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NDRI News

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From the Director's Desk

OPU-IVF Sahiwal Calf 'Holi' born on 7th March 2012

The share of livestock sector to National agriculture GDP continues to increase mainly due to enhanced rate of production in the dairy sector, which accounts to more than 65 per cent of the value of output from livestock sector. Although India ranks first in milk production, the demand for milk and milk products is projected to increase to 142.9 MT in 2015 and further to 191.3 MT in 2020. At the existing rate of growth in milk production, in next ten years, supply is likely to fall short of the demand. To cope up with the situation, we need to gear up to increase the population of high producing animals and to reduce the low producing and problematic animals, which are competing for the limited feed and fodder resources and already shrinking productive land for dairy animal production. Presently, in India, there are around 122 million breedable cattle and buffaloes but only 69% of them are in milk production. Since cow slaughter is banned in India, the only promising way to reduce the population of low producing animals is not to breed them. For the propagation of superior germ plasm, till date we are depending mostly on the Artificial Insemination technique. No doubt, AI has contributed significantly to the crossbreeding and upgrading of cattle and buffaloes, but the genetic improvement through this technique is very slow. However, with the development and refinement of upstream reproductive technologies, it is now possible to hasten the genetic improvement at a faster pace.

In vitro embryo production is one such tool that allows us to effectively utilize the superior germ plasm. Ovum pick-up (OPU) is one of the cutting edge techniques in reproduction, where oocytes are harvested from live animals by trans-vaginal untrasound guided aspiration. Then the oocytes are subjected to *in vitro* maturation, *in vitro* fertilization and *in vitro* embryo production until they reach blastocyst stage. Then, these embryos can either be transferred non-surgically into recipient animals or frozen for further use. This non-invasive technique enables repeated collection of oocytes from live animals on a weekly or biweekly basis over long periods of time. Advantageously, this technique can also be applied on genetically superior sub-fertile, infertile animals and those animals that do not respond to conventional multiple ovulations and embryo transfer technique thus, enables utilization of their genetic potential, which would otherwise remain unutilized or underutilized. Using this technique, oocytes can also be obtained from genetically superior pre-pubertal heifers and early pregnant animals to reduce the generation interval.

Recently, we have applied the OPU-IVF technique in Sahiwal cattle and successfully produced a live calf named "Holi". In future, this technique will be a boon to harvest oocytes from elite cows and to produce more offsprings in a short time. Further, this technique could also be very useful for obtaining calves from infertile, aged/tired and problematic, yet valuable animals.

(A. K. Srivastava)

In this issue...

Noori, the World's first cloned Pashmina goat with Dr. A. K. Srivastava, Consortium Leader of NAIP cloning project and the team

RESEARCH NEWS

India's First Ovum Pick up – IVF Cattle Calf 'Holi' Born at NDRI

(M. S. Chauhan, R. S. Manik, S. K. Singla, P. Palta, M. K. Singh and Shiv Prasad)

India's first cattle calf was produced using Ovum Pick-Up-IVF technology for which oocytes were collected from the ovaries of a live Sahiwal cow using ultrasound-guided needle. The oocytes were matured, fertilized and cultured *in vitro* in an incubator for 7 days until development to a transferrable stage of embryo called 'blastocyst'. The transfer of a blastocyst stage embryo to a surrogate mother led to the birth of a female calf with a normal birth weight of 23 kg on 7th March, 2012. The female calf is named 'Holi'.

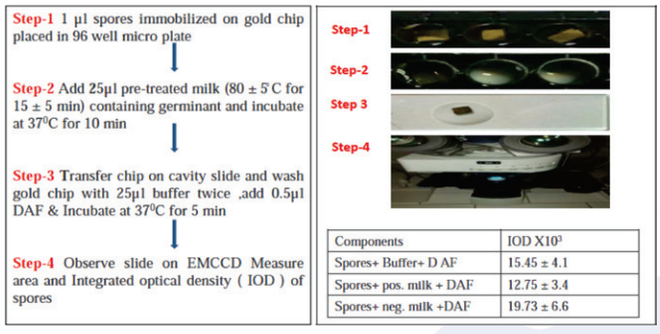
OPU-IVF calf 'Holi' with the team of scientists

The team of scientists, which were involved in the production of 'Holi' included Dr. M. S. Chauhan, Dr. R.S. Manik, Dr. S. K. Singla, Dr. P. Palta, Dr. M.K. Singh and Dr. Shiv Prasad. This technology could be very useful for obtaining calves from such animals. It could also be applied to those animals which do not respond to the conventional embryo transfer program.

Miniaturized Spore Based Assay on Biochip for Aflatoxin M1 in Milk

(Naresh Kumar, Raghu, H.V., R. K. Malik and Namita Singh)

Biochip based technologies for monitoring of hazardous contaminants are emerging worldwide. These technologies are known for superior quantum efficiency and minimal background noise and signal can be captured at a single photon level. A miniaturized spore based assay for detection of aflatoxin M1 in milk on functionalized gold chip has been achieved. It requires minimal quantity of milk (25 μl) and other reagents (0.5 μl). The new assay has higher sensitivity (0.5 ppb). The developed assay needs to be transformed into commercial products after its integration with other consortia partners to have multianalayte high through put analysis for dairy applications.



Components	IOD X10³
Spores+ Buffer+ D AF	15.45 ± 4.1
Spores+ pos. milk + DAF	12.75 ± 3.4
Spores+ neg. milk +DAF	19.73 ± 6.6

Novel features:

- New innovation over existing one where gold chip has been used for monitoring Aflatoxin M1 in milk based on unique spore germination principle.
- Miniaturization of assay achieved with 25 μL of milk, 0.5 μL of substrate and 1 μL of spores.
- Minimal pre-treatment of milk.
- Principle works under natural condition of milk production and processing with specific interaction with the analyte.

A Method for Detection of Detergent in Milk – Developed

(Rajan Sharma, Y. S. Rajput and Amit K. Barui)

Chemical quality of milk suffers due to intentional adulteration of milk with various types of adulterants. Synthetic milk has been found to be the youngest entry among the list of adulterants of milk. Detergents are considered as the essential component of the formulation being used for the preparation of synthetic milk. Because of ease in availability of anionic detergent, these are being used for emulsification of added fat of non-milk origin. The other ingredients being used for synthetic milk formulation are urea, salt, soda, sucrose, vegetable oils, skim milk powder, water, etc. The liquid, thus, formed has the appearance of genuine milk (i.e. colour, consistency) and it is reported to be used for the adulteration of dairy milk from 5 to 10%. The detection of detergent in milk is, therefore, essential for checking the adulteration of milk with synthetic milk.

A new test for detection of anionic detergent in milk (dye-detergent complex extraction method) has been developed under World Bank funded NAIP Project. The developed rapid colour based method is more sensitive and can provide the results in less than 5 min. The limit of detection of this method is 0.02% labolene in milk. The other common adulterants and preservatives do not interfere in developed test. The

results are available in 2 min. The test does not require use of any equipment and the cost of ingredient used for preparation of test reagent is very low.

The dye-detergent complex extraction method is primarily based on the ionic interaction between the anionic detergent and cationic dye. Anionic detergents have a property to form a complex with cationic dyes. The solubility of dye and dye-detergent complex differs significantly as dye-detergent complex is relatively less polar in comparison to dye alone. Formation of dye-detergent complex between cationic dye and anionic detergents and subsequently its extraction into the hydrophobic solvent is the major principle behind the developed method.

The method has been validated at Punjab Biotechnology Incubator, Mohali – a NABL Accredited Laboratory, at Mother Dairy, Delhi and under real time situation in the country wherever the reports of synthetic milk are there.

Rapid method for the detection of detergent in milk. Purple colour in lower layer indicates pure milk; blue colour in lower layer indicates presence of detergent in milk.

NEW INITIATIVE

A new project sanctioned on "Costs and Returns in Milk Production: Developing Standardized Methodology and Estimates for Various Production Systems"

Department of Animal Husbandry, Dairying and Fisheries sanctioned a project to NDRI as consortium leader on "Costs and Returns in Milk Production: Developing Standardized Methodology and Estimates for Various Production Systems" and AAU, Anand; TNAU, Coimbatore; ZPD, JNKVV, Jabalpur; KVK, Sakoli, Handara/MPKV, Rahuri; CAU, Barapani; GBPUA&T, Pantnagar and GADVASU, Ludhiana as consortium partners.

Estimation of cost of milk production is a complex exercise because production of milk is largely scattered over innumerable small units of production throughout the country. The cost of milk production is bound to be different with the variations in agro-climatic conditions and would also exhibit variation from season to season for different species of animals and within each species for different breeds of animals. NDRI will standardize the methodology and estimate the cost of milk production for different dairy production systems. The standardization of the methodology will allow for uniform regional and temporal comparisons. It will set a framework for future time and motion studies. This will be a comprehensive study conducted in different dairy production systems and cover a very large geographical area representing varied agro-climatic zones.

ACADEMIC AFFAIRS/ DEEMED UNIVERSITY NEWS

Scholars Qualified for the Award of Ph.D. Degree

Scholar	Guide/ Discipline	Title of Thesis
Mr. Mohammad Zandi	Dr. M. S. Chauhan (Animal Biotechnology)	Role of WNT3A in maintenance of pluripotency or induction of differentiation in buffalo embryonic stem cells.
Mr. K. Rishikanta Singh	Dr. A. K. Chauhan (Dairy Economics)	Economic impact of integrated dairy development project on rural households in Meghalaya state.
Mr. Raj Kumar Yogi	Dr. K. K. Datta (Dairy Economics)	Economic analysis of goat rearing in Rajasthan.
Ms. Ruchi	Dr. P. Palta (Animal Biotechnology)	Examination of the relationship of signalling molecular with some pluripotency related transcription factors in putative buffalo embryonic stem cells.
Mr. Rouhollah Mirmahmoudi	Dr. B. S. Prakash (Animal Genetic Breeding)	Development of a novel estrus synchronization protocol for fertility improvement in buffalo.
Mr. Satvinder Singh	Dr. R. K. Sharma (Animal Biochemistry)	Effect of almond and probiotic fermented milk on gut health and type 2 diabetes.

Scintillating dance performances during All India Inter-University Youth Festival Reverie-2012

- 70th meeting of the Standing Committee on Course Curricula and Academic Affairs was held on 1st February, 2012.
- 47th meeting of the Standing Committee on Faculty, Students' Problems and Discipline was held on 3rd February, 2012.
- 32nd Meeting of Academic Council was held on 14th February, 2012.

A complete display of sporting mettle by Students of NDRI Deemed University during Sports Meet-2012

TRANSFER OF TECHNOLOGY

KRISHI VIGYAN KENDRA (KVK)/DAIRY TRAINING CENTER (DTC)

Training Programmes

- During the period under report, in all 67 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 2224 farmers, women, rural youth and extension functionaries were imparted training.
- Out of the total courses, KVK organized 15 sponsored training programmes on Scientific Dairy Farming for 443 farmers, rural youth and extension functionaries. In these training programmes 169 from Bihar, 100 trainees from Rajasthan, 92 from Utrakhand, 60 trainees from Himachal Pradesh and 22 from Uttar Pradesh state were imparted training.
- During the period, KVK also organized 45 exposure and study visits for 1519 farmers and farm women from different districts of Uttar Pradesh, Madhya Pradesh, Gujrat, Uttrakhand, Assam, Bihar, Jammu & Kashmir, Rajasthan, Punjab, Haryana & Himachal Pardesh states.

Animal Health Management Activities

Various Animal Health Management activities were organized through stockman centers in adopted villages of KVK. At these centers, 424 cattle and 186 buffaloes were artificially inseminated and as a result 377 calves were born. Besides these, 36 animals were treated, 38 calves were dehorned and 21 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, a total 27 FLDs of mustard (variety Pusa Jai Kisan, Pusa Bold and C S-56) were laid in 10 hectare area under irrigated conditions. Also 9 FLDs on gram (variety HC-1 and BG-1103) were laid in 2.42 hectare area under irrigated condition. The FLDs are in progress.

On Farm Trials (OFTs)

Wheat: During the rabi season 2011-12, total 6 on farm trials on wheat varieties i.e. HD-2851, HD-2932 and HD-2733 were conducted in 2.42 ha. area in 6 locations under irrigated conditions. The crop is in progress.

Berseem: Also 18 on farm trials on berseem varieties i.e. BL-42, Mescavi were conducted in 4.45 ha area in 18 locations under irrigated conditions. The crop is in progress.

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

DAIRY EXTENSION DIVISION

Dairy Education at Farmers' Door

Extension Education Programme "Dairy Education at Farmers' Door" was continued to strengthen the effective dissemination of dairy production and processing technologies among farming community. Under this programme a team of NDRI scientists including subject matter specialists from production, processing and management group visited villages viz. Khrijpur and Wazidpur Karnal district on 2nd Saturday of each month during the period under report.

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

1. **Tick Control Problem:** Tick 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.
2. **Anoestrus:** The scientists educated the farmers on recommended breeding and feeding practices to resolve this problem.
3. **Low Milk Production during Summer:** The scientists informed/educated the farmers to offer balanced nutrition to their animals, so that milk yield could be maintained as per animal potential.

Filed/Farm Activities Conducted in Adopted Villages

Activities conducted	Nos. of cases
• A.I. in cows	570
• Conception rate	45.0%
• A.I. in buffalo	385
• Conception rate	25.0 %
• Nos. of cross bred calves born	126
• Nos. of buffalo calves born	110
• General treatment	176

During the period under report, a total of 15 veterinary camps were organized. In all 1094 cases were treated for reproductive disorders and various veterinary ailments. Ecto & endo-parasite control programmes were conducted. Special attention was given to improve the productive & reproductive performance of dairy animals.

Kisan Sangosthi

Thirteen Kisan Sangosthies were organized at village level. In all 55 male and 35 female farmers participated and were benefitted through these sangosthies.

Empowerment of Women and Mainstreaming of Gender Issues

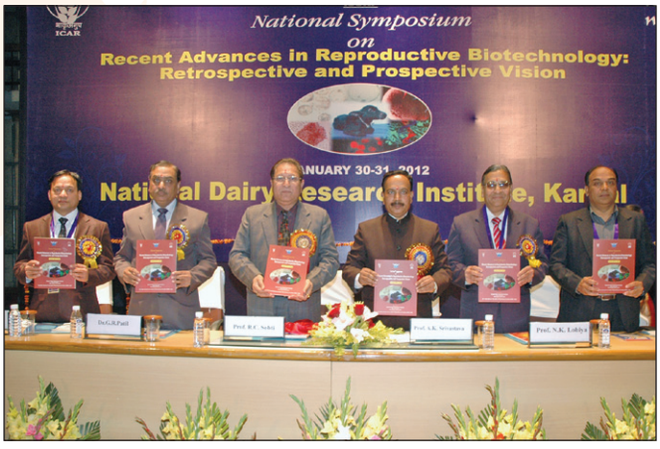
The women empowerment training and campaigns were organized with the objective to create awareness in the field of dairying and home science and also to impart skill in these areas so that farm women could generate more income from dairying and maintain healthy atmosphere in their respective families.

Programme	Village (s)	No. of courses	Participants
• Capacity building of farm women in value added milk products.	Kulwaheri, Vazidpur Shahpur, Subri	11	153
• Capacity building on scientific dairy farming.	Subri	1	17
• Awareness campaign in women empowerment through SHGs.	Kharajpur	4	47

RECENT HAPPENINGS

National Symposium on Recent Advances in Reproductive Biotechnology

A two day National Symposium on "Recent Advances in Reproductive Biotechnology: Retrospective and Prospective Vision" was organized at Animal Biotechnology Centre, NDRI, Karnal from January 30th to 31st, 2012. A total of 205 delegates participated. The symposium was designed in such a way that it offered maximum scientific information to the participants and exchanged new ideas in science and technology involved in frontiers of reproductive biology. This symposium was inaugurated by Prof. R. C. Sobti, Vice-Chancellor, Punjab University, Chandigarh and presided over by Prof. (Dr.) A. K. Srivastava, Director, NDRI. Prof. Sobti highlighted the importance of assisted reproductive technologies in both human and livestock. Prof. Srivastava elaborated the different aspects of embryo biotechnologies such as *in-vitro* fertilization technique, cloning, OPU and sexing. He emphasized that these techniques are needed to be refined further for the successful application in the field. In two days, the symposium covered all the aspects of advanced reproductive biotechnologies and specific recommendations were submitted.



Release of Souvenir during the National Symposium

Tenth Convocation of NDRI Deemed University

The tenth convocation of National Dairy Research institute was held at Karnal on 21st February, 2012. Padma Vibhushan Dr. M. S. Swaminathan Member Parliament (Rajya Sabha) and former Director General, Indian Council of Agricultural Research, New Delhi delivered the Convocation Address and distributed the degree certificates. Dr. Gurbachan Singh, Chairman Agricultural Scientists Recruitment Board, New Delhi, and Dr. Arvind Kumar, Deputy Director General (Education), ICAR, graced the occasion as Guest of Honour.

On this occasion, Doctor of Science (Honoris Causa) was awarded to Dr. Ratnakar Nagarcenkar and Dr. N. R. Bhasin in recognition to their outstanding contribution in dairy science and education. Dr. Nagarcenkar retired as Deputy Director General (Animal Sciences & Education) and served NDRI in different capacities including the position of Director (1984 to 1990). NDRI was recognized by Ministry of Human Resource Development as a Deemed University due to the efforts of Dr. Nagarcenkar

Dr. N. R. Bhasin is presently the President of Indian Dairy Association, New Delhi. He retired from the Indian Administrative Service as Principal Secretary of Rajasthan. He served the Government of India in different positions and made significant contributions in rural development in general and dairy development in particular. He initiated many projects and schemes for dairy development. In the convocation, 20 students were conferred the B.Tech (Dairy Technology), 105 students were conferred Master's degree in 13 disciplines and 25 students were conferred Ph.D. degree in 12 disciplines. Gold medals, merit certificates and best thesis awards were also presented to the students.

In his address, Prof. Swaminathan congratulated the graduating students and lauded the progress made by NDRI in different areas of milk production and processing. He referred to the increase in milk production in India as "White Revolution".

Dr. A. K. Srivastava Director and Vice Chancellor, NDRI presented the convocation report of the Institute by highlighting the research & academic achievements of NDRI, and new developments in infrastructure and other spheres. Books and new technologies developed by NDRI were also released on this occasion.

Group Photo of members of Academic Procession during Tenth Convocation

Dr. M. S. Swaminathan delivering convocation address during Tenth Convocation of NDRI

Dr. K. D. Kokate, Deputy Director General (Agril. Extension) inaugurating the Dairy Mela

Dairy Mela

National Dairy Mela, 2012 was organized at the National Dairy Research Institute (NDRI) from 25th to 27th February, 2012. Dr. K. D. Kokate, Deputy Director General (Agril. Extension) inaugurated the Dairy Mela as the Chief Guest. The farmers, farm women & rural youth representing different states of the country including Andhra Pradesh, Jharkhand, Bihar, Madhya Pradesh, Jammu & Kashmir, Punjab and Haryana participated in Dairy Mela.

Dr. Kokate stressed that there is an urgent need to develop cross breed models and fodder production model systems to meet the growing demand of milk. He said that the Murrah buffalo is rightly called as the Black Gold of the country and has the potential to produce more milk having more nutrients than cow milk.

On this occasion, Dr. A. K. Srivastava said that 60 percent of the agriculture in the country is done in the rain fed area and from this area 70 percent of the total milk production is obtained from the farmers having 2-4 dairy animals in this region and stressed that the technology pertaining to dairy farming be disseminated among these dairy farmers. He said that India has 305 million cattle and buffaloes out of which 122 are breedable dairy animals which require 116 million doses of semen per year for breed improvement through artificial insemination. He said a special thrust has to be given for producing larger number of doses of semen from proven bulls and improving the artificial insemination services in the country

Dr. D. Sundaresan Memorial Lecture Award

The Third Dr. D. Sundaresan Memorial Lecture Award was bestowed on Agricultural Scientist, Padam Bhushan Dr. R. S. Paroda, Former Secretary, DARE and Director General, Indian Council of Agriculture Research and presently the Chairman, Haryana Farmers' Commission on 10th February, 2012. Dr. D. Sundaresan Memorial Lecture Award is instituted in memory of the legendary Director of NDRI Dr. D. Sundaresan who led this institute for 11 long years during 1970- 1981. The award aims at recognizing the outstanding contribution in education & research in agriculture and allied sectors. The award carries an amount of Rs. 20,000, a citation, shawl and a certificate.

Dr. K. K. Iya Oration Award

The First Dr. K.K. Iya Oration Award was bestowed on Agricultural Scientist, Dr. V.K. Taneja., Vice Chancellor, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana on 14th February, 2012. Dr. K.K. Iya Oration Award is instituted in the memory of legendary Director, NDRI Dr. K.K. Iya. The award aims at recognizing the outstanding contribution in education & research in agriculture and allied sectors. The award carries an amount of Rs. 20,000, a citation, shawl and a certificate.

Dr. N. N. Dastur Oration Award

The First Dr. N. N. Dastur Oration Award was bestowed on Agricultural Scientist, Dr. Tej Pratap.,Vice Chancellor, Sher-e-Kashmir University of Agricultural Sciences and Technology, Srinagar. Dr. Tej Pratap delivered the oration on 27th February, 2012. Dr. N. N. Dastur Oration Award is instituted in the memory of legendary Director, NDRI Dr. N. N. Dastur. The award aims at recognizing the outstanding contribution in education & research in agriculture and allied sectors. The award carries an amount of Rs. 20,000, a citation, shawl and a certificate.

National Training Programme on Precision Dairy Farming

National training programme on "Precision Dairy Farming" for advanced livestock management was organized under the aegis of NAIP project (Wireless sensor networking for animal management) at NDRI, Karnal from 3rd to March 23rd, 2012. Dr. D. Sawroop, Director, CIRG, Makhdum, Mathura was chief guest during inaugural function of training. He highlighted

the importance of individual animal monitoring through precision dairy farming technologies.

The training program was planned to update the faculty of State Agricultural/Veterinary and Animal Sciences Universities, ICAR Research Institutes and other developmental organizations on new technologies of animal management engaged in research, teaching, training and developmental activities. A total no. of 21 candidates participated in the training from ICAR Institutes, SAUs and Animal Husbandry Departments, including one candidate from NDRI and twenty candidates from different states viz., Punjab, Haryana, UP, Rajasthan and AP, MP, Assam, Mizoram, Maharashtra.

The main thrust of the program was on advances in livestock production and précise management technologies to measure physiological, behavioral and production indicators of individual animals to improve management strategies and farm performance. The present training program was formulated to introduce these developments by means of theoretical lectures and demonstrations to the trainees. The training also provided opportunity to the participants as scientific forum for discussing the present status and future perspective plans for livestock improvement in the country. The major topics covered were: Precision dairy farming technologies for estrus detection of dairy animals, judicious use of antimicrobial in precision dairy farming, recent understanding and its applications in udder health management, precision feeding of different categories of animals, optimum feed mix formulation for elite dairy animals, molecular tool as an aid to select dairy animals for enhancement of productivity, zoonotic disease in dairy animals and HACCP plan for clean milk production. Lt. Gen. (Retd.) (Dr.) N. Mohanty, President, Veterinary Council of India, New Delhi delivered valedictory address on 23rd March, 2012 and gave away the certificates to the participants.

Technology Business Incubator

Technology Business Incubator (TBI) established with the support of DST as "Society for Innovation & Entrepreneurship in Dairying" organized two batches of training programs on "Prospects of Dairying for Rural Dairy Farmers" and two batches of Short term training programs for veterinarians from Chhattisgarh state on "Breeding & Health Management in Dairy Animals".

An Incubatee Company, M/s. Agati Healthcare Pvt. Ltd. is also operating under the guidance of TBI & manufacturing colostrum powder. Besides, advisory support was extended to a couple of entrepreneurs in setting up of dairy farm.

Establishment of Clean Room Facility at Dairy Microbiology Division

A clean room with bio-safety level-2 facility for safe handling of dairy pathogens has been created at Dairy Microbiology Division, NDRI, Karnal. The clean room is designated as an ISO class-7 area containing modular panel, false ceiling, FFU integrated with HEPA/ULPA, epoxy resin flooring, polyurethane painting, view panel etc. Two major equipments namely EMCCD camera and liquid handling system procured under ongoing biosensors project have now been installed in clean room with dust free working environment. With this new facility, dairy pathogens namely *E. coli* O157:H7, *L. monocytogenes* and *Campylobacter* as proposed in current project can be handled with great degree of safety. The creation of biosafety level-2 and clean facility has been completed as per biosafety and containment handling requirement to provide safety to researchers, students and environment for pathogens handling, microbial biosensors developments, surveillance study on zoonotic pathogens and non-bacterial contaminants in milk and milk products. A biosafety manual as "Holistic Approach to Biosafety in Dairy Industry" has also been developed as a part of World Bank funded NAIP project. The Biosafety Laboratory Manual (BLM) is intended to be the cornerstone of a safety program designed to aid faculty, staff, and students in maintaining a safe working environment during research and teaching program. To aid the use and maintenance of different equipments standard operating procedures (SOPs) have also been incorporated meticulously in the manual. The valuable information contained in manual would be of immense use in the development of biosafety containment level-2 facilities in dairy industry.

4th Annual Review Workshop on Production-to-Consumption - A Value Chain Approach

PIU-NAIP Annual Review Workshop of the 51 sub projects sanctioned under component - 2 of NAIP "Production – to- Consumption - A Value Chain Approach" was held from 26th – 27th March, 2012 at NDRI, Karnal. This workshop was convened by Dr. A. K. Singh, Sr. Scientist, CPI of one of the NAIP sub projects component-2. Prof. A. K. Srivastava, Director and Vice-Chancellor, NDRI (Deemed University) graced the inaugural session as chief guest and in his opening remarks, he emphasized on the commercialization of promising technologies in remaining period to have visible impact. During the two day workshop, 51 projects were reviewed in three technical sessions. Dr. Bangali Baboo, National Director, NAIP and Dr. R. K. Goyal, National Coordinator Component - 2 reviewed the projects and provided constructive suggestions for further improvement. An exhibition depicting the technologies and outcome of the projects was also organized during the workshop.

National Training Programme on Strategic Use of Cryopreserved Semen for Assisted Reproductive Technologies

A National Training Programme on Strategic Use of Cryopreserved Semen for Assisted Reproductive Technologies was organized from 2nd -11th January,

2012, under the aegis of NAIP project entitled "Molecular basis of capacitation like changes in the assessment and prevention of cryodamage during cryopreservation of bovine spermatozoa (buffalo and crossbred bulls)" at NDRI, Karnal. Dr. Arjava Sharma, Project Director, PDC, Meerut and Chief Guest on the occasion, inaugurated the training programme. Dr. A. K. Srivastava, Director and Vice-Chancellor, NDRI, presided over the function. He released the compendium of lectures on national training programme and stressed upon the need to use cryopreserved semen strategically to improve Indian dairy production. Thirteen participants from various parts of India with related area of research or academics participated in the training programme. Resource persons for the programme included Dr. Subeer Majumdar, NII, New Delhi, Dr. Inderjeet Singh, CIRB, Hissar, Dr. G. S. Dhaliwal, GADVASU, Ludhiana, Dr. M. M. Misro, NIHFW, New Delhi, Dr. Sudershan Kumar SKUAST, Jammu and Dr. A. K. Mishra, GBPUAT, Pantnagar besides senior faculty from Animal Biochemistry Division, Animal Biotechnology Division, Livestock Production and Management Division and Animal Breeding and Research Complex. Course director, Dr. S. K. Atreja, organizers and distinguished scientists disseminated their knowledge and experience in areas of reproductive technologies to upgrade the existing knowledge of professors, researchers and field experts from different institutions. Dr. P. P. Mathur, Dean, School of Life Sciences, Puducherry and Chief Guest on the occasion gave away the certificates to the participants during the valedictory function organized on 11th January, 2012.

Capacity Building Programme

A Capacity Building Programme on Enhancing Competitiveness of Agricultural/Dairy Exports from Haryana was organized at NDRI, Karnal from 14th -16th March, 2012 with financial support from Ministry of Agriculture, Govt. of India and technical support from Indian Institute of Foreign trade, New Delhi. The programme was attended by 30 participants including exporters, entrepreneurs, officers from supporting organizations like Technology Business Incubator, Food Corporation of India, MSME Development Board, faculty from different Colleges, farmers, research and extension workers.

Training Imparted

Dr. (Ms.) Neamah Raef Attalla Rezk, Senior Researcher, Animal Production Research Institute, Giza, Egypt was imparted training at NDRI under the aegis of the prestigious C. V. Raman International Fellowship instituted by Ministry of Science & Technology, Govt. of India for African Researchers under Senior Fellowship. She carried out her fellowship programme under the supervision of Dr. S. K. Kanawjia, Principal Scientist (DT) in Cheese and Fermented Foods Lab, Dairy Technology Division, NDRI, Karnal from 18th February to 17th March, 2012.

DISTINGUISHED VISITORS

28.01.2012 Dr. John Hendricks, Dean of Veterinary Medicine and Dr. Narayan Avadhani, Chairman, Department of Animal Biology of School of Veterinary Medicine, University of Pennsylvania, USA.

03.02.2012 Five member Hungrian delegation led by Mr. Gyorgy Czervan State Secretary, Government of Hungry (Equivalent to Secretary GOI).

14.03.2012 Delegation from Europeon Union of India.

1. Hans Joostens, Policy officer, Sanitary & Phytosanitary export issue.
2. Renita Bhaskar, First Secretary Trade and Economic Affairs.
3. Chaitanya Kaushal from Delhi

21.03.2012 Ten member farmer delegation from Kandhar, Afghanistan with one liaison officer from the Embassy of India, Kabul, Afghanistan.

1. Mohammad Tawos.
2. Ghulam Farooq.
3. Mohammad Tahir.
4. Haji Alaf Khan.
5. Abdul Sami.
6. Abdul Mohammad.
7 Mohammad Asif.
8. Mohammad Omer.
9. Joma Khan.
10. Mohammad Wali.

VISITS ABROAD

- **Dr. Bimlesh Mann**, Principal Scientist and **Dr Rajan Sharma**, Senior Scientist, Dairy Chemistry Division visited Dublin Institute of Technology, Ireland under Erasmus Mundus programme for teaching and research guidance to the International students of European Masters degree in food science and nutrition from 17.02.2012 to 18.03.2012.

HONOURS/AWARDS

Best Doctoral Thesis Awards

- **Ms. Gurpreet Kaur**, Ph.D. in Dairy Microbiology (Processing Group), Major Advisor: **Dr. R. K. Malik**, Principal Scientist
- **Mr. Raj Kumar Yogi**, Ph.D. in Dairy Economics. Management (Management Group), Major Advisor: **Dr. N. K. Verma**, Principal Scientist
- **Ms. Nisha Jha**, Ph.D. in Dairy Nutrition (Production Group), Major Advisor: **Dr. S. S. Kundu**, Head.

Best Master's Thesis Awards

- **Mr. Amit Kumar Barui**, Dairy Chemistry (Processing Group), Major Advisor: **Mr. Rajan Sharma**, Sr. Scientist.
- **Mr. L. L. Michal Khoveio**, Dairy Economics Management (Management Group), Major Advisor: **Dr. D. K. Jain**, Principal Scientist.
- **Mr. C. S. Patil**, Animal Genetics and Breeding (Production Group), Major Advisor: **Dr. A. K. Chakravarty**, Principal Scientist.

- **Dr. Raka Saxena**, **Dr. Smita Sirohi** and **Ms. Massoumeh N. Zadeh** were awarded the "Best Paper Award" by IDA for the paper entitled "Aftermath of global economic crisis: impact on Indian dairy sector" published in Indian Journal of Dairy Science in "Dairy Economics, Extension and Management Area" for the year 2010.
- **Dr. P. K. Roy, Dr. R. B. Singh, Dr. A. Chatterjee and Dr. R. C. Saha** were awarded the **"Best Paper Award"** by IDA for their paper entitled "Micro climatic variables under different dairy cattle shelter systems of rural West Bengal and its impact on milk production" under the "Dairy Production Area" for the year 2010.
- **Ms. Veena N.**, Ph.D. (DC) Scholar was awarded 1st Prize for Oral Presentation on "Effect of addition of Shatavari in milk on functional, immunomodulatory and antioxidative properties" **(Veena N., Sumit Arora, R. R. B. Singh and Suman Kapila)** during the National Conference on "Current Status and Recent Advances in Medicinal and Aromatic Plants Research" held at Gandhi Medical College & Hospital, Mushirabad, Hyderabad.
- **Ms. Madhumita Majumdar**, II Year M. Tech. (DC) Student was awarded **1st Prize** for Oral Presentation on "Optimization of conditions for Seliwanaff's method for estimation of sucrose content in gulabjamun" (Madhumita Majumdar and B. Surendra Nath) at National Conference on "19th West Bengal State Science & Technology Conference" held at Kolkatta from 1st – 2nd March, 2012.
- **Ms. Prerna Saini, Dr. Bimlesh Mann, Dr. Rajesh Kumar, Ms. Anuradha Kumari, Mr. Parbhakar Padhghan** got **"Best Poster Presentation Award"** for their paper entitled "Production and identification of caseinophosphopeptides from buffalo casein" presented in the XL Dairy Industry Conference held at New Delhi from 2nd -5th Feb. 2012.
- **Mr. Laxmana Naik, Ms. Neelima Sharma, Dr. Rajan Sharma** and **Dr. Y. S. Rajput** secured the **"Best Poster Award"** on the topic Glycomacropeptide - Star functional ingredient from milk, in the 'Poster - Walkway Discovery' at 7th Nutra India Summit, held on 15th – 17th March 2012, at The Lalit Ashok, Bangalore.
- **Ms. Neethu K. C**, II Year M.Tech. (DE) was awarded **3rd Prize** for Poster Presentation entitled "Sensory evaluation modeling of buttermilk drinks using fuzzy logic approach" **(Neethu K. C., Magadaline Eljeeva Emerald F., Surendra Nath B., Vedavathi M. K., Menon Rekha Ravindra, Heartwin Amaladhas P.** and **Balasubramanyam B. V.)** during the National Conference on "Appropriate Technologies for Indian Food Industries" organized at UAS, GKVK, Bangalore from 5th – 6th March, 2012.

PERSONALIA

Joining

- **Sh. R. C. Meena**, joined as Sr. Admn. Officer at NDRI, Karnal w.e.f. 27.01.2012 on transfer from NIRJAFT, Kolkata.
- **Dr. T. K. Dutta** appointed as Head ERS of NDRI Kalyani and jointed w.e.f. 01.02.2012 from CIRG, Makhdoom, Mathura, UP.
- **Dr. Ramesh Chandra**, Sr. Scientist (LPM) joined at NDRI, Karnal on 16.02.2012 from ICAR,

Research Complex for N.E.H. Region, Sikkim Centre, Tadong, Gangtok (Sikkim) on transfer.

Promotion

- **Sh. Brahm Parkash**, Assistant promoted as Asstt. Admn. Officer w.e.f. 02.01.2012.

Retirement/Transfer

- **Sh. A. K. Mathur**, Admn. Officer relieved from NDRI, Karnal w.e.f. 21.03.2012 to join at Directorate of M.R. New Delhi.
- **Dr. S. N. Rai**, Principal Scientist (Animal Nutrition) retired from Council's services on superannuation on 31.03.2012.
- **Dr. Siddaramanna**, T.O. T-6 (F/FT) was relieved of his duties from SRS of NDRI, Bangalore on 29.02.2012 to join as Associate Professor at Veterinary College, KVAFSU, Hebbal Bangalore.
- **Sh. P. S. Shiva Prasad**, T.O. T-7/8 (W/S) SRS, Bangalore retired on superannuation on 31.01.2012.

REGIONAL STATIONS

SOUTHERN REGIONAL STATION, BANGALORE

Training Programmes

- Two PG students from M.Sc. Food and Nutrition Biotechnology of SRM University, Chennai have registered for the Project Work for period of three months from 02.01.2012.
- One week training was conducted on "Commercial Dairy Production" from 23.01.2012 to 28.01.2012 for five candidates.
- Four B.Tech students of Dairy Technology College, Pusad have registered for In-plant training for period of four months from 28.01.2012 to 27.05.2012.
- Two B.Tech students of Dairy Technology College, Udgir (Maharashtra) have registered for In-plant training for period of four months from 28.01.2012 to 27.05.2012.
- Ten days training on "Preparation of Ice-cream and Indigenous Dairy Products" was conducted from 01.02.2012 to 10.02.2012 for five candidates.
- One week training on "Calibration of Dairy Glassware" was conducted from 13.02.2012 to 18.02.2012 for five candidates of MANMUL, Mandya.

Extension Activities

- During the period under report, 490 visitors in thirteen batches comprising of students from various educational institutes, farmers and entrepreneurs of southern region visited the institute. The visitors were taken round the institute to various sections as per their needs and were explained about the ongoing activities.
- Advisory service/technical advice was rendered to eight clientele during personal visits and mail enquiries to the institute. Information on availability of literature on advanced dairy farming, training programmes for farm families and dairy entrepreneurs on scientific dairy farming aspects was provided as per their queries.
- Extension literature on dairy production and processing was distributed to the needy clientele groups, visitors and trainees during their visits to the institute.
- A Training Programme on, "Scientific Dairy Farming Practices" was organized for the forty five progressive dairy farmers of Pathanamthitta, Kerala under ATMA programme from 16th to 20th. 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), State Cattle Breeding Farm, Cattle Feed plant of KMF 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 in the villages visit.

IRC Meeting at SRS of NDRI

IRC meeting of concluded and new project proposals was held on 7th January, 2012 under the chairmanship of Dr. A. K. Srivastava, Director NDRI.

IJSC Meeting conducted at SRS of NDRI

The IJSC meeting was held at SRS of NDRI on 1st March 2012. Dr. G. R. Patil, Joint Director (Academic & Research) chaired the meeting. After the meeting, there was an interactive meeting with the staff of SRS of NDRI in which Dr. G. R. Patil, Sh. J. K. Kewalramani and Dr. Satish Kulkarni participated.

EASTERN REGIONAL STATION, KALYANI

Research News

Dairying: Means of Livelihood Security in Rural Himalaya of Sikkim

(Lotan Singh, R. A. Dey and M. K. Ghosh)

A study conducted by the ERS-NDRI, Kalyani revealed that cross-bred cattle population (mostly Jersey crosses) was predominant (70-85%) in the villages (Kadamtam and Shanti) of Himalayan state Sikkim which produced 3-12 kg of milk/day/cow with an average yield of 7 kg/day. An organized Women Dairy Co-operative Society, Kadamtam is actively involved in milk disposal (average supply/day-290kg) chain for higher income generation of the society members. About 223 hectares of cultivated land is intensively cropped with maize and vegetables under mixed farming system with rearing of cross-bred cows for increased income generation. This resulted into higher literacy (>86%) in these villages and a woman dairy farmer, Mrs. Shanti Devi from the village Kadamtam was awarded with "Progressive Woman Dairy Farmer Certificate" by the Honourable Union Minister of Agriculture & Food Processing Industries, Sh. Sharad Pawar for successfully running one dairy farm for greater livelihood security.

Extension Activities

- One 15 day training programme was organized at ERS of NDRI , Kalyani on Scientific Dairy Farming for unemployed rural youth and dairy farmers. The course was conducted from 1st -14th February 2012 in which 9 trainees from 4 districts participated (Nadia, 24(N) Pgs., Purulia and Hooghly).
- The Chaltaberia Krishak Sangha, an NGO in Barasat of 24 (N) Paraganas, organized an Agricultural and Livestock fair in collaboration with NABARD on 16th February, 2012. The Institute set up an exhibition stall in the fair.
- One Exhibition Stall was set up by ERS-NDRI during 'Regional Agricultural Fair 2012' organized by the Central Rice Research Institute (CRRI) at Cuttack, Odisha on 21st-23rd February 2012. 'Animal Nutrition and Green Fodder for Economic Milk Production' was the theme of the stall set up by the station. Farmers from Bihar and Odisha visited the stall.

Animal Health Camp

One Animal Health Camp and Livestock show was organized in Panchuriya village, under Barasat-I Block (W.B.) on 18th February, 2012.

IRC Meeting held at ERS, Kalyani

The mid-term IRC meeting was held at ERS-NDRI, Kalyani on 6th January, 2012 under the chairmanship of Dr. A. K. Srivastava, Director, NDRI. Dr. G. R. Patil, Joint Director (Research), NDRI co-chaired the meeting. The progress of the ongoing projects was presented by the respective principal investigators. The progress reports of the projects were critically evaluated and mid-course corrections were suggested.

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