dairy farming	Subri	3	61
Capacity building on in value added milk products	Vazidpur	9	155
Awareness campaign on clean milk production	Shahpur		
Awareness campaign in health and management	Kulwaheri		
	Shahpur	1	14
	Vazidpur	1	25

Awareness campaign in dairy enterprises through dairy SHGs	Shahpur	2	24
Capacity Farm women building of in value added fruits and vegetable products	Vazidpur	3	51
	Shahpur		
	Kulwaheri		

REVENUE GENERATION THROUGH CONSULTANCY SERVICES

(October to December, 2011)

1. Contract Services

- | | |
|---------------|--------------|
| a. Analyses | Rs. 21,501/- |
| b. Sale of CD | Rs. 4,50/- |

Sub total (1) Rs. 21,501/-

2. Non Student Training Charges

Balance training fee on dairy processing for employees of Nestle India Ltd. in Dairy Technology (Rs. 17,749/- after S. Tax.)
Rs. 17,749/-

3. Consultancy (Individual/General) Rs. 57,665/-

4. Transfer of Technology

- | | |
|----------------------|-----------------------|
| a. Royalty/Licensing | Rs. 1,40,000/- |
| Grand total | Rs. 2,36,915/- |

RECENT HAPPENINGS

Farmers-Industry-Scientist Meet at NDRI, Karnal

NDRI organized Farmers-Industry-Scientist meet on 28th September, 2011 during which deliberations were held for increasing productivity of dairy animals. Dr. Inderjeet Singh, Director, Department of Dairy Development (Punjab), the Chief Guest of the function, emphasized that the animals should be fed properly from the birth itself. He was also of the view that other aspects of animal husbandry like health, reproduction and management should be given due attention. Dr. A. K. Srivastava, the Director and Vice-Chancellor of NDRI, Karnal in his presidential address, advised the dairy

farmers to follow scientific practices of feeding, breeding and management to harvest more economic benefits. Dr. S. S. Kundu, Head, Dairy Cattle Nutrition Division presented various nutritional technologies developed by the Division. Interactive sessions were held and farmers, representatives from feed industry and scientists of Dairy Cattle Nutrition Division exchanged their views and discussed about the ways and means for enhanced productivity of dairy animals especially bovines.

International Conference on Functional Dairy Foods-2011

National Dairy Research Institute and Dairy Technology Society of India (DTSI) organized



International Conference on Functional Dairy Foods-2011 (ICFDF-2011) from 16-19th November, 2011 at NDRI, Karnal. The conference was inaugurated by Dr. V. M. Katoch, Director General, ICMR & Secretary Department



Dr. V. M. Katoch, Director General, ICMR, New Delhi inaugurating the International Conference by Lighting the Ceremonial Lamp

of Medical Education, New Delhi, who emphasised on the nutritional and therapeutic virtues of milk and called for developing novel dairy products to combat the malnutrition and life-style associated diseases. The conference was attended by around 550 delegates, which consisted of 20 foreign participants. Dr. B. N. Mathur, Former- Director of NDRI and Dr. J. V. Parekh, Technical consultant were conferred with DTSI Fellowship for their outstanding contribution in promotion of dairy processing. There were nine technical sessions including the one session for young researchers during the conference. One exhibition related to the theme of the conference was also arranged for the benefits of the participants and 20 companies and organizations displayed their exhibits. Four poster sessions were also organized in which more than 200 posters were displayed. Mr. Rakesh Kakkar Secretary, MOPFI was the chief guest at the valedictory function on 19th November, 2011.

Dairy Conclave: Connecting with the Dairy Farmer

Confederation of Indian Industry (CII) Northern Region & National Dairy Research Institute (NDRI) jointly organized a Dairy Conclave at NDRI Karnal on 26th November 2011. Dr. A. K. Srivastava, Director & Vice Chancellor, NDRI chaired the Conclave.

The discussions focused on ways to increase production and productivity of dairy farms – optimum farm size, proper dietary management

and advanced genetic techniques, economics of Indian dairy industry and public private partnership for building infrastructure in dairy industry (setting up of milk processing units and value addition techniques) among other things. The conclave also included a session exclusively for dairy farmers. Some of the speakers at the event were Mr. Rudhra Gangadharan, Secretary, Ministry of Animal Husbandry Government of India; Dr. S. Ayyappan, Secretary, DARE and Director General, ICAR; Mr. S. Dave, General Manager, APEDA; Mr. Raveen Chaudhary, Asstt. General Manager, AMUL; Mr. S. K. Bhalla, Chief Operations Officer, Mother Dairy; Mr. B. S. Bhullar, Nestle; Mr. Shiva Mudgil, Dairy Analyst, RABO India.

NDRI-Industry Meet Organized

NDRI-Industry Meet was organized on 1st December, 2011 wherein technologies available at NDRI were presented to participants from Industries with a focus on commercial transfer. Commercial and technological aspects of thirty technologies were presented by inventors to allow one-to-one interaction and facilitation of technology transfer. Representatives from IDMC Ltd Anand, Mother Dairy Delhi, Swarkshit Pariwar Pvt. Ltd. Hisar, Neugen Diagnostics, Delhi, Haldiram Noida, Gururaj Engineers, Varodara, Auro foods, Vedic Creation, Milk Union (Milk Fed) Mohali, Milk Union (Milk Fed) Hosiarpur, Milk Union (Milk Fed) Patiala, Milk Union (Milk Fed) Sangrur, HAU, Hisar and National Research and Development Corporation, Delhi participated in NDRI-Industry Meet. The Director NDRI, Dr. A. K. Srivastava, on this occasion emphasized the need of technology transfer to stakeholders.

Conference on Statistics and Informatics in Agricultural Research

The 65th three-day annual conference of Indian Society of Agricultural Statistics (ISAS) on the theme "Statistics and Informatics in Agricultural Research" was organised on 3rd to 5th December, 2011 at NDRI, Karnal. The conference was inaugurated by Padam Vibhushan Dr. K. Kasturirangan, the noted space scientist and Member (Science), Planning Commission, Govt. of India. He also delivered the 48 Rajendra Prasad Memorial Lecture on the occasion of birth anniversary of Late Dr. Rajendra Prasad, the first President of India, who was also founder president of the ISAS.



Padam Vibhushan Dr. K. Kasturirangan inaugurating the Conference on Statistics and Informatics in Agricultural Research by Lighting the Ceremonial Lamp

Dr. Gurbachan Singh, Chairman, Agricultural Scientists Recruitment Board, New Delhi was the Guest of Honour at the Inaugural session of the conference. Dr. A. K. Srivastava, Director & Vice Chancellor, NDRI Deemed University delivered the presidential address.

The "Sankhyā Bhushan Award" instituted by the ISAS was conferred upon Dr. V.K. Bhatia, Director, IASRI, New Delhi in recognition of his best teaching and research contribution in the field of genetic statistics for the year 2010-11. Prof. P.V. Sukhatme Gold-Medal was presented to Dr. Prajneshu, Principal Scientist, IASRI, New Delhi for his outstanding contribution in the field of Agricultural Statistics Research. The conference was widely attended by the scientists/teachers/ scholars working in agricultural institutions and coming from all parts of the country.

Awareness Workshop on Foot and Mouth Disease in Dairy Animals

Foot and Mouth Disease (FMD) is an economically important disease of dairy animals leading to huge losses to the dairy farmers. To revisit the FMD control program and to create awareness amongst the stakeholders, a two day awareness workshop on "foot and mouth disease in dairy animals" was inaugurated at NDRI on 15th December, 2011 by Dr. B. K. Joshi, Director, NBAGR, Karnal. The chief guest of the programme underscored the importance of FMD eradication in view of the losses associated with milk production, reproduction and other indirect causes. Dr. Gurmeet Singh, Deputy Director of Animal Husbandry, Karnal informed the house that the State has controlled FMD outbreaks by regular vaccination program and there have been no outbreaks in the last two years.

During presidential address, Dr. A. K. Srivastava,

Director & Vice-Chancellor, NDRI Karnal highlighted the FMD control programmes that were implemented in developed countries and stressed that creating awareness amongst the stakeholders is of prime importance to achieve complete eradication of this dreaded disease. He also informed that the field veterinarians' knowledge should be updated at regular intervals by introducing a 'Continuing Veterinary Education' policy. He also indicated that 'zoning' the country based on the incidence of outbreaks of FMD as declaring specific zones as 'FMD controlled zones' would help in better trade of livestock products.

Dr. Shiv Prasad while introducing the theme of the workshop to the participants emphasized a need to evolve composite control programme for this disease.

Dr. R. K. Malik, Secretary, National Academy of Dairy Sciences presented the vote of thanks. The programme was attended by the Deputy Directors, AH Dept. & senior level veterinary officers from Haryana, Rajasthan, Uttarakhand, Punjab and Orissa and scientists & progressive farmers.

Winter School on Recent Advances in Functional Fermented Dairy Foods and their Quality Assurance

A 21 day winter school was organized on "Recent Advances in Functional Fermented Dairy Foods and their Quality Assurance" from 9th to 29th of December 2011. Dr. Rakesh Tuli, Executive Director of National Agriculture Biotechnology Institute, Mohali was the chief guest of the inaugural function and Dr. A. K. Srivastava presided over the function.

A total no. of 15 candidates from different states of India participated in this winter School. The participants came from different places of India like Meghalaya, Karnataka, Gujarat, Rajasthan, Punjab, Madhya Pradesh and Uttar Pradesh. The course included 36 theory and 15 practical classes on the various aspects of preparation, health benefits and quality of functional fermented dairy foods. The winter school training program was concluded with the valedictory function on 29th December 2012. Dr. Kusumakar Sharma ADG (HRD) Education Division, ICAR was the chief guest for the function. Dr. R. K. Malik, Course Co-Director read the report of the Winter School and Dr. Shilpa Vij, Course Director presented the vote of thanks.



राजभाषा मास का आयोजन

संस्थान में विगत वर्षों की भांति इस वर्ष भी राजभाषा मास 14 सितम्बर-30 अक्टूबर-2011 तक आयोजित किया गया। इस मास के अन्तर्गत संस्थान के वैज्ञानिक, तकनीकी तथा प्रशासनिक कर्मियों को भा0कृ0अनु0परिषद और राजभाषा विभाग, गृह मंत्रालय, भारत सरकार के निर्देशानुसार स्टाफ राजभाषा {हिन्दी} में सरकारी काम-काल निपटाने एवं राजभाषा में रुचि एवं जागरूकता पैदा करने के उद्देश्य से तीन प्रतियोगिताएं तथा एक प्रशासनिक कार्यशाला तकनीकी कर्मियों हेतु आयोजित की गयी।

इस दिन की यादगार में संस्थान के वैज्ञानिक, तकनीकी कर्मियों तथा छात्रों हेतु शोध-पत्र पोस्टर-प्रदर्शन प्रतियोगिता आयोजित की गई। इस प्रतियोगिता में वैज्ञानिकों, तकनीकी अधिकारियों, छात्रों ने सोलह नवीनतम शोध विषयों पर पोस्टर प्रदर्शित किए गए। इस प्रतियोगिता में लगभग 40 कर्मियों तथा छात्रों का सराहनीय योगदान रहा। प्रतियोगिता के बाद विश्व हिन्दी दिवस समारोह आयोजित किया गया। इस अवसर पर माननीय केन्द्रीय गृह मंत्री जी का संदेश भी पढ़ा गया। संस्थान के सभी कर्मियों के दैनिक पत्राचार बढ़ाने के उद्देश्य टिप्पण एवं मसौदा लेखन प्रतियोगिता दिनांक 20.9.2011 को आयोजित की गयी। इस प्रतियोगिता में वैज्ञानिक तथा अधिकारी स्तर सहित 18 कर्मियों ने भाग लिया।

इसी क्रम में संस्थान के कर्मियों ने रा0भा0{हिन्दी} के प्रति जागरूकता पैदा करने के प्रयोजन से 23 सितम्बर, 2011 गीत-गायन प्रतियोगिता आयोजित की गई। इस प्रतियोगिता में संस्थान के साथ करनाल स्थित भारत सरकार, उपक्रम निगम वि0वि0 अनुसंधान संस्थानों तथा राष्ट्रीयकृत बैंकों आदि के कर्मियों ने योगदान दिया। संस्थान के टी-1 से टी-4 तक के कर्मियों के लिए 27 सितम्बर, 2011 राजभाषा प्रशासनिक कार्यशाला आयोजित की गई। इस कार्यशाला में 103 कर्मियों ने बड़ी उत्सुकता से भाग लिया तथा कर्मियों को दैनिक पत्राचार तथा कंप्यूटर पर हिन्दी में कार्य करने की व्यावहारिक जानकारी दी गयी।

22 अक्टूबर, 2011 को मुख्य राजभाषा एवं पुरस्कार वितरण समारोह आयोजित किया गया। इस समारोह में डा0 एम.एल. रंगा, कुलपति गुरु जम्भेश्वर विज्ञान एवं प्रौद्योगिक विश्वविद्यालय, हिसार, {हरियाणा} ने राजभाषा हिन्दी की संवैधानिक स्थिति पर प्रकाश डालते हुए संस्थान के वैज्ञानिकों एवं अन्य कर्मियों से संस्थान की कृषि विज्ञान संबंधी

अनुसंधानों एवं उपलब्धियों से कृषक समुदाय को लाभान्वित करने के लिए राजभाषा हिन्दी के माध्यम से परिचित कराने का आह्वान किया। समारोह की अध्यक्षता करते हुए संस्थान निदेशक ने संस्थान के वैज्ञानिकों, तकनीशियन तथा अन्य कर्मियों से प्रतिदिन सरकारी काम-काज अधिक से अधिक राजभाषा हिन्दी में निपटाने का अनुरोध किया।

नगर राजभाषा कार्यान्वयन समिति की 54 वीं छमाही समीक्षा बैठक

नगर राजभाषा कार्यान्वयन समिति करनाल की 54वीं छमाही समीक्षा बैठक दिनांक 29.12.2011 को राष्ट्रीय डेरी अनुसंधान संस्थान, करनाल में आयोजित की गई। इस अवसर पर नवनियुक्त अध्यक्ष नराकास प्रोफे0 {डा0} ए.के.श्रीवास्तव को शाल भेंट कर अभिनन्दन किया गया। सचिव श्री आर.एस. गौतम ने नवागत अध्यक्ष महोदय का संक्षिप्त परिचय दिया और उनकी राजभाषा हिन्दी एवं साहित्य के प्रति रुचि पर प्रकाश डाला।

इस अवसर पर अध्यक्ष नराकास डा0 ए.के.श्रीवास्तव ने कहा कि अंग्रेज अपनी भाषा के बल पर ही हम पर लगभग 200 वर्षों तक शासन कर गये और ऐसी जड़ें जमा गए कि आज भी हम उस मानसिक गुलामी से उबर नहीं पा रहे हैं। बतौर सम्मानित अतिथि डा0 कुसुमाकर शर्मा, सहा0 महानिदेशक भा0कृ0अनु0सं0, नई दिल्ली ने भी बैठक को सम्बोधित किया।

बैठक में शिरकत करने आये श्री शैलेश कुमार सिंह क्षेत्रीय उपनिदेशक, राजभाषा विभाग, गृह मंत्रालय, भारत सरकार ने करनाल के केन्द्रीय कार्यालयों के प्रशासनिक प्रमुखों को सम्बोधित करते हुए नगर राजभाषा कार्यान्वयन समिति की बैठक में सभी कार्यालयों के प्रशासनिक प्रमुखों की अनिवार्य रूप से भागीदारी पर जोर दिया। इस अवसर पर एन.डी. आर.आई. की वार्षिक पत्रिका दुग्ध-गंगा के द्वितीय अंक-2010-11 का भी विमोचन किया गया।

इस अवसर पर डा0 दिनेश कुमार शर्मा, निदेशक, केन्द्रीय लवणता अनुसंधान संस्थान, डा0 बी.के.जोशी, निदेशक एन बी ए जी आर श्री अरुण मित्तल, महाप्रबन्धक, दूरसंचार करनाल सहित अपेक बैंकों के उपमहाप्रबन्धकों सहित अनेक वरिष्ठ अधिकारी उपस्थित रहे।



DISTINGUISHED VISITORS

10.10.2011 Seven member French delegation from Association for Development of International Exchange in Agricultural Products and Technologies (ADEPTA), France.

- Mr. Ali Haider - SERSIA
- Mr. Philippe Arzul - VITALAC
- Ms. Virginie Hervy - IDENA
- Mr. Alain Reocreux - OLMIX
- Mr. Jerome Desquiens - French Embassy
- Ms. Nisha Jolekar - French Embassy
- Mr. Philippe BEYRIES - French Embassy

3.12.2011 Two member delegation from the Embassy of France to India.

- Mr. Sebastien Chazel from POLYSEM
- Mr. Jerome DESQUIENS, Head of Agrofood Department, French Trade Commission.

22.12.2011 Eight member delegation from

Afghan Ministry of Agriculture, Irrigation & Livestock (MAIL).

- Mr. Abdul Ghani Ghuriani - Deputy Minister Technical Affairs.
- Mr. Farid Mateen - Director General, Policy & Planning.
- Mr. Ahmed Tamim - Director & Sr. Advisor (Private Secretary).
- Mr. Aziz Osmanzai - Director (Quality Control).
- Mr. Mir Amanuddin Haidari - Director (Plant Protection).
- Mr. Sulaiman Ashrafi - National Advisor (Export Promotion).
- Ms. Muzhgan Sadat, Head of Unit (Economic Regeneration)
- One representative of the Afghan Foreign Ministry.

VISITS ABROAD

Dr. (Mrs.) Suman Kapila, Sr. Scientist, Animal Biochemistry Division participated in Summilk - IDF World Dairy Summit-2011 under NAIP project "Novel Approaches for Production of Nutraceuticals from Milk and Indian Herbs for Potential use in Functional Dairy Foods." from 15th -19th October, 2011 at Parma, Italy.

Dr. S. K. Singla, Principal Scientist, Animal Biotechnology Centre attended training programme from 9th - 12th October, 2011 at Miami, Florida.

Dr. D. Malakar, Sr. Scientist, Animal Biotechnology Centre participated in the Bit's Annual World Congress of Regeneration Medicine & Stem Cell from 11th - 13th November, 2011 at Beijing, China.

Dr. R. C. Upadhyay, Principal Scientist, Dairy Cattle Physiology Division attended the International Conference on the "Impact of Climate Change on Agriculture" (ICICCA 2011) and delivered a keynote address on "Livestock and Fisheries" from 21st - 22nd December,

2011 at the Faculty of Agriculture University of Ruhuna, Sri Lanka.

HONOURS/AWARDS

Dr. A. K. Srivastava, Director, NDRI received "Chellapa Memorial Oration Award" of Indian Society of Veterinary Pharmacology & Toxicology for the year 2011.

Dr. P. Narender Raju, Scientist, Dairy Technology Division, NDRI, Karnal receiving "Young Researcher Award" "International Conference on Functional Dairy Foods-2011" NDRI, Karnal during 16th - 19th November, 2011 at NDRI, Karnal.

Mr. Laxmana Naik, Ph.D. Scholar, Dr. (Mrs.) Bimlesh Mann, Principal Scientist, Dr. Rajesh Bajaj, Sr. Scientist and Dr. R. B Sangwan, Principal Scientist got "Best Poster Award (Second Prize)" on "Optimization of Bio-functionality and Techno-functionality of Whey Protein Hydrolysates by Trypsin Enzyme" during the 2nd International Conference on Functional Dairy Foods held at NDRI Karnal from 16th -19th November, 2011.

**PERSONALIA****JOINING**

Dr. P. S. Oberoi, Principal Scientist (Animal Nutrition) joined at NDRI, Karnal on 01.11.2011 from CIRB, Hisar Nabha Centre on transfer.

Dr. Magan Singh, Sr. Scientist (Agronomy) joined at NDRI, Karnal on 08.11.2011 from ICAR, Research Complex for N.E.H. Region, Arunachal Pradesh Centre, Basar on transfer.

Ms. Rashmi H.M. joined as Scientist (Dairy Microbiology) at NDRI Karnal on 14.12.2011.

Sh. Pradip Vishnu Behare, joined as Scientist (Dairy Microbiology) at DM, Division, NDRI Karnal on 24.12.2011.

Dr. A. K. Mathur joined as Admn. Officer at NDRI, Karnal w.e.f. 26.12.2011 from IARI, Pusa, New Delhi on promotion.

PROMOTIONS

Sh. A. K. Kohli, Technical Officer T-6 (W/S) promoted as T-7-8 (W/S) w.e.f. 24.02.2011.

Sh. B. P. Singh, Technical Officer T-5 (Library) promoted as T-6 (Library) w.e.f. 31.10.2010.

Ms. Kanchan Choudhary, Technical Officer T-5 (P&E) promoted as T-6 (P&E) w.e.f. 29.06.2011.

RETIREMENT/TRANSFER

Dr. S. L. Goswami, Joint Director (Research) appointed to the post of Director at NAARM, Hyderabad & relieved from NDRI, on 20.12.11.

Dr. B. S. Prakash, Head, Dairy Cattle Physiology appointed to the post of Assistant Director General (Animal Nutrition & Physiology) at Hqrs. ICAR, Krishi Bhawan, New Delhi & relieved from NDRI on 29.12.11.

Smt. Saroj Kumari, AAO retired from Council's service on superannuation on 31.12.2011.

NDRI PAYS HOMAGE TO ITS FORMER DIRECTOR

Dr. Krishnaswami Kilara Iya one of the great legendry Founder Directors of NDRI who served this Institution for about eight years from 1957-1965, left for his heavenly abode on 6th December 2011 in Bangalore. NDRI family is immensely grieved at his sad demise and pays homage to the great soul, who though no longer with



Dr. K. K. Iya

us, continues to shine bright on the Indian dairying horizon.

Born on June 26, 1920 in Mumbai, Dr. Iya passed the Indian Dairy Diploma with Honours in 1939 from the then Imperial Institute of Animal Husbandry and Dairying at Bangalore. He obtained B.Sc. in Microbiology followed by Associateship in Fermentation Technology from Indian Institute of Science, Bangalore. He was the first Indian to obtain Doctorate in Dairy Microbiology.

Dr. Iya returned from USA in 1948 and became the Head of Dairy Bacteriology Division at NDRI, Karnal. Dr. Iya became the Director of the Institute at the young age of 35. He was responsible for laying a strong foundation for the development of NDRI and was great motivator in initiating innovative research programmes at NDRI and a driving force in making NDRI a premier scientific organization in the country.

Dr. Iya's experience, knowledge and pioneering approach was utilized by the Government of India by appointing him as Dairy Development Advisor (1965-66) and subsequently he was given a greater responsibility as Deputy Director General of Animal Science at ICAR.

NDRI acknowledged his meritorious services by



honouring him with NDRI Golden Jubilee Award and conferring him with Honorary D. Sc. Degree in 1998. Dr. Iya was a special invitee at University of Wisconsin to talk on "Enhanced Nutrition for Malnourished

Children" at their Sesquicentennial Celebration in 1998. In recognition of the outstanding contribution of Dr. Iya in developing NDRI at a Centre of Excellence for Dairy Education and Research and for his life-time contribution in the over all development of the India dairy industry, the Alumni Association of NDRI conferred on Dr. Iya the "Illustrious Alumni Award" during Platinum Jubilee celebration of the Institute. IDA (SZ) organised the 1st Endowment Lecture in honour of Dr. Iya on 29th July 2011. His demise has been a great loss to the entire dairy fraternity. He will always be remembered for his invaluable contributions to the field of Dairying.



REGIONAL STATIONS

SOUTHERN REGIONAL STATION, BANGALORE

Training Programmes

- Six days training was conducted for eleven candidates on 'Commercial Dairy Production' from 21.11.2011 to 26.11.2011.
- Four days training programme on 'Scientific Dairy Farming Practices for Dairy Farmers' was conducted from 22.11.2011 to 25.11.2011 for 27 Farmers sponsored by ATMA, Warangal, Andhra Pradesh.
- A Training cum demonstration programme was arranged for the benefit of the dairy farmers of Boppanahalli village of Mallur taluk under Kolar Milk Union, Kolar dist on 24th November 2011. The training programme was on detection of subclinical mastitis in the milking cows by using electrical conductivity meter and by using CMT kit.

Extension Activities

- During the period under report, 271 visitors in six batches comprising of students from various educational Institutes of southern region, farmers and entrepreneurs visited the institute. The visitors were taken round the Institute and were explained about the ongoing activities.
- Advisory services / technical advice was rendered to eight clientele during their personal visits to the Institute. The profile of information needed included availability of publications in dairy farming aspects, technical know-how and consultancy facilities for dairy business projects, training programme on dairy management aspects and credit support for dairy projects.
- Extension literature on dairy production and processing was distributed to the needy clientele groups, visitors and trainees during their visits to the Institute. An exclusive literature on profile of SRS of NDRI and information on training programmes organized at the Institute was prepared and published in regional language for the benefit of the farming community of the region.
- Participated in Dairy Tech. India 2011 International Exhibition on Dairy Products & Technology held during 9th to 11th September 2011 at Palace ground, Bangalore. NDRI stall in the exhibition depicted innovative & educative information on dairy production & processing aspects viz., Indigenous breeds of the region & on indigenous dairy products for the benefit of the farming community.
- Participated in Rashtriya Krishi Mela 2011 organised by University of Agricultural Sciences, Bangalore, a national event to showcase new farm technologies benefiting the clientele group. The Mela was held during

16th to 20th November 2011 at GKVK Campus, Bangalore. NDRI Stall depicted the needed and useful information on clean milk production, indigenous breeds of the region & on indigenous dairy products for the benefit of the farming community. An exclusive literature on profile of SRS of NDRI and information on training programmes organized at the Institute was made available in regional language for the benefit of the farming community of the region.

- An orientation programme was organised for a batch of farmers from Kasargod, Kerala under ATMA programme on 11th November 2011 at the Institute on request. The farmers were briefed up about the institute activities and taken round the Institute to various sections as per their needs.



Progressive Dairy Farmers of ATMA, Warangal (AP) at SRS of NDRI for Training Programme on Scientific Dairy Farming Practices

- A training programme on, "Scientific Dairy Farming Practices" was organized for the progressive dairy farmers of Warangal district, Andhra Pradesh under ATMA programme organized by project directorate, ATMA. Theoretical and practical orientation on dairy production aspects was provided on first-aid & health care of dairy animals, green fodder production, balanced feeding, clean milk production, technology of milk products, quality aspects of milk & milk products and constraints in dairy farming. Exposure visits and field trips were organized for the benefit of trainee farmers to Mega Dairy, Karnataka Milk Federation (KMF), Central Cattle Breeding Farm, State Cattle Breeding Farm, Cattle Feed plant of KMF, organised dairy farms and community milking centre.
- Regular weekly visits were made by the extension team to the adopted villages under Rural Extension Programme for the benefit of the clientele group in the adopted villages to provide necessary dairy extension services the villages visit.



RECENT HAPPENINGS

Lead Auditor Training Program

Alumni Association of Southern Regional Station, NDRI, Bangalore organized Intensive training program from 13th to 17th September 2011 on "Lead Auditor for Food Safety Management System : ISO 22000:2005" in collaboration with Indian Register of Quality Systems (IRQS), New Delhi. Twenty member group consisting of Professors from University, Principal Scientists from research institutes, leading consultants and General/ Deputy/Assistant Managers from dairy industry participated in the training programme.

Hindi Week/Day

As part of promotion of Hindi language, Hindi Week was celebrated in the Institute from 22.10.2011 to 29.10.2011. During the celebrations, competitions were conducted for the staff members as well as for their children and students of this campus. Hindi Day was celebrated at this station on 29.10.2011. The occasion was graced by Sh. Dharendra Kumar, Editor, Dheer Patrika, Bangalore. Dr. Satish Kulkarni, Head, NDRI, Bangalore presided over the function. Prizes to the winners/runners of the competitions were distributed by the chief guest.

Meeting Conducted

Project Monitoring and Evaluation Committee Meeting for NABARD sponsored Project on Subclinical Mastitis (SCM) was conducted on 23rd November 2011.

Kannada Rajyotsava & National Integration Day

Kannada Rajyotsava and national integration day was organized on 26th November, 2011. Sh. N. Shrivashankar, Former Secretary, Kannada Sahitya Parishat, Bangalore was the chief guest. Dr. K. T. Sampath, Director, NIANP, Bangalore was the guest of honour. Dr. Satish Kulkarni, Head of station presided over the function. Many competitions in cultural and sports events were arranged for staff, students and children.

PERSONALIA

PROMOTION

- Ms. M. K. Vedavathi, Technical Officer T-6 (L/T) promoted as T-7/8 (L/T) w.e.f. 01.10.2010.
- Sh. B. K. Rajashekarlah, Technical Officer T-6 (F F/T) promoted as T-7/8 (F F/T) w.e.f. 01.01.2011.
- Dr. Siddaramanna, Technical Officer, T-5 (F F/T) promoted as T-6 (F F/T) w.e.f. 07.08.2011.
- Ms. T. R. Thivijakumari, Technical Officer, T-5 (P&E) promoted to T-6 (P&E) w.e.f. 29.06.2011.
- Sh. Sreekantha, T-4 (W/S) promoted as Technical Officer, T-5 (W/S) w.e.f. 03.02.2011.
- Ms. Janakshi, T-4 (L/T) promoted as Technical Officer, T-5 (L/T) w.e.f. 12.07.2010.

Retirement

Dr. A. Obi Reddy, Principal Scientist retired from Council's service on superannuation 31.10.2011.

EASTERN REGIONAL STATION, KALYANI

Development of Forage Farm

Efforts were made to develop the land given by Eastern Regional Station of Indian Veterinary Research Institute, Kolkata in cultivable condition.



Presently, fodder crops have been grown for animal feeding.



Forthcoming Events

- National Training Programme on "Advanced Statistical Tools for Analysis of Animal Breeding Data" (10th – 30th March, 2012).
- International Workshop on "Transcriptomics, Proteomics and Structural Biology" (27th - 29th February, 2012).
- National Training on "Embryonic and Spermatogonial Stem Cell Biology" (3rd – 23rd February, 2012).
- National Training on "Strategic use of Cry preserved Semen for Assisted Reproductive Technologies" (2nd – 11th January, 2012).
- Dairy Mela – 2012 (25th – 27th February, 2012).

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