



Director's Message

Dear Readers,

It gives me immense pleasure to bring out the 7th volume of the Institute News letter –“Swine News”. We all know that with the changing scenario of the world agriculture, its allied activities including pig farming is bound to change and pig producers have to face many challenges in order to keep their enterprise sustainable, farmers and eco-friendly as well as market competitive. In India too, with the increasing demand for pork and pork products particularly in the tribal dominated areas of the country most particularly in the North eastern part of the country, there is an increase pressure on producers to produce more number of pigs so that the gap between demand and supply can be minimized to some extent. As the enhanced pig production is governed by several factors, the researchers have to find out the ways so that the technologies developed by them are user friendly, cost effective and are readily accepted by the target groups viz. pig rearers of the country. In this context, ICAR-NRC on Pig has a pivotal role to play and some of the remarkable works carried out during the reported period is reflected in this news letter. In addition, meetings, celebrations, trainings conducted etc. during the period reported upon are highlighted briefly in this news letter.



SECTORAL NEWS

Lysozyme could be antibiotic alternative for pigs

Studies by US Department of Agriculture (USDA) scientists have found that a naturally occurring antimicrobial enzyme currently being used in food and beverage applications may also prove useful as an antibiotic alternative for improved feed efficiency and growth in pigs. William Oliver, a physiologist at USDA's Agricultural Research Service in Clay Center, Nebraska and his colleagues began investigating lysozyme, which is used in food and beverage applications such as cheese- and wine-making. In a recently published trial they compared the growth rates and weight gains of two groups of 600 piglets placed on one of 3 diet regimens: (i) corn/soybean meal and specialty protein, (ii) the same as (i) with lysozyme added and (iii) containing the antibiotics chlortetracycline and tiamulin hydrogen fumarate rather than the lysozyme. The groups were also kept in weaning pens that had either been disinfected or left uncleaned since the last group of animals had occupied them. The latter was done to stimulate chronic, or long-term, immune activity, including the production of cytokines, which divert nutrients away from growth in swine and result in slower weight gain. The results showed that piglets on lysozyme- or antibiotics-treated feeds grew approximately 12% faster than untreated pigs—even in uncleaned pens, suggesting that the treatments successfully ameliorated the effects of indirect immune challenge in the animals. Swine producers are currently under pressure to eliminate sub-therapeutic antibiotic use throughout the production cycle. Finding safe and effective alternatives to traditional antibiotics will give swine producers viable options in the event of removal of growth promoting antibiotics.

Research Highlights

Documentation of pig population of Assam

Under a Network Project entitled “ Animal Genetic Resources for characterization of pig population of Assam”, funded by ICAR- NBAGR, a study was undertaken for documentation of pig population of Assam. The survey covered three districts of Assam comprising of four block of each district, five villages of each block and sixty farm family of each villages. Survey of more than 1000 farm family of *Dhemaji* district of upper Assam has been completed during the reported period. The survey included

available pig genetic resources and their (re)productive performances, feeding, housing and slaughter and marketing practices.

It was observed that different community people viz. Missing, Bodo, Nepali, Assamese, Hajong and Bengali are the main pig rearers of *Dhemaji* District. Mostly the animals are of local origin. Assam Local (Doom) pigs are the major contributor of pig population of the area comprising of almost 75% of pig population. However, few Hampshire cross pigs are also available in the locality. In very rare cases Duroc cross pigs are available. Average litter size at birth and weaning was recorded to be 8 and 7, respectively. Average weight at birth and weaning was 250 gm and 5.5 kg, respectively. Adult body weight was 47 Kg. Dressing percentage of carcass was recorded to be 72-75%.



Local pig (Doom) available in different villages of *Dhemaji* District

Production of quality germ plasm

During the reported period, the institute has produced 303 numbers of quality pig germplasm and distributed 199 to farmers. Besides, for horizontal propagation of quality germplasm production at the farmers' field, 467 numbers of artificial inseminations were successfully conducted at the farmers' field.

New stain and staining technique for staining of boar spermatozoa

One new stain, the modification of Nigrosin-eosin-giemsa has been developed and the staining technique has been simplified with least time preparation clear identification of live sperms with normal acrosomes.

New additive for boar semen preservation

One herbal compound has been prepared for improvement of semen preservability without the presence of antibiotic. Pilot insemination trials have been started and further investigation on the compound is being carried out in respect of semen preservation.

Transfer of Liquid Boar Semen to Ludhiana, Punjab

A progressive farmer, Sri Sukhwinder Singh Gerwal from Kotli village, Ludhiana, Punjab had procured forty doses of preserved semen of Duroc boars for insemination to his pig in his own farm in the month of March and April, 2015. In batch of ten Large White Yorkshire sows separately were synchronized for estrus injecting 300 iu of e-CG and 150 iu of HCG in combination that resulted 70% response. Six of the sows became pregnant from the synchronized groups.

Thermal insulation properties of pig hair fibre

In order to know the insulating properties of the pig hair fibre a study was undertaken. The thermal insulation of the fibre was measured using a custom made thermal insulation instrument at ICAR-NIRJAFT, Kolkata. Twenty-five grams of the fibres were spread with a thickness of 4.5mm between two discs of the custom developed instrument to determine the thermal resistance (R) values. The thermal conductivity (K) values were calculated from the R-values. The mean thermal insulation and conductivity values of pig hair fibre was $0.068 \pm 0.004 \text{ m}^2\text{K/W}$ (range 0.04 to 0.14) and $0.029 \pm 0.003 \text{ W/m/K}$ (range 0.026 and 0.031) respectively. No significant variation in thermal insulation and conductivity of hair fibres with respect to breed were observed during the study. The thermal insulation values of pig hair fibre observed in the present study are similar to wool fibre. Thermal conductivity of pig hair fibre was comparable to values reported for wool, cow hair, elephant hair, horse and rabbit hair. A thermal insulation value, similar to wool fibre suggests that pig hair can find application in places where natural fibres are utilised for insulation. However, the inherent variability of the natural fibres in the physical properties needs adequate consideration during preparation of products. Large sample studies are required to further understand thermal insulation properties for development of products from pig hair fibre and role on animal adaptability.

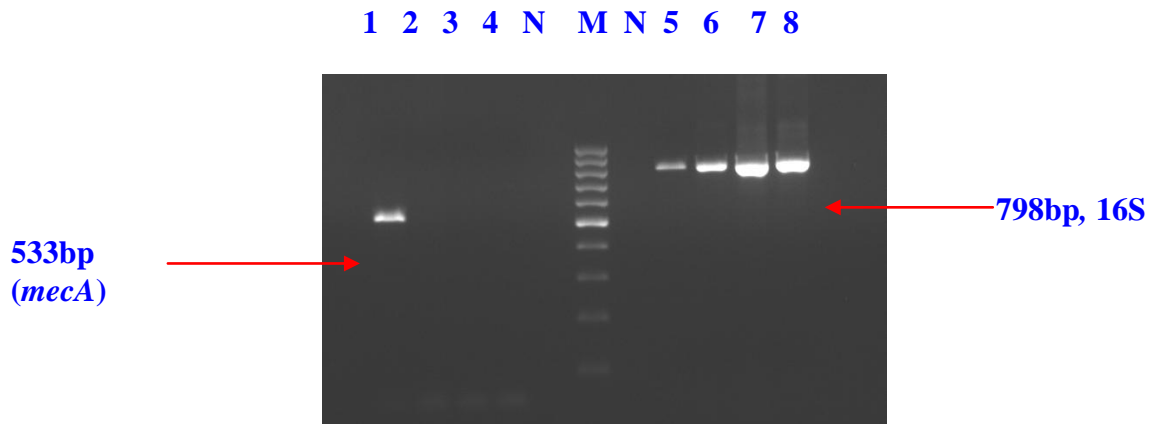
ICAR-NRC on Pig developed guidelines for export of fresh pork and pork products from India

The aforesaid project has been undertaken in collaboration with Agricultural and Processed Food Products Export Development Authority (APEDA) to develop guidelines for export of fresh pork and pork products from India. Accordingly, a draft

report on 'Export of Fresh Pork (Chilled/ Frozen) and Processed Pork Products (Quality Control and Inspection) Rules, 2015' has been prepared and submitted to APEDA. The report include the following points viz. responsibilities of APEDA, responsibilities of establishments, minimum requirements for an approved pig abattoir and pork processing plant, code of hygienic practice for fresh pork, specifications for pork, method of sampling and analysis for fresh (chilled/frozen) pork, specifications for microbiological standards of fresh (chilled/frozen) pork, sampling of canned processed pork products, sampling of chilled/frozen processed pork products, specifications for microbiological standards for processed pork products, specifications for cooked cured ham, specifications for cooked cured pork shoulder, specifications for cooked cured chopped pork, specifications for pork luncheon meat, specifications for canned ham, minced; specifications for pork sausages, canned; specifications for bacon rashers, canned; specifications for ham, canned; specifications for smoked bacon, specifications for pork sausages, fresh; pesticide residues in raw (chilled/frozen) meat, veterinary drug residues in raw (chilled / frozen) meat, pork primal diagram, side primal diagram- with respective bone demarcation for portioning, pig carcass- recommended sites for measuring the quality parameters, primal & sub primal cuts of pork, standard edible offals and inspection visit proforma/ checklist.

Standardization of PCR for rapid detection of methicillin-resistant *Staphylococcus aureus* (MRSA) in pigs

Presence of *S. aureus* and MRSA in food-producing animals and retail meat has increased the concern about the exposure of humans through the food chain, and hence there is a need to use rapid method for its quick detection. Several studies strongly suggest that people working with livestock are at a potential risk of becoming MRSA carriers and hence are at an increased risk of infections caused by MRSA. We have standardized the PCR protocol for rapid detection of MRSA from pigs and we used this protocol for routine screening of pigs managed under both scavenging and intensive system of management for the presence of MRSA.



PCR detection of methicillin-resistant *S. aureus* from pig. Lane M: marker, 100-bp DNA ladder; lane 1 & 5: test sample 1 (positive for *mecA* gene); lane 2 & 6: test sample 2; lane 3 & 7: test sample 3, lane 4 & 8: test sample 4 and N: negative control (without template)

Institutional News

Meeting and Other Activities

Celebration of Republic Day

The Institute has celebrated the 66th Republic Day on 26th January, 2015 where all the staff members of the Institute actively participated.



Celebrations of Republic Day at the Institute

Training of farmers on pig husbandry

Institute has conducted a three days training programme on 'scientific pig husbandry practices' for 18 numbers of farmers from Udalguri District during 23rd to 25th February, 2015.

Institute Management Committee meeting

XIIth Institute Management Committee meeting of the institute was held on 27th February, 2015. under the Chairmanship of the Director, NRC on Pig. The other members present in the meeting were the Director, Dept. of Vety. & AH, Govt. of Assam, Dr. A. K. Chakraborty, Director of Research (Vety), CVSc, AAU, Khanapara, Dr. A. K. Pattanayak, Head & Principal Scientist (Plant Breeding), ICAR RC for NEH Region, Barapani, Dr. Mohan, N.H., Sr. Scientist, ICAR-NRC on Pig, Rani, Guwahati, Dr. P. Chakravarty, AO I/C, ICAR-NRC on Pig, Rani, Guwahati, and Shri P. Ghosh, Sr. F & AO, ICAR RC for NEH Region, Barapani. Various agenda items were discussed in detail and the suggestions put forward by the committee members were incorporated in the proceedings of the meeting.

Promotion of scientific aptitude through exposure training

Three days training *cum* outreach programme on “promoting scientific aptitude through exposure training” was conducted under DBT sponsored Institute Biotech Hub (IBH) programme on 9-11th March, 2015. Approximately 132 students and teachers of three schools namely Rani High School, Rani, Guwahati, Dakshin Kamrup Bidyapith High School, Moniari Tiniali, Guwahati and Uppardani High School, Rajapani Chanda, Rani, Guwahati were given an exposure visit to laboratory, farm and slaughter house facility of the institute for increasing scientific aptitude.



Exposure training organized at the Institute

Interactive workshop on ‘Pig-cum-fish farming in North-east India

Institute has organized an interactive workshop on ‘Pig-cum-fish farming in North-east India’ in collaboration with ICAR-CIFRI, Regional Centre, Guwahati on 24th March, 2015. More than sixty-five farmers along with scientists, entrepreneurs, representatives from NABARD and National Fisheries Development Board (NFDB) participated in the workshop. Dr. K.K. Baruah, OSD and Dean I/C, College of Fisheries, Raha was the Chief Guest of the event. Workshop covered all aspects of pig-cum-fish farming including pig and fish husbandry practices, fish breeding and quality seed production, water quality management, pig breeding, health, Government-sponsored subsidy schemes in pig farming and fisheries development.



Workshop on ‘Pig-cum-fish farming in North-east India held at the institute

Participation in stakeholder’s consultation on piggery projects

The Director and Scientist of the institute participated in the stakeholder’s consultation on piggery projects in NE States Chaired by Secretary, Ministry of DoNER, Govt. of India on 24th April, 2015 at NEDFi House, Guwahati.

Celebration of National Technology Day

National Technology Day was celebrated at the institute on 11th May, 2015. A lecture on ‘Comparative functional anatomy of porcine and human cardio vascular system’ was delivered by Dr. Mohan N.H., Senior Scientist during the said occasion.

Celebration of World Environment Day

World Environment Day (WED) is the most globally celebrated day for positive environmental action. The Institute has celebrated WED on 5th June, 2015. In order to mark the day several tree saplings were planted on the campus on that day



Planting of tree sapling in the campus on World Environment Day

Organization of Workshop for enhancing export of meat and meat products

Institute has organized a workshop on 'Enhancing export of meat and meat products from North Eastern India' on 25th June, 2015, in collaboration with Agricultural and Processed Food Products Export Development Authority (APEDA) and over 80 participants attended the programme. Shri. U.K. Vats, Deputy General Manager, APEDA was the Chief Guest and Dr. S.K. Ranjan, consultant of APEDA & Dr. K.K. Baruah, Dean, College of Fisheries, Raha were the Guest of Honour of the workshop. Resource persons from Food Safety and Standards Authority of India, International Livestock Research Institute, College of Veterinary Science, Khanapara and Federation of Indian Export Organizations were participated in the workshop.



Organization of workshop at the Institute

Signing of non-exclusive Memorandum of Understanding (MoU) for popularization of value added pork products

The state of the art R&D pork processing plant has refined and standardized the technologies for processing an array of emulsion based value added pork products. Due to its keen desire to popularize the developed technologies and to establish close linkage with small scale entrepreneurs who are willing to take up these improvised technologies, the Institute has signed a non-exclusive Memorandum of Understanding (MoU) with M/s Sayuri Farms, Guwahati to establish a Public-Private-Partnership (PPP) during the period under report. Further the institute has already signed non-exclusive MoU with M/s Arohan Foods Pvt. Ltd. Guwahati in this regard.



Distinguished Visitors

❖ Shri. Christophor Jackson, Export Manager, British Pig Association and Shri. Anthony Cooper, First Secretary, UK Trade and Investment-India (7th February); Dr. V.K. Taneja, Former DDG (AS) (11th February) and Dr. M.I. Meitei, Advisor, Agriculture & Allied, Ministry of DoNER (18th & 19th February) visited the institute and interacted with the scientists.



- ❖ Hon'ble Minister of State, MSME, Govt. of India, Shri. Giriraj Singh visited the Institute on 6th February, 2015. He took stock of activities going on at the Institute and interacted with the Scientists and other staffs.
- ❖ Mrs. Sunita Rai, Assistant General Manager, APEDA visited the institute on 30th April, 2015 and interacted with the Director and Scientists.



- ❖ Shri. Mandeep Singh Sandhu, IAS, Addl. Chief Secretary to Govt. of Punjab; Dr. H.S. Sandha, Director, AHD, Punjab and Dr. Premkumar Uppal, Advisor to Govt. of Punjab visited the institute on 19th June, 2015 and interacted with the scientists for the development of piggery in Punjab in collaboration with the ICAR-NRC on Pig, Guwahati .



- ❖ Hon'ble Minister (Veterinary & Animal Husbandry, Commerce & Industries, Sericulture), Govt. of Manipur Shri. Govindas Konthoujam along with other officials of the Veterinary and Animal Husbandry Department, Manipur visited the institute on 23rd June, 2015 and interacted with the Director and Scientists of the institute on the development of piggery in Manipur.