

Institutional updates

ICAR, Government of India provide ILRI regional office space

The International Livestock Research Institute (ILRI), initially opened as a liaison office in South Asia in 2004 and the ILRI office in India was elevated to branch office status in 2011. However, ILRI office either housed in a rented premises or sharing space with other CGIAR centres.

On 20 June 2019, the Department of Agricultural Research and Education (DARE) and Indian Council of Agricultural Research (ICAR) allocates ILRI office space in the National Agricultural Science Complex (NASC), Pusa, New Delhi, which also hosts other CGIAR centres.

An agreement signed on 6 October 2020 by Habibar Rahman, ILRI's regional representative in South Asia, and Girish Bhat, deputy secretary of ICAR, formalized the new status of the ILRI office. The agreement, which is for an initial 15 years, not only enables ILRI to have an officially recognized presence in India but also to carry out activities independently of other CGIAR centres. This change in status also paves the way for ILRI to increase its work and visibility in India and South Asia.

ILRI at the FAO Regional Conference for Asia and the Pacific

From 1-4 September 2020, ILRI's Habibar Rahman attended the thirty-fifth session of the Food and Agriculture Organization of the United Nations (FAO) Regional Conference for Asia and the Pacific (APRC). The virtual conference had two parts: the senior officers meeting from 1-2 September and ministerial-level meeting from 3-4 September 2020. Representatives from 41 member nations participated in the conference. Representatives of 9 inter-governmental organizations and 34 International and non-governmental organizations attended as observers. Representatives of 13 sister United Nations organizations and specialized

The conference focused on agriculture but had minimal discussions on livestock sector development issues. The thirty-sixth session of the APRC will be held at Dhaka, the capital of Bangladesh in 2022.

ICAR-CGIAR review meeting assesses progress of collaborative projects

In a December 2020 meeting, representatives of ICAR and ILRI reviewed the progress of collaborative projects between the two organizations. Habibar Rahman, who is principal investigator of the four ICAR-ILRI projects (on backyard poultry genomics, animal disease economics, methane emission and mitigation, and feed and fodder) presented key achievements and progress of the projects in 2020.

Bhupendra Nath Tripathi, deputy director general of Animal Sciences, ICAR, praised the achievements of the four projects and called for more collaboration between the two organizations.

Welcome note

Welcome to the sixth edition of ILRI's South Asia newsletter!

This newsletter shares key updates of ILRI's activities in South Asia with stakeholders, partners and donors.

I hope you will enjoy reading it and thank you for your strong support to ILRI South Asia.

Learn more about our work at www.asia.ilri.org. If you have any feedback please contact ilri-delhi@cgiar.org

Habibar Rahman
Regional representative for ILRI South Asia



Farmer Ratan Lal Chaudry milks his cow whose name is Dhamni in Nagar village, Tonk District, Rajasthan, India (photo credit: ILRI/Stevie Mann).

Project news

USAID renews Innovation Lab for Livestock Systems activities in Nepal

The United States Agency for International Development (USAID) has awarded a grant to the University of Florida to continue research on livestock production and consumption of animal-sourced foods (ASFs) in five countries including Nepal. The Innovation Lab for Livestock Systems is one of the 26 innovation labs funded by the Feed the Future initiative of the US government. The Innovation Lab for Livestock Systems is implemented by the University of Florida, ILRI and other partners to help poor farmers produce more meat, dairy and eggs; to do so more efficiently using innovative technologies and environmentally sustainable practices; and to increase consumption of ASFs among children and vulnerable populations.

In Asia, about 10 innovations were implemented with national partners in the first phase (2015-20) of the project. In the second phase (2020-25), the Innovation Lab for Livestock Systems will build on the successes of the first phase, which include improved livestock productivity, reduced animal disease prevalence, empowered women, improved food safety, increased incomes, and improved nutrition of mothers and infants.



A dairy farmer in south-central Nepal (photo credit: ILRI/Susan MacMillan).

Breed signature of Indian native chicken deciphered under ILRI–ICAR collaborative project on backyard poultry genomics

India has 19 recognized chicken breeds, which harbour one of the home tracts of the wild Red Jungle fowl from

which all the modern-day chicken breeds are believed to have evolved. A collaborative effort by ICAR and ILRI has been exploring the breed signature of Indian native chickens to explore their traceability and forensic application. A total of five Indian native chicken breeds (Aseel, Ghagus, Nicobari, Kadaknath and Hansli) and two synthetic high-yielding exotic chickens (Broiler and Layer types) were analysed in research that sequenced the whole genome of 10 birds of each breed under the Illumina Novaseq Next-generation Sequencing (NGS) platform at 10X coverage.

The total filtered Single Nucleotide Polymorphisms (SNPs) identified among the breeds ranged from 1.8 to 2.5 million. The breed specific unique SNPs were 147, 3, 50, 386 and 33 in Aseel, Ghagus, Nicobari, Kadaknath and Hansli breeds, respectively. These SNPs were distributed across the chromosomes. The combination of the breed specific SNPs determines the breed signature of the specific breed. This unique SNP signature of the chicken breeds will be useful for accurate identification of specific breeds, even without looking at the phenotypes of the breeds. In future, these breed signatures will be used in the development of native chicken-specific SNP chips.



Male and female birds of the Nicobari chicken breed (photo credit: ILRI).

Evaluation of 'Harit Dhara' as an anti-methanogenic supplement in sheep

India has 192, 109, 74 and 148 million cattle, buffalo, sheep and goats, respectively. Approximately 85% of the total livestock population in the country is owned by landless and marginal farmers. Methane, a potent greenhouse gas (GHG) contributes approximately 30% to the global GHG emissions. In addition to global warming, methane emission from livestock accounts for a substantial energy loss (6-12%).

'Harit Dhara,' an anti-methanogenic supplement developed by the ICAR National Institute of Animal Nutrition and Physiology (NIANP) in Bengaluru, was tested under the ILRI-ICAR collaborative project on methane emission and its mitigation in sheep to assess the supplement's capacity to reduce methane emissions. Results from the in vivo study revealed a significant ($p < 0.001$) reduction (21.7%) in enteric methane emission from supplementation of Harit Dhara at 5% level in finger millet straw and concentrate-based animal diets. There was no adverse impact of the anti-methanogenic supplement on the feed intake, nutrient digestibility and blood biochemical profile. Using Harit Dhara as a supplement in the feed significantly reduced total protozoa, *Entodiniomorphs* and *Holotrichs* population in the rumen of sheep.

India's Odisha state starts work on a livestock master plan

In 2020, the Indian state of Odisha officially rolled out the process of designing a livestock master plan (LMP) with the support of ILRI. The process started on 22 October with a virtual inception meeting. R Raghu Prasad, the commissioner-cum-secretary of the Fisheries and Animal Resources Department (FARD) of the Government of Odisha praised the initiative saying the LMP would help to leverage the tremendous opportunities for growth in the sector. ILRI will give technical support to the livestock experts and planning staff of FARD to develop a quantitative, evidenced-based, long-term livestock sector strategy and a medium-term investment plan.

The implementation of this plan will lead to the modernization of the state's livestock sector and help achieve the state government's societal development goals. It is expected that the Odisha LMP will attract substantial and better targeted livestock sector investments from the finance ministry, development partners and private sector investors. The LMP process will accomplish this by identifying needed investments and policies to develop the livestock sector and carrying out foresight or ex-ante investment analysis to document and demonstrate the potential returns on investment of combined livestock technologies and policies that increase the livestock sector's contribution to poverty reduction, food security while taking gender, equity, and other social factors into account. The preparation of the LMP with short-term and long-term implementation plans is scheduled to be completed by mid-2021.



Goat lives and livelihoods in Mayurbhanj, Odisha, India (photo credit: ILRI/Susan MacMillan).

APART project improves biosecurity in government pig breeding farms in Assam

The absence of biosecurity measures in nearly all the pig breeding farms under the Animal Husbandry and Veterinary Department of the government of Assam makes them vulnerable to various infectious and transmissible diseases including African swine fever (ASF) which has no treatment and no vaccine. Diseases such as ASF, classical swine fever, foot-and-mouth disease, and porcine reproductive and respiratory syndrome can be prevented only by following biosecurity measures. In field visits by ILRI and a team from the Animal Husbandry and Veterinary Department to five government pig breeding farms (Rani, Khanapara, Sonapur, Diphu and the Assam Livestock and Poultry Corporation) sought to help improve the biosecurity infrastructure in these farms with an aim of minimizing the risks of these diseases.



Foundation laying of biosecurity provision at a government pig breeding farm in Diphu, Assam (photo credit: ILRI).

Consultative meeting on new feed and fodder technologies

ILRI hosted a consultative meeting to discuss new feed and fodder technologies on 6 October 2020 at the Strategic International Partnership Centre (SIPC) in Guwahati, Assam. The meeting was attended by the representatives from the Animal Husbandry and Veterinary Department, Dairy Development Department, Agriculture Department, Fishery Department, Assam Agricultural University (AAU) Jorhat, AAU Khanapara Campus, the International Rice Research Institute (IRRI) and the Assam Rural Infrastructure and Agricultural Services (ARIAS) Society.

ILRI scientist Varjakshapanicker Padmakumar presented findings from research on new livestock feed technologies. The meeting also discussed the results from an analysis of quality of paddy straw, use of the near-infrared spectroscopy (NIRS) platform for testing of feed samples, low-cost feeding, commercial Total Mixed Ration (TMR) feed and silage making, and promotion of new fodder varieties.

Capacity development

Strengthening capacity to tackle methane emissions from livestock in India

More than 40 Indian livestock experts who are working to reduce GHG emission from the livestock sector benefited from a Nov 2020 training workshop on assessing and reducing the impact methane emissions from cattle in the country.

Jointly organized by ILRI and ICAR, the 'Livestock methane emission: assessment, impact, and amelioration strategies,' virtual workshop was hosted at ICAR's National Institute of Animal Nutrition and Physiology (NIANP), Bengaluru, in early November.

Participants included researchers from various ICAR institutes, state animal science universities, state veterinary colleges, ILRI and NIANP. The training included more than 20 lectures more than half of which were by international experts including Theun Vellinga of Wageningen University and Research, and Jan Dijkstra of Wageningen Livestock Research, the Netherlands; Robin C Anderson of the United States Department of Agriculture; Richard Kohn of the University of Maryland and Ermias Kebreab of the University of California. Chris McSweeney of the Commonwealth Scientific and Industrial Research Organisation; Yutaka Uyeno of Shinshu University, Japan; Metha Wanapat of Khon Kaen University, Thailand. Karen Beauchemin of Agri-Food, Canada and Polly Ericksen from ILRI also spoke at the nine-day training workshop.

Key topics at the training workshop included: Methanogenesis and hydrogenotrophic in ruminant livestock; feeding approaches for reducing enteric methane emissions; techniques for quantifying enteric methane emissions from livestock; modelling of methane emissions in cattle; nitro compounds-based technologies combined with hyper-nitrite reducing bacterium for methane reduction; strategies for enteric methane amelioration from livestock; thermodynamic and kinetic control of rumen fermentation contributing to methanogenesis; and application of R-Programming in biological sciences.

Training workshop for mentoring government pig breeding farms in Assam

About 10 pig breeding farm managers in Assam State were trained on how to keep good quality breeding stock, keep proper records, follow recommended feeding, healthcare and management practices, and create and maintain infrastructure for efficient farm operation under the Assam Agribusiness and Rural Transformation Project (APART). The training was held in June 2020 by the Animal Health and Veterinary Department at the Regional Institute of Livestock Entrepreneurship Management (RILEM), Rani, Kamrup, Assam. The resource persons at the training include ILRI scientist Ram Deka, Madan Tamuli, retired scientist from the National Research Centre on Pigs, and Naba Kumar Das, a consultant with ILRI. The training aimed to improve the supply of quality germplasm from government pig farms to large commercial and smallholder pig farmers to boost pig productivity in the state.



The International Livestock Research Institute (ILRI) works to improve food and nutritional security and reduce poverty in developing countries through research for efficient, safe and sustainable use of livestock. Co-hosted by Kenya and Ethiopia, it has regional or country offices and projects in East, South and Southeast Asia as well as Central, East, Southern and West Africa. ilri.org



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ILRI thanks all donors that globally support its work through their contributions to the [CGIAR Trust Fund](#).

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February 2021