



NDRI

News

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Hon'ble Dr. A. P. J. Abdul Kalam, Former President of India delivering the convocation address

8th Convocation of NDRI Deemed University

This Excellency Former President of India Dr. A. P. J. Kalam congratulated the graduating students for their excellent academic performance and the Faculty Members for shaping the young minds. He delivered the talk on the topic "Dairy Technology Empowers National Development" and expressed the hope that the graduates will work in partnership with milk-farmers for successful realization of our Milk Vision 2020. He administered an oath to all the Dairy Technologists.

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Rechristening of Auditorium as Dr. D. Sundaresan Auditorium by Hon'ble DG ICAR



Dr. S. Ayyappan, Hon'ble DG ICAR, addressing the young graduates and the faculty



Signature of NDRI released

RESEARCH NEWS

Effect of Prebiotic on Probiotic Properties of Lactobacilli and Development of Synbiotic Shrikhand

(Anshu Anamika and Kishan Singh)

Intestinal microbial activities and balance are important for maintenance of host health, providing energy and nutrients and protection against invading organisms. The beneficial microflora of the intestine can be modified through ingestion of group of beneficial bacteria i.e. probiotics, ingestion of substances which increase the growth and/or activities of beneficial microflora i.e. prebiotics and both probiotic and prebiotic i.e. synbiotic. Thus, the effect of prebiotic on some probiotic properties of lactobacilli in order to select the best prebiotic (honey, resistant maize starch, inulin) and probiotic (*Lactobacillus casei* NCDC 298, *Lactobacillus casei* NCDC 17, *Lactobacillus acidophilus* NCDC 13) combination, followed by its incorporation in Shrikhand to make synbiotic Shrikhand was investigated. The efficacy of synbiotic preparation was also evaluated through in-vivo study in albino mice. Based on the prebiotic utilization efficiency, antimicrobial activity against indicator organism and cell adherence properties, *Lactobacillus casei* NCDC 298 with honey was selected as the best prebiotic-probiotic combination among the combinations examined. The selected *Lactobacillus casei* NCDC 298 and honey was used to prepare synbiotic Shrikhand. Viable lactobacilli count remained unchanged (10^9 cfu/g) in Shrikhand during storage study for 28 days under refrigeration temperature ($7 \pm 1^\circ\text{C}$). The coliform and yeast and molds count were less than 10 cfu/g throughout the storage study. Acidity of Shrikhand remained unchanged during storage study. Sensory panelist preferred both the plain and synbiotic Shrikhand, equally. Faecal lactobacilli count and coliform count increased and decreased, respectively in albino mice when fed with synbiotic Shrikhand. Thus, the combination of *Lactobacillus casei* NCDC 298 with honey was found to be a promising probiotic- prebiotic combination for value addition to other dairy and food products.

Development of Technology for Manufacture of Feta Cheese with Enhanced Functional Attributes from Buffalo Milk

(Sanjeev Kumar and S. K. Kanawjia)

Cheeses are considered superior over the non-fermented dairy products in terms of nutritional and intrinsic health attributes. Feta cheese is a Soft white-brined cheese which is traditionally made from Sheep milk or from mixture of Sheep and Goat milk. To meet the ever increasing demand of Feta cheese throughout the world, cow milk has been used successfully for its production. Since the typical character of this cheese is white colour, cow milk Feta has to be bleached to get its desired white colour. However, bleaching destroys the valuable nutrients β -carotene. As such, buffalo milk contributes more than 57% to the total milk production in India, which could be a potent candidate for the manufacture of such cheeses. There is also a great scope for export of Feta Cheese to Middle -East countries due to higher demand by which foreign exchange can be earned for the country. Mild acidic flavour of this cheese may also be liked by Indian consumers. Therefore, the study was designed to develop a good quality Feta cheese with enhanced functional attributes from buffalo milk. In order to obtain an acceptable quality Feta cheese, various processing

parameters such as C/F ratios, heat- treatments, type and level of Starter culture, level of rennet, brine condition, level of rennet and brine concentration were studied. It was also observed that Feta cheese made from buffalo milk by modified technology was quite comparable to that made from cow milk Feta and commercial Feta cheese with advantages of higher yield and without adding additives. Augmentation of starter with starter adjunct like *L. helveticus* and *L. casei* had further improved the quality of buffalo milk Feta cheese. The attempts were also made to reduce the sodium content by replacement of NaCl by KCl. The study revealed that replacement up to 30% could be done



without adversely affecting the quality of buffalo milk Feta cheese. Through this study, an appropriate technology has been developed to manufacture good quality Feta cheese with enhanced functional attributes from buffalo milk.

ACADEMIC AFFAIRS/ DEEMED UNIVERSITY NEWS

Scholars Qualified for the Award of Ph.D. Degree

Scholar	Guide/ Discipline	Title of Thesis
Arun Bhardwaj	Dr. R. K. Malik (Dairy Microbiology)	Safety Evaluation and Probiotic Potential of Bacteriocinogenic Strains of <i>Enterococcus Faecium</i> .
Sanvendana Kumari	Dr. Jancy Gupta (Dairy Extension)	Information Management on Reproductive Disorders in Bovines through Farmer Livestock School.
Ajay Kumar Ashok Rao Raut	Dr. Gopal Sankhala (Dairy Extension)	Retrospect and Prospects of Commercial Dairy Farming in Maharashtra.
Manik Lal Roy	Dr. K. S. Khadian (Dairy Extension)	Mixed Farming Amongst Resource-poor Farm Families in West Bengal : A Gender Perspective.
Mr. Thakur Krishan Shankar Rao	Dr. T. K. Mohanty (Livestock Production & Management)	Effect of Management and Processing Interventions on Preservability of Subfertile Crossbred Bull Semen.
Mr. Amit Sharma	Dr. Shiv Prasad (Livestock Production & Management)	Influence of Polyherbal Immunomodulator Supplement on Production Performance and Milk Quality of Karan-Fries Cows.
Ms. Michelle C. Lallawmkimi	Dr. Sohanvir Singh (Animal Physiology)	Impact of Thermal Stress and Vitamin-E Supplementation on Heat Shock Protein-72 and Antioxidant Enzymes in Murrah Buffaloes.
Ms. Ganga Devi	Dr. D. K. Jain (Dairy Economics Statistics & Management)	Economics of Dairy Financing through Self Help Groups in Jaipur District of Rajasthan.
Ms. Rashia Banu N	Dr. Avtar Singh (Dairy Cattle Breeding)	Genetic Evaluation of the Lactation Curve in Karan Fries Cattle.
Raja T. V.	Dr. R. S. Gandhi (Dairy Cattle Breeding)	Part Lactation Records for Sahiwal Sire Evaluation.
Mr. Babu. D.	Dr. N. K. Verma (Dairy Economics Statistics & Management)	Marketing of Milk and Milk Products in Organised Sector of SALEM District (Tamil Nadu).

Eighth Convocation

Eighth Convocation of NDRI Deemed University was held on 13th March, 2010. Dr. A. P. J. Abdul Kalam, Former President of India, delivered the Convocation Address and Dr. S. Ayappan, Director General, ICAR and Secretary, DARE presided over the function. Dr. A. K. Srivastava, Director & Vice Chancellor, NDRI Deemed University presented the Convocation

Report. A total of 148 students (including 23 B.Tech. (Dairy Technology), 84 M.Sc./ M.V.Sc./ M.Tech. and 41 Doctoral) were conferred different degrees. Four



A student receiving degree from Hon'ble Dr. A.P.J. Abdul Kalam, during Convocation



topper students were awarded the Director's Gold Medals. They were: Ms. Richa Singh (B.Tech, Dairy Technology), and Ms. Anisha, P. V. (Processing group), Mr. Jay Prakash Gupta (Production group), Mr. Kale Rajiv Baliram (Management group) in the Master's

degree programme. Ms. Priyanka Meena (B. Tech, DT), Ms. Dingle K. Simon, M. Tech. Dairying in Dairy Engineering (Processing group), Mr. Manoj, M., M.V. Sc. Dairying in Animal Genetics & Breeding (Production group) and Mr. Midhun, T. R., M.Sc. Dairying in Dairy Extension Education (Management group) were awarded Merit Certificates for securing second position in B.Tech and different groups in master's degree programmes, respectively.

Dr. Kalam congratulated the graduating students for their excellent academic performance and the Faculty Members for shaping the young minds. He delivered his talk on the topic "Dairy Technology Empowers National Development" he expressed the hope that the graduates will work in partnership with milk-farmers for successful realization of our Milk Vision 2020.

He administered an oath to all the Dairy Technologists:

- I love dairy technology which is a noble profession.
- Every cattle is my friend and is a wealth generator.
- I will treat the cattle with kindness and compassion and always develop technologies to keep them disease free and healthy.
- I will develop mechanized systems using technologies for ensuring cleanliness of the feeds and maintaining the cattle in a clean green environment.
- I will facilitate the farmers to apply dairy technology for producing value added milk for export and ensure that the standard hygiene of milk is maintained right from cattle, vessel, storage, transportation and delivery through simple cost effective sample tests.
- Dairy technology is my passion and I will apply dairy technology for national development particularly of the rural sector.



A galaxy of eminent guests including Dr. K. M. L. Pathak, DDG, Animal Science (ICAR), Dr. Arvind Kumar, DDG, Education (ICAR), Dr. Kirti Singh, Dr. R. M. Acharya, Dr. M. L. Madan, Dr. M. P. Yadav,

Dr. N. Balaraman, Dr. B. Mishra, Dr. Gurbachan Singh, Dr. S. R. Singh, Dr. B. K. Joshi, Dr. R. K. Sethi, and Dr. S. S. Singh graced the occasion.



Best Thesis Awards

Best Thesis Awards have been instituted for the first time for Masters and Doctoral theses (one each in Production, processing and management groups). Best thesis award carries a citation, a certificate and Rs. 5000 for Best Masters Thesis and Rs. 10,000 for Best Doctoral Thesis. Two theses in each programme were recommended by committees in each discipline. The students presented their theses before the Award Committee. The three award committees evaluated the theses and gave their recommendations for the Best Thesis Awards.

Processing Group: Dr. P.A. Shankar, UAS, Bangalore (Chairman), Dr. G. S. Sharma, NDRI Karnal (Member) and Dr. N.S. Rathore, MPUAT, Udaipur (Member).

Production Group: Dr. N. Balaraman, Ex-VC, TANUVAS, Chennai (Chairman), Dr. A. S. Nanda, GADVASU, Ludhiana (Member) and Dr. R. K. Sethi, Director, CIRB, Hisar (Member)



Management Group: Dr. Rajvir Singh, Commission for Agricultural Costs & Prices, New Delhi (Chairman), Dr. B. S. Hansra, IGNOU, New Delhi (Member), Dr. S. S. Raju, NCAP, New Delhi (Member)

Following students received the Best Thesis Awards on 13th March, 2010 during the Eighth Convocation of NDRI Deemed University.

Best Masters Thesis Awards

- Kumari Arpana Verma, M.Sc. Dairying in Animal Biotechnology (Production Group), Major Advisor: Dr. T. K. Datta.
- Ms. Archana Chandran, M.Sc. Dairying in Dairy Microbiology (Processing Group), Major Advisor: Dr. V. K. Batish.
- Mr. Bitan Mondal, M.Sc. Dairying in Dairy Economics (Management Group), Major Advisor: Dr. B. S. Chandel.

Best Doctoral Thesis Awards

- Ms. Jaspreet Kaur, Ph.D. in Animal Biochemistry (Production Group), Major Advisor: Dr. Gautam Kaul.
- Ms. Ramya Iyer, Ph.D. in Dairy Microbiology (Processing Group), Major Advisor: Dr. Sudhir Kumar Tomar.
- Ms. Sanvendana Kumari, Ph.D. in Dairy Extension Education (Management Group), Major Advisor: Dr. Jancy Gupta.

Dr. D. Sundaresan Memorial Lecture Award

- Dr. D. Sundaresan Memorial Lecture Award has been instituted to pay respect to the legendary Director of NDRI, Dr. D. Sundaresan who led this Institute for 11 long years during 1970-1981. The award aims at recognising 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. The first award was bestowed on eminent educationist, Dr. S. L. Mehta, former Vice-Chancellor, MPUAT, Udaipur; and DDG (Education), ICAR, New Delhi. Dr. Mehta delivered the lecture on 11th March 2010 in the Main

Auditorium of NDRI, on the topic "Dairy Education: Prospects and Challenges". Dr. A. K. Srivastava, Director & Vice Chancellor, NDRI Deemed University, read out the citation, presented the certificate and shawl to Dr. Mehta.

Presentation of Academic Achievements and Innovations in Teaching

- The Heads of Divisions and Head, SRS, Bangalore made presentations on academic achievements and Innovations in Teaching in a special programme convened in the Mini Auditorium on 9th March 2010 before a panel of experts. The panelists included Dr. M. L. Madan, Dr. N. Balaraman, Dr. R. T. Patil, Dr. Surat Singh, Dr. V. Venkatasubramaniam. The faculty and students participated in the deliberations.



Meetings

- 66th meeting of the Standing Committee on Courses, Curricula and Academic Affairs was held on 23.2.2010 to discuss various academic affairs.
- 28th meeting of Academic Council was held on 11.3.2010.



Dance Performance by girl students of NDRI during Vasantotsva

TRANSFER OF TECHNOLOGY

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

Training Programmes Organized

- During the period under report, 43 training programmes (both 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 & participated by 1306 farmers, women, rural youth and extension functionaries.
- In addition KVK organized 21 sponsored training programmes on Scientific Dairy Farming for 600 farmers. In these sponsored programmes seven trainees were from Uttar Pradesh, 174 from Rajasthan, 179 from Himachal Pradesh, 89 from Bihar and 151 from Jharkhand state.
- KVK also organized different exposure and study visits for the beneficiaries of different states. A total of 37 visits were organized in which 1097 number of farmers and farm women participated from Rajasthan, Himachal, Uttar Pradesh, Delhi, Punjab, Haryana and J & K.

Animal Health Management Activities

Various Animal Health Management activities were organized through Stockman centers in adopted villages of KVK. At these centers, 654 cattle and 452 buffaloes were artificially inseminated and as a result 521 calves were born. Pregnancy Diagnosis in 45 cattle and 48 buffaloes was carried out. Besides these, 67 animals treated, 69 calves dehorned, 12 animals given infertility treatment and 1600 were vaccinated for FMD. Four Animal Health campaigns for Ecto and Endo-parasitic control and infertility

treatment were organized in which 45 animals were given general treatment, 15 were diagnosed for pregnancy, 210 were given de-worming doses, 43 were given infertility treatment and 460 animals were treated for tick control.

Mahila Diwas

International Women Day was celebrated in village Kailash on 8th March, 2010 in which more than 300 farm/rural women/girls/volunteers of NGOs and Women Extension workers from 24 villages of the district, Karnal participated. An exhibition depicting KVK activities was also put up. Lectures were also delivered by Subject-matter-specialist.

Extension Activities of KVK

- KVK in association with State Animal Husbandry Department participated in the calf rally in village Narukheri on 10th Feb., 2010 and village Uncha Samana on 20th Feb., 2010. The expert lectures were delivered to the farmers over around 200 farmers.
- KVK participated in the Kisan Mela organized by NHRDF, Salarau on 20.1.2010. An exhibition was organized by KVK and KVK exhibition stall was awarded first prize.
- "Preservation of fruits and vegetables", All India Radio, Kurukshetra, Rohtak delivered by Saroj Mehta on 18th March, 2010.
- "Gehon ki katai uprant dalhani faslon per charcha", All India Radio, Kurukshetra, Rohtak delivered by Dr. D.K. Gosain on 05th March, 2010.

REVENUE GENERATION IN KVK (January to March, 2010)

Source	Amount (Rupees)
Training fee from KVK courses	10,800
Training fee from sponsored programmes	3,24,136
Tuition fee from visits conducted	23,000
Crop Production Unit	5,22,650
Vermicompost Unit	500
Bee-keeping Unit	19,755
Room Rent from Farmers' Hostel	1,24,830
Dairy Vikas Kendras	26,760
Total	10,52,431

DAIRY EXTENSION DIVISION

Dairy Education at Farmers' Door

Dairy Extension Division organized the new Extension Education Programme "Dairy Education at Farmers'

Door" 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



groups visited villages viz. Gorgarh and Nasirpur Tila of Karnal district on 2nd Saturday of each Month during the period under report. Extension scientists of the team Dr. Gopal Sankhala and Dr. B. S. Meena, acted as coordinator of each visit and obtained the feedback from the participating farmers.

In order to give a wide publicity about the visit of NDRI Scientists to that village, announcements were done through the NGO (Farmer's First and Pragti). Further, different Subject Matter Specialists participated in the kisan gosthi. During the discussion, farmers updated their knowledge on scientific dairy farming. Meanwhile, some of the dairy farmers had brought their dairy cattle and buffaloes for the purpose of health check - up ; and their animals were diagnosed and proper treatment was given by veterinarians and the necessary advice was given to such farmers regarding animal health - care management. Farmers were provided need based scientific interventions on aspects of breeding, feeding, health care, management, processing of milk and marketing. The farming community expressed happiness on this new Extension initiative of the Institute.

Participatory Rural Appraisal in Nasirpur Tila Village

Dairy Extension Division has extended its activities to Nasirpur Tilla village of Karnal district, and to begin with Participatory Rural Appraisal (PRA) was carried out on 26th March, 2010 in the village. This gave the first hand knowledge regarding the agricultural situation of the village, problems faced by the villagers, social interaction pattern and time related trends of agricultural activities especially dairy related activities. The villagers actively participated in the PRA. The problems faced by the farmers were discussed thoroughly.

The condition of the dairy production of the village was not very encouraging. For the last 20 years there was no progress in terms of milk productivity. Thus, there is a huge scope for the development of milk production scenario in this village. The main problem of the farmers regarding fodder production was the scorching of Berseem plants. They were facing problems of water stagnation in their residential areas, as there was no sewage facility available, which in turn affects human as well the animal health.

Extension Activities of Field Farm Technician (FFT) Laboratory

The field level extension activities of FFT lab of Dairy Extension Division were carried out through Dairy Vikas Kendras. Following programme were organized:

Kisan Sangosthi: In order to create awareness among farmers for adopting improved dairy farming practices, 11 kisan gosthis were organized in adopted villages. The main topics of discussion included regular vaccination, feeding of lactating animals, preparation of low cost concentrate, control of mastitis, clean milk production, management of dairy animals and cutting management in berseem and oats.

Infertility Campaigns: For tackling the reproductive disorders in dairy animals, 14 infertility and veterinary aid campaigns were organized in adopted villages wherein 111 animals were examined and mainly had late maturity, anoestrus and repeat breeding problems.

During the period, 170 and 71 cows and buffaloes were given artificial insemination and 60 were subjected to pregnancy diagnosis. Sixty cattle and 23 buffalo calves were born. A total of 57 cases of general treatment were attended at Dairy Vikas Kendras.

Women Empowerment Programme

During the period under report, six training programmes/ awareness campaigns of women empowerment through dairy self help group were organised on clean milk production and capacity building of women in the field of scientific dairy farming. A total of 129 farm women participated from villages Shahpur, Nasirpur Tila and Subri.

Training and Exposure Visits

- A three days Training & Exposure visit of 21 farmers of Tikamgarh District (MP) was organized at NDRI which was sponsored by Deputy Director, Animal husbandry, Tikamgarh Under ATMA scheme of Madhya Pradesh.
- A six-member group representing an N.G.O., SAMARPAN, was provided awareness about dairy farming practices in nearby villages during February 7-9, 2010. The group comprised of 5 foreign nationals (3 from Germany, and one each from Russia & Finland) and one Indian. The main objective was to understand different aspects of dairy farming practices.
- An educational visit of 55 students alongwith 2 officers of VIII semester B.V.Sc. & A.H. of Veterinary College, Mathura under their North India educational tour was conducted on 21st March, 2010.

Students Exposure

To provide the first hand knowledge of farming community to the students, following practical were conducted in villages.

- An exposure visit of post graduate and doctorate students under gender sensitization for development course was organized on February 16, 2010 at Rajiv Gandhi State Institute of Panchyati Raj and Community Development, Nilokheri.
- Field level exposure visit of under graduate students of NDRI was conducted on March 19, 2010 in village Kulwaheri-Subri. Students interacted with the dairy farmers and learned their social system.

Advisory Services

Dairy Extension Division provided the regular advisory services through postal, e-mail, phone to individual farmers'/NGOs/relevant departments all over the country in response to their particular/general queries regarding latest technologies of the institute and modern dairy farming practices.

Release of Mineral Mixture for Cattle

In Dairy Mela 2010, Dairy Cattle Nutrition Division prepared five different types of mineral mixture on the basis of specific requirements of individual minerals for different categories of animals i.e. for cure of Degnala disease, Transitional animals, Lactating animals etc. These were released in Dairy Mela and made available to farmers.

CONSULTANCY SERVICES

(January – March, 2010)

1. Contract Research

Contract Research Project entitled "Climatic Change concerns vis-à-vis Livestock and Dairy Products in India" (Dr. R. C. Upadhyay Principal Scientist, DCP Division), sponsored by Winrock International India, New Delhi, total project cost Rs. 4,89,368/- (including S. Tax) amount to be received in three installments, received only one installment (including S. Tax) Rs. 2,20,216/- (i.e. S. Tax 20,564 = Rs. 1,99,652)

Rs. 1,99,652/-

Sub Total (1)

Rs. 1,99,652/-

2. Contract Services

a. Analytical Service	Rs. 81,400/-
b. Sale of Culture	Rs. 39,900/-
c. Sale of CD	Rs. 300/-
d. Sale of Kit	Rs. 1,200/-
e. Sale of Semen	Rs. 2,59,724/-

Sub Total (2)

Rs. 3,82,524/-

3. Training Charges

Rs. 1,48,565/-

4. Consultancy (Individual/General)

Rs. 1,27,796/-

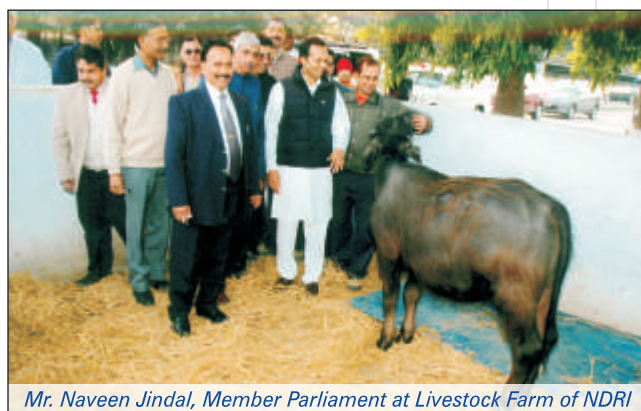
Grand Total

Rs. 8,58,537/-

RECENT HAPPENINGS

Technology Business Incubator

1st Entrepreneurship Development Programme (EDP) on Commercial Dairy farming was organized by the Technology Business Incubator (TBI) on 15th January, 2010 at NDRI Karnal. Mr. Naveen Jindal, MP from Kurukshetra was the Chief Guest and Dr. B. K. Joshi, Director, NBAGR, Karnal was Guest of Honour.



Mr. Naveen Jindal, Member Parliament at Livestock Farm of NDRI

The Technology Business Incubator (TBI) is a grant-in-aid project of Department of Science & Technology, Government of India, promoted by Society for Innovation and Entrepreneurship in Dairying (SINED) & hosted by National Dairy Research Institute, Karnal. The TBI has the broad objective of promoting knowledge-based and innovation-driven dairy enterprises in the country. SINED-TBI has state of the art start-up friendly infrastructure, with common resource sharing arrangement to support budding entrepreneurs from among students and technocrats from all over the country. SINED-TBI is situated on the NDRI campus hence, it leverages all the resources that are available within the campus such as access to milk production and processing units, feed processing unit, laboratories, workshops, library, computing resources, internet access and above all the human resources. In addition to these resources, SINED-TBI also has a network of eminent

professionals, academicians, bankers, venture capitalists and businessmen, who can extend support to these ventures.



In the form of a business centre, the TBI provides incubatees an initial place of operation equipped with supportive environment in which services such as assistance in technology, hands-on management, mentoring, business plan development, exposure to Venture Capital and Institutional Capital and all other operational business/finance related needs involved in starting and growing a technology company.

The TBI is designed to support and nurture industries in the following areas:

- Commercial Dairy & Food Processing
- Commercial Dairy Farming
- Commercial Feed Technology
- Commercial Fish Farming
- Commercial Apiculture & Honey Processing
- Bio-fertilizers, Bio-pesticides & Panchgavya products based on dung & urine.

Services Offered

Incubation Process: SINED-TBI is designed to provide a launch pad to budding entrepreneurs who wish to launch themselves into the world of technology based business careers. The incubator is designed to provide entrepreneurs all the support to make technology based business ventures successful. An entrepreneur makes fewer mistakes in highly innovative and supportive environment of TBI.

Fifteen trainees participating in this programme were provided practical as well as theoretical knowledge on New Dairy Farm Creation, Scenario of Dairy Production in India, Progeny Testing in Bulls, Economic Analysis, Shelter Requirement and Housing of Dairy Animals in Tropics, Cleanliness and Sanitation of Dairy Farm Premises and Disposal of Farm Waste, Milk Quality and Practices for Clean Milk Production, Mineral Requirements of Dairy Animals

and Formulation of Mineral Mixture. General topics like Planning a Small-Scale Unit, Market Survey Tools, Preparation of Schedule and Techniques of Data Collection, Business Plan Format for Micro and Small Enterprises, Marketing Management, Legal Requirements, Government Policies, Bank Schemes, Project Report Preparation were covered by the guest speakers from Banks, MSME & Industrialists and visit to successful Dairy Farms was also a part of the programme. NDRI faculty complemented by guest speakers delivered the lectures and conducted practical exercises.

Winter School on Recent Advances in Dairy Nutraceuticals and Bioinformatics Application

The Division of Animal Biochemistry organized a winter school on "Recent Advances in Dairy Nutraceuticals and Bioinformatics Applications from February 1-21, 2010, sponsored by Education Division of Indian Council of Agricultural Research, New Delhi. At inaugural function held on February 1, 2010, the Chief guest Dr. S. K. Garg, former Vice Chancellor Veterinary University Mathura, highlighted the importance of understanding small peptides/ molecules in immunological functions and diseases. Dr. A. K. Srivastava, Director and Vice-chancellor, National Dairy Research Institute, in his presidential address emphasized the importance of milk as a good source of many nutraceuticals such as bioactive peptides from casein, beta lactoglobulin, alpha lactalbumin & lactoferrin, lactoperoxidase, lysozyme, lactulose, butyrate, calcium, immunoglobulins, ACE-inhibitory, antimicrobial, anticarcinogenic and antithrombic molecules. The course Director, Dr. V. K. Kansal, Head, Animal Biochemistry Division informed that calcium protects against colon cancer. The conjugated linoleic acid present in milk helps in improving immune functions and in management of diabetes. Dairy ghee protects against mammary cancer. Nutraceuticals from milk confer protection against various diseases and disorders such as cancer, hypertension and cardiovascular diseases.

The Winter school was attended by 25 participants who are working as Assistant Professors/equivalent scientists in various universities across the country and deliberated for 21 days on various aspects of dairy nutraceuticals, research techniques in biochemistry & molecules biochemistry and bioinformatics applications. The participants were also given hand on experience on various research techniques. The conduct of school involved 23

teachers, which included 5 guest speakers from outside and teachers from various disciplines at NDRI. The programme was concluded with the valedictory function on 21st Feb. 2010. Dr. M. L. Madan, former Vice-Chancellor Veterinary University Mathura and former Deputy Director General (Animal Sciences), ICAR, New Delhi gave away the training certificates to the participants.

Dairy Mela 2010

A three day National Cattle Fair (Dairy Mela) participated by more than 9000 farmers was organized at NDRI from 24th-26th February 2010. Dr.



K. M. L. Pathak, Deputy Director General (Animal Science), Indian Council of Agricultural Research (ICAR), New Delhi in the inaugural programme as a Chief Guest stressed that the dairy farmers should learn the new technologies evolved by the NDRI, adopt them at their dairy farms and get benefits through enhanced milk production. He added that although India ranks first in the world in milk production but to meet the growing demand of milk



newer technologies need to be evolved for further increasing the milk production.

Ch. Ved Pal, Member, Board of Management, NDRI lauded the contributions made by the NDRI in

increasing the milk production and said that dairy farmers should undergo different training programmes organized by this institute so that with the adoption of newer technologies they were benefited.

Dr. A. K. Srivastava, Director, NDRI spoke on the issues pertaining to Mastitis and the use of oxytocin in dairy animals. He said that there is shortage of green



fodder, straws and concentrates used for feeding the dairy animals and in this context the farmers should use cost effective feeding technologies.

In the fair around 500 cattle and buffaloes participated in 35 different categories of competitions. Champion farmers were given away a total of 259 prizes in different categories. In the category of cross bred cattle Bhupinder Singh of Fategarh Sahib was conferred first prize for his cow that yielded 53.023 kg of milk in one day, Dalbir Singh of Ludhiana was given



Dr. Mangala Rai, Former DG ICAR with prize winning animal

second prize for his cattle that could produce 43.438 kg milk whereas Ram Singh of Taraori of this district was awarded third prize for 41.268 kg milk yield of his cow in the cattle fair.

In the category of buffaloes Rajiv Khurana of Rohtak was awarded first prize whose murrah buffalo yielded 22.56 kg whereas buffalo of Gulab Singh of Kaithal



was given second prize for milk production of 19.36 kg from his buffalo.

Som Parkash of Taraori of this district was conferred first prize for having the best cattle of the show and Narinder Kumar of village Dadvari of Panipat was awarded first prize for keeping the best buffalo bull.

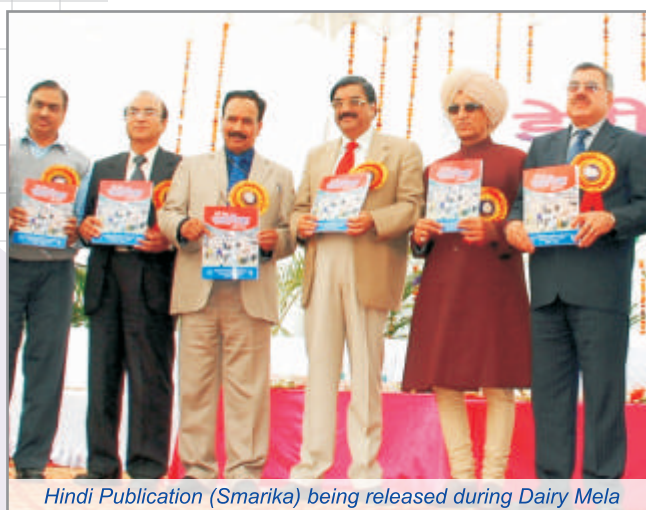
In the valedictory and prize distribution function, Dr. Mangala Rai, Former Secretary DARE & Director General, ICAR, New Delhi said that there was an urgent need to evolve newer technologies at all fronts of agriculture and allied sectors so that the production could be improved further. He stressed that the technologies generated need be adopted by the farming communities.

Sh. Hardeep Kumar, Financial Commissioner-cum-Principal Secretary, Govt. of Haryana in his address said that Haryana state has a target of doubling its milk production in 10 years that could be achieved through breed improvement programme of both cattle and buffaloes. He added that keeping in view the shortage of feeding resources the farmers should adopt the silage making technologies for economic feeding to their dairy animals.

Dr. K. S. Dangi, Director General, Animal Husbandry and Dairying, Haryana said that the state has 2790 veterinary dispensaries including veterinary hospitals which ensure health coverage and provide facilities

for artificial insemination to dairy animals. He added that in the state around 81 percent milk is contributed by buffaloes 18 per cent by cattle and one percent through other dairy animals and spoke about various schemes concerning improving of dairy scenario in the state.

Dr. S. L. Goswami, Joint Director (Research), Dr. G. R Patil, Joint Director (Academic) NDRI and Dr. D. S. Sohi, Organizing Secretary coordinated in organizing this mega event.



Hindi Publication (Smarika) being released during Dairy Mela

1st National meeting of Core Group on Probiotics

First National Meeting of the Core Group on Probiotics was held at NDRI, Karnal on 5th March, 2010. The main purpose of this one day meeting was to bring all the R&D scientists, researchers and other stake holders, extensively involved in probiotic research in the country at one platform to discuss the major issues of concern related to health applications of probiotics relevant to the needs of India specifically. A total of about 40 participants from all over the country including probiotic group from NDRI attended the meeting. Dr. A.K. Srivastava, Director,



Release of NDRI Newsletter



NDRI and Vice-Chancellor, NDRI Deemed University, Karnal presided over this function and Dr. G.P. Tawlar, Former Director, NII, New Delhi & an eminent immunologist of international repute was the Guest of Honour. While inaugurating the function, Dr. A.K. Srivastava gave his introductory remarks and made a presentation 'NDRI at a Glance' to apprise the delegates with the significant achievements including the major leads in Probiotic research made at NDRI during the last few years. It was followed by five specialized presentations in the subject delivered by the eminent invited speakers, the pioneers in probiotic research viz. Dr. G.P. Talwar, Dr. Rama Chaudhary (AIIMS), Dr. S. Prafulla (CFTRI), Dr. Sanjeev Ganguli from Nestle India & Dr. J.B. Prajapati (GAU). Interactive session was chaired by Dr. G.P. Talwar. Deliberations took place on some of the focal issues such as efficacy of Indian probiotic cultures versus the western strains, their biosafety, identification at strain level, the need for clinical studies in human subject to validate the health claims associated with specific probiotic strains made on the basis of in vitro assays and in vivo models, role of biomarkers and regulatory guidelines to maintain the safety and quality of probiotic preparations including value added functional/health food as the carriers of probiotics etc. Dr. G.P. Talwar finally summed up the outcome of the session and short listed the key points emerging from the discussions that formed the basis for formulating the recommendations for immediate follow up.

Board of Management Meeting

The 28th meeting of the Board of Management of NDRI was held on 12th March, 2010 under the Chairmanship of Dr. A. K. Srivastava, Director of the Institute. Among the Hon'able members of the BOM present were Dr. K. M. L. Pathak, DDG (AS), ICAR and Dr. M. C. Sharma, Director, IVRI. The agenda was presented by Sh. J. K. Kewalramani, Chief Admn. Officer of the Institute.



Signature of NDRI Released

The specific pattern of Signature of NDRI was conceptualized, finalized and adopted to give a specific identity to NDRI in all official matters and correspondence and to adopt a uniform style of encrypting and writing the Institutional name. The signature of NDRI was released by Former President of India Prof. A. P. J. Abdul Kalam at the 8th Convocation of NDRI (Deemed University), in the presence of Dr. S. Ayyappan, Secretary, DARE & Director General, ICAR and Dr. A. K. Srivastava, Director and Vice Chancellor of NDRI, Karnal on 13th March, 2010. The signature of NDRI will be used in addition to the already existing insignia.

The signature of NDRI represents the running flow of achievements of NDRI which is the premier organization that provides R&D support for dairy development programmes of the Nation. The Red Bindia on the forehead of NDRI is the symbol of prosperity, prestige and growth orchestrating dairy development process in a harmonious manner.

Republic Day Celebrations

NDRI Staff Club celebrated the Republic Day-26th Jan., 2010 at the NDRI Auditorium. Dr. Anil Kumar Srivastava, Director and Vice chancellor hoisted the tricolour and addressed the staff, their families and the students. Swami Gurgyananand Ji, Coordinator, Divya Jyoti Jagriti Sansthan was the Guest of Honour. Under the programme BHARAT patriotic songs were presented by a talented team of Swamijis.



North Carolina State University (USA) Faculty delegation visited

Five member delegation of North Carolina State University (NCSU) comprising of Dr. Vivek Fellner, Dr. Kelly Zering, Dr. Paul Bergey, Dr. Maria Correa and Dr. Prema Arasu visited NDRI- Karnal on 25th Jan. 2010 for exploring collaboration in research and education in the areas of sustainable development



(livestock and poultry production, biofuels & environment and public health). These members interacted with experts from NDRI in the meeting chaired by Dr. A. K. Srivastava, Director, NDRI. US delegation and NDRI agreed to work for possible collaboration in both education and research field. In education, the focus of discussion was on-line teaching where NCSU is much ahead of NDRI. The research areas of interest for collaboration are probiotic foods, biofuels (production of butanol), nutraceuticals, anaerobic digester (removal of moisture from methane, removal of CO₂ and H₂S from methane).



Institute Research Committee

The Institute Research Committee (IRC) meetings were held on 16th -19th March, 2010 at NDRI, Karnal under the Chairmanship of Dr. A. K. Srivastava, Director, NDRI, Karnal. IRC meeting was also held on 26th March, 2010 at SRS, Bangalore and at ERS, Kalyani, on 6th February, 2010, respectively.

Dr. Srivastava emphasized for the development of viable and relevant technologies to address the emerging challenges in the present scenario. Dr. S. L. Goswami, Joint Director (Research) prevailed upon the scientists to keep in mind the priority areas identified by RAC and reflected in perspective plan of the Institute while formulating new projects. The

progress reports of the completed research projects were discussed threadbare and the proposals of new research project proposals were considered for approval.

International Training Programme on "Milk Collection, Processing & Marketing"

An International Training Programme on "Milk Collection, Processing & Marketing" was organized by the Dairy Technology Division during March 18-31, 2010 for 24 personnel from Afghanistan. The trainees were Cooperative Dairy Union Members, FAO Project Staff, and the Counterparts from the Ministry of Agriculture, Irrigation and Livestock (MAIL), Govt. of Afghanistan. The training programme was funded by the Food and Agricultural



Organization (FAO), Rome. The course was delivered in the form of theory lectures and experiential learning as also field visits to commercial dairy farms, chilling centres, processing plants, & feed manufacturing plants. The areas that were covered during the training were: Clean milk production & raw milk collection, Raw milk quality in relation to processing and marketing challenges in countries with warm climatic conditions, Cleaning and sanitization of dairy equipments and plant hygiene maintenance, Chemical and microbiological tests for milk and milk products, Liquid milk processing including Clarification, Bactofugation, Separation and Homogenization, UHT sterilization etc., Manufacture of Yoghurt/ Butter/Ghee/Paneer/Mozzarella cheese and Packaging and marketing of milk and milk products etc.

Honours/ Awards

G. Jagan Mohanrao, G. Raj Kumar and S. K. Atreja received Prof. N. J. Chinoy Award for "2nd Best Oral Presentation" on the paper entitled "Analysis of Tyrosine Phosphoproteome of Capacitated Buffalo (*Bubalus bubalis*) Spermatozoa in the International Symposium on endocrinology and Reproduction:

Molecular Mechanisms to Molecular Medicine organised by The Society for Reproductive Biology and Comparative Endocrinology at Special Centre for Molecular Medicine, Jawahar Lal Nehru University and NIHFW, New Delhi from 4th - 6th February, 2010.

Dr. S. K. Tomer, Principal Scientist and **Dr. J. P. Sehgal**, Principal Scientist of Dairy Cattle Nutrition Division received "**Best Paper Award**" for their research paper entitled "**Nutrients Requirements for Pregnant Buffaloes**" during the International Buffalo Conference on "Optimizing Buffalo Productivity through Conventional and Novel Technologies" organized by Indian Society for Buffalo Development held at NASC Complex, New Delhi on 1st April, 2010.

Dairy Cattle Nutrition Division stall was adjudged second among all stalls and different transferable technologies demonstrated and explained to farmers during the Dairy Mela organized by NDRI, Karnal from 24-26th Feb., 2009.

Dr. R. S. Gandhi, Head, Dairy Cattle Breeding Division was awarded "**Bioved Honorary Fellowship Award - 2010**" by Bioved Research and Communication Centre, Allahabad (UP) on the occasion of 12th Indian Agricultural Scientists and Farmer's Congress held at Allahabad University, Allahabad from 20th - 21st February, 2010.

Mr. M. Manoj, **Dr. R. S. Gandhi**, **Mr. T. V. Raja**, **Dr. Avtar Singh** and **Dr. G. K. Sachdeva** were awarded "**Best Oral Presentation Award**" for the paper entitled "**Genetic Parameters of various First Lactation Traits in Sahiwal Cattle**" by Bioved Research and Communication Centre, Allahabad (UP) on the occasion of 12th Indian Agricultural Scientists and Farmer's Congress held at Allahabad University, Allahabad from 20th - 21st February, 2010.

Dr. Avtar Singh, **Dr. P. S. Oberoi** and **Dr. B. K. Joshi** received "**First Best Paper Award**" for the paper entitled "New computer Simulated Excel based Software for Analysis of Techno-economic Feasibility of Dairy Farming" by published in Indian Dairyman for the year 2008 in the "Commercial Aspects Area" on 19th February, 2010 from Dr. N. R. Bhasin, President, IDA, New Delhi at NIMHANS, Bangaluru.

A poster authorised by **Manju, G ; Kumar, N ; Das, G ; And Malik, R K** was presented on entitled **Bacterial Spore Based Iodometric Assay To Monitor Beta Lactum Group of Antibiotic Residues in Milk** presented in in XXXVIII Dairy Industry Conference held at NIMHANS convention centre Bangalore on 17th - 19th Feb., 2010 and awarded first prize .

DISTINGUISHED VISITORS

05.01.2010 A Vietnamese delegation.



15.01.2010 **Sh. Naveen Jindal**, Hon'ble Member of Parliament, New Delhi.

20.01.2010 Eight member delegation from Ministry of Agriculture, Royal Govt. of Bhutan.

22.01.2010 **Dr. M. H. Karim**, Counselor & Director, Science & Education Section, Embassy of the Islamic Republic of Iran.



23.01.2010 **Mr. Ngoga Eugene Fixer**, First Counselor, Rwanda High Commission, New Delhi.



25.01.2010 Five member delegation from NC State University, USA.

29-30.01.2010 **Dr. Jayant Lohakare**, Fulltime Faculty, College of Animal Life Sciences, Kangwon National University, KNU Ave-I, Chuncheon, South Korea with five students.



09.02.2010 Four member delegation from General Mills, Minneapolis, USA.

10.02.2010 **Mr. Craig Pedley** of Skellerup Industries Ltd., New Zealand.

29-30.03.2010 Eight Member delegation from Nepal.



11.13.02.2010 Prof. George Smith, Michigan State University, USA.

PERSONALIA

Joining

Dr. Rameshwar Singh, Principal Scientist appointed as Head, Dairy Microbiology Division w.e.f. 19.02.2010.

Dr. Ajoy Mandal, Sr. Scientist (Animal Genetics and Breeding) after transfer from CIRG, Makhdoom joined ERS-NDRI, Kalyani on 18.02.2010.

Dr. K.P. Ramesha, Sr. Scientist (AG&B) joined at SRS of NDRI Bangalore w.e.f. 3.2.2010 on transfer from IVRI, Izatnagar

Dr. Kaushik Khamrui joined as Sr. Scientist (Dairy Technology) at NDRI Kanral on 3.3.2010.

Dr. Asik Mohammad joined as Scientist (Veterinary Extension Education) at NDRI Kanral on 6.3.2010.

Dr. (Ms.) Raka Saxena joined as Sr. Scientist (Agril. Economics) at NDRI Kanral on 9.3.2010.

Dr. S. Subash joined as Scientist (Veterinary Extension Education) at NDRI Kanral on 15.3.2010.

Promotion

Dr. Ashutosh, Scientist (SS) (Animal Physiology) promoted as Sr. Scientist w.e.f. 03.06.2003

Mrs. Ritu Chakravarty, Scientist (SS) (Home Science) promoted as Scientist (SG) w.e.f. 16.05.2005.

Retirements

Dr. M. K. Bhavadasan, Principal Scientist (Dairy Chemistry) SRS of NDRI Bangalore retired from Council's services on w.e.f. 31.01.2010.

Dr. V. S. Raina, Principal Scientist (LPM) retired from Council's services on w.e.f. 31.03.2010.

Dr. R. S. Sangwan, Principal Scientist (Dairy Chemistry) retired from Council's services on w.e.f. 31.03.2010.

EASTERN REGIONAL STATION, KALYANI

Ruminal Methane Production not Influenced by the Rumen Ciliate Protozoal Population

(A. Santra., A. Banerjee., S. K. Das., A. Chatterjee., P. K. Roy and R. A. Dey)

Microbial fermentation of lignocellulosic feeds in the rumen, resulting considerable energy loss as methane. Ruminal methane production not only renders the methane energy unavailable to the animal but also contribute to the green house effect in the atmosphere leading to global warming. Manipulation of rumen fermentation for enhancing digestibility of poor quality roughage/fibrous feed, reducing methane

emission and nitrogen excretion by the ruminant animals to improve their productivity performance are the main targets for the researchers. Recently, there has been an increased interest to use natural products containing plant secondary compounds to modify rumen fermentation for improving feed utilization and livestock productivity. However, it was observed that ruminal methane production did not reduce due to lower ciliate protozoal population in vitro. Leaves of *Agave americana* were extracted in three different solvents e.g., aqueous, aqueous methanol (50 % methanol in water) and aqueous ethanol (50 % ethanol in water). Effect of these plants extracts on rumen



fermentation was studied at three levels e.g., 0, 1.0 and 2.0 ml in four replicate for each treatment by in vitro gas production technique using the substrate comprising of paddy straw and concentrate mixture in 60:40 ratio. Ruminal gas production increased ($P < 0.01$) due to addition of aqueous, aqueous methanol and aqueous ethanol extract of *Agave americana*. However, ruminal methane production was not influenced by the addition of *Agave americana* extract in the incubation medium. Ruminal total as well as differential (spirotrich) ciliate protozoal population reduced ($P < 0.01$) due to addition of aqueous, aqueous-methanol and aqueous ethanol extract of *Agave americana*. Rumen total ciliate protozoal number was 26.2, 18.9, 12.8 and 12.2×10^3 / ml incubation medium due to addition of 0, 2 ml aqueous, 2 ml aqueous-methanol and 2 ml aqueous ethanol extract of *Agave americana* in 30 ml incubation medium, respectively. Ruminal ammonia nitrogen and TVFA concentration also reduced significantly due to addition of *Agave americana* leaves extract. However, these extracts had no influence on VFA composition and acetate: propionate ratio. It is concluded from the study that reduced rumen protozoal population does not always reduce the ruminal methane production. Moreover, reduction in ruminal ammonia nitrogen concentration due to addition of extract of *Agave americana* leaves indicated better dietary protein utilization.

Institute Joint Staff Council Meeting held at ERS, Kalyani

Institute Joint Staff Council (IJSC) meeting held at ERS, Kalyani on February 6, 2010 under the chairmanship of Dr. A. K. Srivastava, Director, NDRI, Karnal. The agenda items were discussed in presence of Dr. S. L. Goswami, Joint Director (Research), Dr. G. R. Patil, Joint Director (Academic), Mr. J. K. Kewalramani, CAO, Dr. R. A. Dey, Head, Administrative officials of NDRI, Karnal and members of IJSC.

Training Programme Organised

- Two capsule course on Dairy Cattle Management of five days duration each were organized for the Ichhamati Milk Union in 24 (N) Parganas on 12th, 18th, 22nd to 26th Feb., 2010, respectively. A total number of seventeen women members from

7 woman dairy cooperative societies underwent these trainings.

- A seven weeks "AI and Veterinary First Aid" training programme has been initiated from 8 March, 2010. Eleven participants are undergoing this training, Ten have been deputed by Ichhamati Milk Union and one by an NGO from 24(N) Parganas.
- Three orientation programmes of one day duration were organized on 5th Jan., 16th- 21st Feb., 2010 in which 79 woman dairy unit members participated. The programmes were organized on the request of the Lokhatia Farmers' Welfare Society, an NGO in 24 (N) Parganas.
- Three Induction programmes were organized for woman members of Ichhamati Milk Union, 24 (N) Parganas, on 16th, 20th and 27th Feb., 2010 in which 83 women participated. In these programmes awareness and knowledge about improved dairy management and clean milk production were emphasized upon.

Extension Activities

- The institute put up an exhibition stall on "Improved Dairying" in the 17th State Science & Technology Congress organized by the West Bengal University of Animal and Fisheries Science at Belgachhia on 4th & 5th March, 2010.
- A batch of 45 vocational students of government aided school from Lakhanpur, district Purulia visited ERS-NDRI on 1st Feb., 2010.
- A group of 8 trainee state veterinary officers undergoing training at ERS-IVRI, Belgachia visited the institute farm on 18th March, 2010.
- Eight ARS probationers of 89th FOCARS undergoing their FET, visited the institute farm on 18th March, 2010.
- Thirty two women and ten men SHG members of Bagmundi Panchayat Samity from Purulia district visited the farm and museum on 24th March, 2010.
- A group discussion was organized in Haripara village in 24(N) Parganas by Dr. Lotan Singh, Senior Scientist on 1st Feb., 2010 to enlighten the farmers about the "Method of obtaining bank loans". Forty two farmers attended the group discussion.

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