



ICAR – CSWRI

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From the Director's Desk

Greeting to all

The institute has emerged as one of the leading research institute in the country and Asia by developing strong multidisciplinary approaches in sheep and wool research and development. Its three Regional Stations ARC, Bikaner, NTRS Garsa and SRRC, Mannavanur addressing the regional issues in the sheep sector. Now, the institute is focusing on dairy sheep. Milk from sheep will provide better nutrition and a source of additional income to farmers in dry and harsh topography and milk products from sheep milk will meet the demand of urban people in the country. It will break the vicious circle of poverty and bring a sizable contribution to the livelihood of the farming community. The institute has developed several technologies and innovation for increasing the income of farmers. Development of Avishaan sheep bearing twins and triplets, Memnprash for lamb feeding, Avikesil –S for estrus synchronization, Avikhad for best use of wool waste, accelerated lambing system and intensive feeding of lambs to achieve desirable slaughter weight at an early age are paving the path for doubling the income of farmers. Scientists of the Institute have developed many healthy and functional products of meat, milk and wool like mutton spread, meat cookies, cheese, paneer, flavour milk, gulabjamun. Several value added handicraft products from coarse wool developed. Under transfer of technologies programme Farmer FIRST, Mera Gaon Mera Gaurav, Sansad Adarsh Gram Yojna and Tribal sub plan are some of the initiative that the institute has taken to extend technology to farmers. New initiative on ERP, e-office and the MIS & FMS system has been implemented in the institute. The sports activities have been strengthened with the creation of new facilities for gymnastics. The institute has performed excellently in ICAR's Zonal and inter Zonal sports. The institute is undergoing MoU with SAUs, ICAR institutes and other research organization for extending research facilities to students for their master and doctorate programs. As part of Swachh Bharat Abhiyan activities, efforts are being made to build a clean and healthy campus. As we move forward, I extend my best wishes to all, to achieve even more success in the coming years.



(Arun Kumar Tomar)
Director

Research Highlights

Mutton Sandwich Spread: A Newer Mutton Product

Gauri Jairath, Y.P. Gadekar and A.K. Shinde



A new product - Mutton spread has been developed. It has not only given the variety to the meat lovers, but also much tastier and healthy alternative of animal proteins to the kids and young generation. The spread contains 50 % mutton and other non-meat ingredients. Several preliminary trials were conducted to develop the spread and on the basis of sensory evaluation, the much liked product was selected. The colour and flavour were very much liked by the sensory panellists. Spreadability of spread on the bread was good with acceptable adhesive power. The product can be stored for 3 months at refrigeration temperature.

tested at farmer's field and is well accepted by farmers in Rajasthan, Maharashtra and other states.



Environmentally controlled chamber

A. Sahoo



It is often referred as psychrometric chamber, wherein desired temperature and humidity of a test environment can be controlled for studying climate related stress. This facility at the institute has been created for studying i) simulated microclimatic model in psychrometric chamber for different agro-climatic conditions (arid, semi-arid, hot and cold); ii) the effect of climatic stress variables on reproductive and productive parameters; iii) the effect of climate-driven multiple stress (climate + nutrition) on behaviour, metabolic profile, oxidative stress and immunity iv) comfort-zone and



Memnaprash for Lamb Feeding

R.S. Bhatt



Memnaprash is a milk supplement aims to enhance growth and reduce mortality losses in lambs during early life. It is made from vegetable protein and oil sources and contain 24-28% crude protein, 10-12% fat and 15-17% total solid (dry matter). It is fed at the rate of 100 ml during 10 -15 days and thereafter 250 ml up to 90 days. It costs Rs 115/kg (dry powder) and liquid milk Rs 19.50/litre. Six litre of milk can be prepared from 1 kg of powder and fed to lambs, individually by a bottle. Feeding of Memnaprash to lambs increased 4-5 kg more body weights at 3 months of age in Malpura lambs with feed efficiency of 2.46-2.48. It provides a net return of Rs 800 per lamb. The Memnaprash has been



quantifying threshold level of THI and THSI under simulated as well as in fixed model of microclimate and v) efficacy study of different intervention strategies for promoting resilience against thermal stress.

A novel AI technique in sheep with frozen semen

Krishnappa B, S.V. Bahire and D. Kumar

In India, artificial insemination (AI) in sheep is less popular in comparison to other domestic species. The major impeding reasons are complex anatomy of cervix, poor freezing ability and low shelf life of liquid preserved semen. This has necessitated researchers to find alternative means of insemination. The scientist of institute have standardized the laparoscopic insemination where frozen thawed semen with acceptable motility (50%) is used. In brief, the ewe is positioned in a supine head down (Trendelenburg) position to an approximate angle of 30° and a rigid fiber-optic laparoscope is passed into the abdomen under local anesthesia. The uterus is visualized through camera and the semen is deposited directly into the uterine horns by using special gun-transcap. A well trained person can inseminate 10-12 ewes in an hour with least postoperative complication. The technique attempted on 42 synchronized Malpura ewes with fixed time insemination at 48 h of sponge withdrawal resulted in 60% lambing.



PCR-based identification of fibre, milk and meat of sheep and goat origin

Rajiv Kumar, A.S. Meena and D.B. Shakyawar

The detection of species specific products is important for consumer protection and food industries. A molecular technique: PCR based method for detection of sheep and goat specific fibre (wool and pashmina), milk and its dairy products and raw meat as well as meat products has been developed by the institute. This technique definitely provides a quality control measures which would be helpful in trade and commerce in sheep and goat products based industries. The Pashmina fibre is one of specialty animal fibres derived from goat. Due to its excellent quality and better cold resistance character, adulteration of Pashmina fabrics with sheep and rabbit fibres is common practice in industry which incurs losses to the local artisan involved in Pashmina cottage industries. ICAR-CSWRI has developed a simple PCR based test which can be able to certify purity of pashmina textiles and up to 10 percent adulteration in Pashmina textiles can be detected by using this technique. Similarly, raw milk and its dairy products, raw meat and its processed products purity and unlabelled adulteration can also be detected by the PCR based method.



Accelerated lambing system for increasing life time production of ewes

Kalyan De, D. Kumar and Krishnappa B.

Mostly sheep husbandry is an extensive production system with one lambing in a year in a conventional management system. However, the accelerated lambing system enables three lambing in two years per ewe, targeted for fulfilling ever-increasing demand for meat. It is possible only when, fixed mating and lambing schedule is followed. The periods between the successive lambing are shortened and the lamb crops are produced in every 8 months instead of every 12 months to get 3 lambs in 2 years. Ewes are bred strictly within 90 days post-lambing either at natural estrus or induced estrus. The induction of estrus is done by using indigenously developed progesterone impregnated intra-vaginal sponges and eCG protocol. This accelerated lambing system produced 50% more lambs in Malpura sheep in comparison to conventional a lamb a year. Out of that 24.4% lambs were born at induced estrus. In an experiment at ICAR-CSWRI, 89 lambs were produced from 30 Malpura ewe (1 ewe culled due to a health problem) in a span of 2 yr. Keeping view on the benefits, at the present time, the accelerated lambing system may serve as a boon for sheep husbandry to make it more economical, profitable and sustainable.



Moth repellent formulation for woollens from nano clay

Seiko Jose, N. Shanmugam and A. Kumar

Woollen products are susceptible to the attack of wool moth. Nano kaolinite, an aluminium silicate mineral of natural origin was used as a moth repellent agent against *Anthrenus verbasci*. The woollen fabric was treated with various concentrations of nano kaolinite dispersion for 30 minutes. After treatment, the fabric was exposed for the analysis of moth repellence using standard protocol. The bio-assay was also performed in order to find the toxicity of nano kaolinite on moth. After the incubation period of 15 days, the 1.0% nano kaolinite treatment was found to be much effective in repelling the moth than other concentrations. The bio assay results showed no toxicity, however 70 % of moth mortality was recorded over incubation period. The fabric weight loss due to moth attack was below 2.0 %. It is anticipated that lesser fabric damage may be due to the bitter taste of nano kaolinite treated fabric lead starvation to moth and ultimately to die. The presence of nano kaolinite coating on wool surface was confirmed by FTIR and SEM analysis. The application of nano kaolinite is nontoxic and eco-friendly, since no chemicals are involved in the process and thus, recommended for industrial application.



Glimpse of Celebration

National Sheep and Wool Fair



Shri Gajendra Singh Shekhawat, Minister of State, Agriculture and Farmer Welfare, addressing the farmers in National Sheep and Wool Fair at Avikanagar on 8 December 2017. While addressing to farmers, Shri Shekhawat said that Hon'ble Prime Minister vision of doubling the farmers income by 2020 is possible through development of livestock, wherein contribution of sheep and goat is important.



Foundation day - Scientist & Farmers interaction

On the occasion of 57th Foundation Day celebration of ICAR-CSWRI on 4 January, 2018, Scientists & Farmers interaction was organised at institute campus. Dr Arun Kumar Tomar, Director welcomed the chief guest Dr Rameshwar Singh, Vice Chancellor, Bihar Animal Sciences University, Patna, Shri R.P. Singh, Member, Governing Body, ICAR, New Delhi, Dr Nagendra Sharma, Ex-Vice Chancellor, SKUAST, Jammu, Dr B.N. Tripathi, Director, NRCE, Hisar, Dr R. Bhatta, Director, NIANP, Bangaluru and Dr Gopal Lal, Director, NRCSS, Ajmer. Breeding rams were distributed to farmers at goat and sheep sectors. The publication on Annual Sheep Rearing Calendar and Malpura Sheep Breeders Information bulletin were released at the occasion.



Krishi Unnati Mela

On occasion of Krishi Unnati Mela, at New Delhi, live telecast of the Hon'ble Prime Minister was organised at the institute on 17 March, 2018. Live animal exhibition and display of sheep, goat and rabbit technology of the institute with the theme "Doubling the farmer's Income" was arranged.



On this occasion, Prof. K.K. Saharia, Member, governing body member, ICAR, Sh. Kanhaiya Lal Choudhary, MLA, Malpura-Todaraisingh, Sh. Shatrughan Gautam, MLA, Kekri, Miss Saroj Choudhary, Pradhan, Panchayat Samiti Malpura, Sh. Badri Narayan Choudhary, Mahamantri, Bhartiya Krishan Sansthan and Sh. Krishna Murari, Pradesh Sanghathan Mantri, Bhartiya Kisan Sangh, Rajasthan were present.



International sheep News

Merino Sheep Provide Clue to Curly Hair

Hairs curl because the cells on one side of the strand are longer than the cells on the other, at least in merino sheep (Journal of Experimental Biology, 23 March, 2018). The findings don't fit neatly into either of the two leading theories for how curliness arises—namely, that there are more cells on one side than another, or that the two main cell types making up hair differ consistently in length and are distributed unevenly. They found that although the two cell types, known as orthocortical and paracortical cells, did indeed differ in length on average, there was a wide range of lengths in both cell types, and the average difference could not predict the curvature of the fibers. Instead, the team showed that curvature was determined by the relative length of an orthocortical cell and the paracortical cell directly opposite it—meaning a mix of the two previous theories can explain why hair curls. “We have established clearly that cell type is important, as is cell length,” Harland tells The New Zealand Herald. The same should be true for human hair, he adds.



International Seminar Attended

Dr. Gopal Gowane, Sr. Scientist (AG&B) attended World Congress on Genetics Applied to Livestock Production 11-16 February 2018, Auckland, New Zealand and presented a paper on Optimising bias and accuracy in genomic prediction of breeding values.

Dr. G.G. Sonawane, Pr. Scientist (Veterinary Pathology) attended 14th International Colloquium on Paratuberculosis at Riviera Meya, Mexico from 4-8 June 2018.

Forth coming programme

Laparoscope aided artificial insemination and embryo transfer in sheep from 03 to 12 October 2018. Dr. Krishnappa Kariyappa Balaganur, (Scientist) Tel: 09982250644, 01437-220165 (O), Email: drkittyb@rediffmail.com

Basic Research Tools in Textile Testing and Textile Chemistry at TMT division from 31.07.2018 to 24.08.2018. Seiko Jose (Scientist). Email : seiko_jose2005@yahoo.co.in

Appreciation and awards

Institute exhibition has been appreciated by District Administration and awarded, II prize in Krishi Fair by Project Directorate, ATMA, Tonk on 22 March, 2018.

New Publications

Jose S, Shanmugam N, Das S and Kumar A. 2018. Moth proofing of wool fabric using nano kaolinite. The Journal of The Textile Institute 109: 225-231 (NAAS-7.0)

De K, Kumar D, Singh AK, Sahoo A and Naqvi SMK. 2018. Effect of altered ambient temperature through shelter modifications on physiological indicators of Malpura lambs reared in semi-arid region during winter. Journal of Thermal Biology 72:161-167 (NAAS - 8.16)



Training programmes

Advances in Small Ruminant Production System

A training program was sponsored by MANAGE Hyderabad, held on 21st February 2018 (Module II) at the institute with the theme to transform the Agriculture Extension Personnel into specialist- Certified Livestock Advisor (Sheep). Dr Krishnappa B. (Course-coordinator) informed that training batch comprises of 22 Assistant Directors and Veterinary Surgeons from 5 states (Telangana, Andhra Pradesh, Himachal Pradesh, Rajasthan and Uttarakhand) attended the training.



Training cum Exposure Visit of Odisha Veterinary Officers at SRRC, Mannavanur

A team of ten Veterinary Officers from Govt. of Odisha have visited SRRC, Mannavanur (ICAR-CSWRI) for four days training cum exposure visit on "Recent Trends and Applications in sheep husbandry" from 20-23 Feb, 2018.

Training on Advances on Sheep and Goat Production

The three days short-term training programme was organized by institute from 6 to 8 March, 2018. It was sponsored by Project Director, ATMA, Pauri Garhwal, Uttarakhand. Total 40 farmers (12 woman and 28 men) participated in the programme.

Training on Advances on sheep production

The five days short-term training programme was organized by institute from 13 to 17 March, 2018. It was sponsored by Central Wool Development Board, Jodhpur. Total 50 farmers (6 women and 44 men) participated.



Visitors

Deputy Director General (Animal Sciences), ICAR, visited ARC (ICAR-CSWRI), Bikaner

Dr J.K. Jena, Deputy Director General (Animal Sciences), ICAR, New Delhi and Dr A. K. Tomar, Director ICAR-CSWRI visited Arid Region Campus of ICAR-CSWRI Bikaner on 19 January 2018. Dr N.V. Patil, Director NRCC Bikaner and Dr B.N. Tripathi, Director NRCE, Hisar also present during his visit. The DDG inaugurated newly developed museum at centre.



Training on Integrated Farming System

The two days training programme from 16-17 March, 2018 was sponsored by ICAR sponsored Farmers FIRST programme. Total 25 farmers participated.

Training on Advances on sheep, goat and rabbit production

The five days training was sponsored by Project Directorate, ATMA, SwaiMadhopur, Rajasthan. Total 30 farmers participated.

ICAR sponsored short course on Molecular techniques in sheep reproduction

A ten days ICAR sponsored short course was organized in the institute from 14-23 May 2018. Dr Rajani Paul was the course director.

Training on Natural Dyeing

Fifteen participants including, M.Sc., Ph.D. students and faculty members from universities participated in the training from 22-28 March, 2018 at the institute. The training was self-sponsored and fee and other expenses were born by the participants.



Shri Suresh Chandel, governing body member, ICAR visited the institute on 24 March, 2018. He appreciated the scientists for their research contribution for improving livelihood of sheep and goat farmers.



Prof. K.K. Saharia Member (ICAR-GB) visited ARC, Bikaner on 19 March, 2018

Sh. Chhabilendra Roul, Spicial Secretary (DARE) & Secretary (ICAR) visited the ICAR-SRRC, Mannavanur on 28 Dec, 2017.

International Team Visited ICAR-CSWRI

The OIE-PVS Evaluation Team constituted of Dr Susanne Munstermann (Germany), Dr H. Batho (France) Dr A. Mishra (Gov. of India) and Dr Sushmit (Gov. of Rajasthan) visited ICAR-CSWRI, Avikanagar on 16-04-2018. Dr Batho and Dr Susanne interacted with farmers and asked about outbreaks, prevention and control of the diseases. They asked about vaccination, deworming schedule and other Veterinary practices followed at farmer's door.



अन्तर्राष्ट्रीय योग दिवस एवं कार्यशाला का आयोजन

संस्थान में 21 जून 2018 को अन्तर्राष्ट्रीय योग दिवस का आयोजन किया गया। योग सत्र डेढ़ घण्टे का सुबह प्रातः 6 बजे आयोजित किया गया था जिसमें संस्थान के कर्मचारियों एवं उनके परिवार के सदस्यों, स्कूल के अध्यापकों एवं बच्चों ने भाग लिया। योग सत्र में व्यायाम, विभिन्न "आसन" सामान्य योग प्रोटोकॉल के अन्तर्गत अभ्यास किये गये तथा प्रणायाम के साथ इसका समापन किया गया। इससे पहले एक "योग शिविर" का आयोजन दिनांक 15-20 जून तक प्रातः 6 बजे किया गया तथा योग पर आर्ट ऑफ लिविंग समझना, जानना तथा ग्रहण करने पर एक कार्यशाला का भी आयोजन संस्थान में किया गया था। इसमें योग की दिनचर्या एवं सम्पूर्ण जीवन के बारे में बताया गया तथा सामान्य योग प्रोटोकॉल के अन्तर्गत प्रतिभागियों को सम्मानित किया गया। संस्थान के शुष्क अनुसंधान केन्द्र, बीकानेर, एन. टी.आर.एस. गड़सा और एस.आर.आर.सी. मन्नावनूर पर भी इस प्रकार के कार्यक्रमों का आयोजन किया गया। डॉ. अरुण कुमार तोमर एस. आर.आर.सी. मन्नावनूर में योग दिवस पर सम्मिलित हुए।



Meetings

RAC Meeting (9-10 April, 2018)

Dr Prabhakar Rao (Chairman RAC), Dr R.S. Gandhi (ADG AP&B), Dr Lal Krishna (Member), Dr Avtar Singh (Member), Dr R.S. Sahota (Member), Dr Arun Kumar Tomar (Director, ICAR-CSWRI) and Dr A.K. Shinde (Member Secretary), Head of the Divisions and Regional Stations attended the meeting.

IRC Meeting (26-27 April, 2018)

Dr Arun Kumar Tomar chaired the meeting. Dr Vineet Bhasin (PS, ICAR), Dr Rajiv Gulyani (Retired PS), Head of the Divisions and Regional Stations and all the scientist of institute attended the meeting.



राजभाषा कार्यान्वयन

गृह मंत्रालय, राजभाषा विभाग के केन्द्रीय हिन्दी प्रशिक्षण संस्थान, नई दिल्ली के तत्वावधान में दिनांक 15.02.2018 को संस्थान में एक दिवसीय हिन्दी कार्यशाला का आयोजन किया गया। जिसमें श्रीकरन सिंह, सहायक निदेशक नई दिल्ली ने संस्थान के वैज्ञानिकों, अधिकारियों को संबोधन करते हुए राजभाषा अधिनियम 1963, राजभाषा नियम 1967 एवं देवनागरी लिपि का मानकीकरण व गृह मंत्रालय राजभाषा विभाग से प्राप्त वार्षिक कार्यक्रम के अनुरूप हिन्दी के अनुपालन करने पर विस्तृत रूप से व्याख्यान दिया।



Farmer's corner

दूरदर्शन के यात्रा लोग कार्यक्रम के अन्तर्गत किसान चौपाल का आयोजन

दूरदर्शन जयपुर की टीम ने दिनांक 29 जनवरी, 2018 को संस्थान का भ्रमण किया। टीम ने संस्थान के द्वारा फार्मर फर्स्ट कार्यक्रम के अन्तर्गत गोद लिये गये गाँव चौसला का भी भ्रमण किया तथा भेड़ एवं बकरी पालकों के साथ एक वार्तालाप भी किया। इस अवसर पर किसान चौपाल का आयोजन किया गया। लगभग सौ किसान ने इस कार्यक्रम में भाग लेकर वैज्ञानिकों से विचार-विमर्श किया। संस्थान के निदेशक ने संस्थान की मुख्य उपलब्धियों जैसे भेड़ की नई नस्ल अविशान, मेमनों के लिये मेमनाप्राश, भेड़ों को मद में लाने हेतु स्पंज, कृत्रिम गर्भाधान, स्वास्थ्य कलेण्डर, ऊन के उत्पादों आदि के बारे में विस्तृत रूप से जानकारी प्रदान की।



स्वच्छ भारत अभियान

माननीय प्रधानमंत्री जी के आह्वान पर स्वच्छ भारत मिशन के अन्तर्गत परिसर में कार्यरत सभी वैज्ञानिकों, अधिकारियों एवं कर्मचारियों ने प्रति-दिवस अपने कार्यालय कार्यों के अतिरिक्त सफाई कार्य में अपना पूर्ण योगदान दिया। साफ-सफाई के अन्तर्गत सभी वैज्ञानिकों अधिकारियों एवं कर्मचारियों ने अपने सम्बन्धित कार्यालय भवनों प्रयोगशालाएं विभिन्न सैक्टर्स एवं आवासीय कॉलोनी, संस्थान के सम्पूर्ण परिसर में साफ-सफाई का कार्य किया। तथा संस्थान के तीनों उपकेन्द्रों मरू क्षेत्रीय परिसर, बीकानेर, उत्तरी शीतोष्ण केन्द्र, गड़सा एवं दक्षिणी क्षेत्रीय अनुसंधान केन्द्र, मन्नावनूर पर भी साफ-सफाई का कार्य कार्यालय एवं आवासीय परिसर में सम्पन्न किया।

Farmers visited ICAR institutes under farmer FIRST programme

Forty five farmers of Chousala, Dechwas, Arnia and Bassi visited Directorate of Rapeseed-Mustard Research, Bharatpur, CIRG, Makhdoom, IARI, New Delhi from 29-31 Jan, 2018. Farmers were acquainted with new varieties of mustards, goat farming, new techniques in agriculture etc.

Dumba sold for Rs. 75000

At the institute, Dumba sheep sold for Rs. 75000 on 25 May, 2018 to Mr M.J. Khan, Breeding farm SK Ventures, Kotda, Udaipur (Rajasthan)



डॉ. राजेन्द्र प्रसाद पुरस्कार 2016

भारतीय कृषि अनुसंधान परिषद् के 89 स्थापना दिवस पर माननीय श्री राधामोहन सिंह जी, केन्द्रीय कृषि एवं किसान कल्याण मंत्री द्वारा डॉ. अरुण कुमार एवं सहयोगियों को डॉ. राजेन्द्र प्रसाद पुरस्कार 2016 हिन्दी तकनीकी पुस्तक "उन्नत भेड़ पालन" के लिए दिया गया।

