

Brief description of significant achievements of ICAR-National Research Centre on Pig, Rani, Guwahati

The ICAR-National Research Centre on Pig has been providing excellent services to farmers, extension agents, lawmakers, and companies engaged in pig farming and pork processing for 22 illustrious years. Since its founding, the institute, along with its affiliated Krishi Vigyan Kendra (KVK) and the 18 centers of the All India Coordinated Research Project on Pig, which are dispersed across the country, has been sincerely working to promote scientific pig production and postharvest management in the country. The Institute employed 20 scientists, 9 technical professionals, and 7 administrative and accounting staffs. The Institute's Scientists and staffs diligently strived to meet a number of research and extension goals outlined in the six main programs in accordance with the mission. Under the auspices of the "Indian Council of Agricultural Research," ICAR-NRCP is currently regarded as one of the most active organizations. It is also an ISO/IEC 17025:2017 Accredited and ISO 9001:2015 Certified Institution.

Conservation and genetic improvement of pigs

In order to uncover genome-wide selection signatures, the genotyping of Doom (28) and Ghoongroo (28) along with the Mali (14), Manipuri black (12) and Agonda Goan (14) breeds were conducted. The signature of selection region within Doom pig was identified on 21 regions on SSC9, SSC15, SSC14, SSC13, SSC7, SSC3 and SSC6 with iHS value more than 3. The strong selection signals were detected in 3 regions of SSA1, 9 regions of SSA13, 18 regions of SSA18, 1 region each in SSA10, SSA5, SSA6, SSA9 and SSA15 in Ghoongroo breed. The positive selection for doom pig was observed in the 5 regions in SSA2. A controlled, non-stressful environment was established for image acquisition, utilizing both mobile phone and DSLR cameras across various age cohorts. Facial feature extraction was achieved through the application of Local Binary Patterns Histograms (LBPH), Histograms of Oriented Gradients (HOG), and Principal Component Analysis (PCA).

In order to develop a traceable value chain for safe pork in the north eastern region of India, a comprehensive dataset of approximately 25,000 facial images was acquired over a 12-month period from 30 Ghungroo pigs of diverse post-weaning ages at the ICAR-Indian Veterinary Research Institute, Eastern Regional Station Animal Farm, Kalyani, West Bengal. A supplementary dataset of 12 images was obtained from the ICAR-National Research Centre on Pig. A mobile application was developed for the automated classification of porcine breeds, employing deep learning methodologies. Further, the molecular mechanisms of African swine fever virus (ASFV) resistance in porcine subjects, with a specific focus on differentially expressed genes within indigenous germplasm. An in-house developed PCR and qPCR assay was utilized for ASFV detection in clinically suspected animals.

Improvement in pig farm management practices

Association of farrowing and piglet traits vis-a-vis colostrum characteristics with neonatal performance in pigs was studied. The low colostrum intake group consumed 226.0 ± 3.1 g of

colostrum, while the high colostrum intake group consumed 288.3 ± 3.4 g. However, when normalized to birth weight, the colostrum intake per kilogram of birth weight was higher in the low group compared to the high group. The birth weights of the two groups also differed significantly ($P<0.01$), with the low colostrum intake group weighing 0.9 ± 0.02 kg and the high colostrum intake group weighing 1.2 ± 0.02 kg. This suggests that piglets with higher birth weights tend to consume more colostrum. The water footprint per Kilogram of pig feed was assessed, which revealed that the water footprint per kilogram of creep feed, starter, grower, and finishers were 10.3, 50.3, 209.7 and 230.2 litres respectively during the life span of a pig in organised pig production system. The total water footprint for feed during a life cycle was calculated as 500.6 litres. Moreover, Estimation of blue water footprint revealed that 61% of fresh water used for pig farming are used for shed washing, 22% for animal washing and 17% as drinking water in an organised pig farm under Indian conditions.

Improvement of reproductive efficiency in pigs

Efforts were made to establish self-sustaining multiplier units with 42 farmers; however, only 25 units were successfully established. DD Kisan team visited the pig multiplier units and a documentary was prepared. Out of 22 bioresources used in semen preservation, only 6 were selected for the subsequent studies depending on the preliminary trials for the sperm motility upto 96 hours. Briefly, gel free ejaculates were collected by double gloved hand method. Satisfactory semen samples were subjected to evaluation. Different types (I-VI) of nanoparticles from different sources were synthesized in green as per the standard procedure and Zeta size along with potential was estimated. Semen aliquots were extended fortified with different types of nanoparticles and processing as per standard procedures. Using the six bioresources, a cocktail preparation was also prepared that was used in vitro for sperm function testing in extended semen. Extended semen was stored at liquid state. Sperm function parameters, antioxidant status and microbiology were estimated. Studies are being carried out towards establishing self-sustainable cooperative models for propagation of liquid semen artificial insemination and envisaging cryopreservation of spermatozoa in pig. Effect of different concentration of additives on boar spermatozoa at different hours of preservation in Androhep extender at post equilibration and thawing was also assessed. The samples supplemented with 1mM BHT, 3mM GSH and 100 mM trehalose (ATR) showed significantly higher values than the 25MM TAU and control group AND after equilibration, however, the difference between the three groups (BHT, GSH and TRE) were non-significant. At post-thaw, all the treated groups maintained significantly higher membrane integrity than the control group AND. The GSH group (17.85 ± 0.90) maintained the highest percentage of membrane integrity in the boar spermatozoa at post thaw.

Nutritional interventions for profitable pig production

Research works were carried out to synthesize nano-Zn at the laboratory level as an alternative to pharmacological doses of Zn to manage early weaning-associated diarrhea and improve intestinal integrity in piglets. Fresh leaves of plants (neem and curry) were collected and thoroughly washed

3–4 times with running tap water, followed by two washes with double-distilled water. The synthesis of Zn nanoparticles involved the use of 20 ml of the plant extract from the stock solution, which was taken in a 250 ml conical flask and heated with continuous stirring on a magnetic stirrer at 70 °C. The characterization of synthesized nano particles is underway.

Improvement of physiological efficiency in pigs

Physio-genomic responses and MCT profiling of exotic and Indigenous pig breeds in heat stress during different seasons were carried out. The relative changes in the copy number of HSP90 mRNA exhibited a significant upregulation ($P<0.05$) in both the thigh muscle and colon tissue of the Rani pig during the winter and summer seasons when compared to the thermo-neutral control season. Detailed analysis of genome-wide methylation of indigenous (Ghungroo and Mali) and exotic (Hampshire and Large White Yorkshire) was conducted. Out of 29.27 million CpGs, identified, 68.6, 13.9, 6.1 and 11.3% belonged to high, medium, low-medium and low methylation category. An investigation was conducted to identify the olfactory genes proteins in the porcine genome based on the whole genome sequencing data generated by ICAR-NRC on Pig. The transcriptome data was extracted from the genome data of Ghungroo, LWY, Mali and Hampshire. The study identified 131 genes, mostly coding for various proteins of olfactory receptor family, olfactomedins, lipocalins, retinol binding proteins etc. Additionally, global transcriptomic changes in the porcine oviduct after ovulation and identification of the differentially expressed genes (DEGs) and signaling pathways were explored. The study revealed modulatory factors associated with the ampullary physiology during early embryonic development, which may influence fertility and litter size in pigs.

Further, development of myostatin knock out pigs is in progress towards production of broiler pig using CRISPR technology. The SgRNA were synthetized by in vitro transcription using standard methodology and the guide RNA (gRNA) DNA template was PCR assembled. The cryopreserved fibroblast cells were thawed and seeded in 96 well plate and transfection was conducted with ribonucleoprotein (RNP) complex consisting of SgRNA (G1 to G6) and Cas9 nuclease using lipofectamine in triplicates when the cells reached the confluence of 40-60 %. TIDE analysis revealed significant difference in editing efficiency of SgRNAs designed on different exon 1, 2 and 3 which ranged from 96.4 % to 1.2 %. The sequence alignment of WT and KO sequences revealed 59 bp deletion in myostatin gene caused by G1 guide.

Pig disease monitoring and surveillance

Serum samples were collected and analysed from Assam against targeted diseases and percent prevalence was recorded to be ASF (0.00%), PRRS (1.40%), cysticercosis (0.31%), Swine influenza (42.18%), JE (51.42%), brucellosis (0.00%), cryptosporidiosis (0.00%), LSD (14.44%) and Q fever (0.00%). An Indirect Enzyme-Linked Immunosorbent Assay (ELISA) was developed and standardized for the detection of antibodies against Porcine Circovirus type 2 (PCV2) using a recombinant capsid (Cap) protein as the coating antigen. The Cap-ELISA was validated by testing

548nos. of serum samples in parallel with a commercial ELISA kit (INzegim, Madrid). A total 264 nos. of pig serum samples were collected/received from Assam, Meghalaya and Tripura for testing the sero-prevalence and molecular epidemiology of important porcine viral diseases in pigs in northeastern part of India. A total of 355 fecal samples/ rectal swabs and 295 nasal swabs were collected from different backyard and organized pig farms of three districts of Assam (Nalbari, Sonitpur and Kamrup) for screening of important bacterial pathogens of pig. A total of 11 post-mortem examinations were conducted on deceased pigs during the reporting period. Gross and histopathological examinations were performed to establish a tentative diagnosis of suspected diseases. Two cases were confirmed as *Streptococcus suis* infections.

Under the AINP-CEDA project, A total of 162 nos. of tissue samples and 39 nos. of blood samples were analysed by PCR and LFA for the presence of ASFV, PCV, PRRSV, CSF & JEV. 3 samples (1.85%) were positive for ASFV, 6 samples (2.27%) positive for PCV2 and 5 samples (3.08%) were positive for CSFV. PCV2d capsid protein of an Indian isolate was expressed in A038 insect cell line using the recombinant baculovirus system. Immunization of pigs with PCV2d VLPs elicited a significant immune response, with higher antibody titers observed in the group receiving the adjuvanted vaccine candidate (PCV2dVLPadj). The study successfully generated a structurally stable and immunogenic PCV2d capsid protein-based VLP vaccine candidate. This candidate may offer a cost-effective and efficient approach to combating PCV2d infections, addressing a critical need in the Indian piggery industry facing genotype-specific outbreaks. A modified pTruEx1.1 plasmid vector, pOPINE vector (6.1kb) was used as baculovirus transfer vector. Both plasmid vector and PCV3 sequence was flanked by unique restriction sites for BstEII and NotI at the 5' and 3' termini respectively to suit the cloning.). Plasmids containing the PCV3 sequence were confirmed by digestion with BstEII/ NotI. A culture-free herbal-aided assay developed for rapid detection of extended spectrum β -lactamase producing bacteria in piggery farms and slaughterhouses. The assay leverages the hydrolysis of β -lactam antibiotics by ESBL enzymes, leading to a detectable color change in a starch-iodine complex. A total of 309 samples from piggery farms and slaughterhouses in India were tested, with the assay demonstrating relative sensitivity and accuracy of 91.3% and 85.1%, respectively, compared to the culture-based double antibiotic disc diffusion method. The assay's potential for broader applications in healthcare, agriculture, and environmental surveillance, enabling timely interventions and improved antibiotic stewardship to combat the spread of AMR. Targeting key ASFV proteins, P54 and CD2v, a chimeric construct was developed, codon-optimized, and expressed in insect cells. The chimeric protein retained antigenic determinants, highlighting its potential for immunological assessment in porcine models and vaccine development.

Minipigs and outbred pigs are suitable models for pharmacokinetic studies and monoclonal antibody delivery platform evaluations. However, the immune response differences in minipigs warrant consideration in future studies. To assess the prevalence of African Swine Fever Virus (ASFV), 30 tissue samples suspected of ASF, including spleen, lymph nodes, lungs, liver, and small intestine, were collected/received from different districts of Mizoram, Punjab, and Assam. Out of the samples tested, seven were confirmed positive for ASFV. An initial characterization of

porcine muscle cells was conducted to identify muscle stem cell-specific markers. A total of 122 samples were tested for molecular characterization of pork borne parasites. The samples that tested positive in PCR were further selected for amplification of the VP2 gene of PPV using expression primers. Following bioinformatic analysis, expression primers for Porcine Parvovirus (PPV) were designed to amplify the target gene for recombinant protein expression.

Post harvest processing and value addition of pork

Development of a Point-of-Care colorimetric method for detection of meat freshness was targeted. Experiments were performed to develop stable colour both in solution as well as in paper medium using ABTS and TMB dyes targeting ATP breakdown products. During this process, five different muscles viz. *Longissimus dorsi*, *Psoas major*, *Biceps femoris*, *Trapezius* and *Triceps brachii* from electrically stunned as well as percussion stunned pigs were evaluated for understanding the postmortem changes pertinent to different physico-chemical parameters pH, sarcomere length, drip loss, colour, ATP concentration etc. Significant differences were observed w.r.t. the decline in pH in different muscle types which are generally depend on muscle fiber type, activities of the muscle and other factors. It was observed that glycogen depletion is faster in fast twitch muscles resulting in comparatively for lactic acid which in turn decreases the pH more rapidly. Significant correlation was observed between the Lightness (L*), redness (a*) and yellowness (b*) values acquired. In addition, the processed pork products subjected to different processing conditions and temperatures were studied. The processing conditions evaluated include moist heat, dry heat and steam. Further, the effects of hot meat, chilled meat and frozen thawed pork on processing of pork products have evaluated. Microstructure of the above-mentioned pork products were assessed using scanning electron microscopy.

Under the DST-STI Hub project, new technologies for processing value added pork products have been developed and transferred to the beneficiaries, along with necessary machineries and capacity building. Institute has organized master training programmes, imparted hands-on knowledge on Silage-making for formulating economic yet balanced pig rations and organized field level programmes and distribution of essential implements for maintaining biosecurity in the farms. Under this project, indPOtrace web platform has been developed to document the data pertinent to pig production and management conditions. The web application has distinct components for 'traceability', 'real time meat inspection' as well as 'Pig help line' to cater the specific needs of stakeholders. It provides specific interaction platforms for pig produces, pork processors, traders, feed suppliers, transporters etc. Also, MeatSpecs 1.0, a tool designed to undertake real time virtual antemortem inspection of pigs as well as postmortem inspection of pig carcasses, was developed. The purpose of the tool is to ensure safe and wholesome meat to the consumers. Further, Opti-PigRation 1.0, a web tool was designed to optimize the energy-protein ratio in the feeds offered by the farmers to their pigs, especially while using the un-conventional pig feeds.

Extension interventions to augment pig production

Technology transfer models that facilitate the adoption of improved technologies were evaluated at the field level. Relationship analysis of their socio-economic variables with technology adoption were seen. age had a negative and significant relationship with adoption level. It might be because the aged persons were less change prone and reluctant to adopt new technologies in their farms. Knowledge and Scientific Orientation were found to have significant contribution at one percent level, 3 variables i.e. Extension contact, Income from piggery, and Farm Education Exposure had significant contribution at five percent level of significance. Using PCA and AHC we have classified the similarity and dissimilarity factors affecting their adoption in farm level. Reels on different aspects of pig farming were made and uploaded in the YouTube handle of the institute. This digital content is accessible remotely on various devices, benefiting those in remote and underserved areas. Priority content areas have been identified within different components of the pig production system. The videos are categorized into different series based on content and viewer preferences. Key topics include biosecurity, feeding, routine farm operations, farrowing, breed identification, training programs, and outreach initiatives by the institute. Under the Pig seed village project, training programs were organised and possible beneficiaries were selected through pilot study. By strengthening pig production systems, the project seeks to boost rural livelihoods, support small-scale farmers, and contribute to the overall growth of the pig farming sector in the region.

Computer Application and IT in pig production

The research works of the section emphasized largely on evaluating the deep learning models to enhance the image classification tasks. Deep learning models were used to improve the image accuracy and classification. To construct our hybrid models, we utilized ResNeXt-50 as a feature extractor, replacing its fully connected layer with an identity mapping to retain learned features. Additionally, we explored alternative combinations by integrating ResNeXt-50 with DenseNet121 and EfficientNet-B6, assessing their comparative performance. Data augmentation techniques, including resizing and normalization, were applied to enhance the dataset, which comprised various types of cell images formatted in a sequence-based input structure. Different cell images were resized and enhanced through different deep learning models. The research demonstrated that hybrid models effectively enhance classification accuracy over standalone CNN architectures. All cell types underwent viability testing using the trypan-blue dye exclusion method and were regularly monitored for growth characteristics. Cell cultures were maintained under optimal conditions, with media replaced every third day. Once the cells reached 70-80% confluence, they were passaged using trypsinization and imaged using a NIKON TS100 microscope under 20X and 10X magnifications. The comparative analysis resulted in the better performance of our model as compared to the conventional ones.

Technological interventions for livelihood enhancement of socially backward people

Institute has successfully implemented Tribal Sub Plan (TSP) and Scheduled Caste Sub Plan (SC SP) programmes, which are the strategic approaches by the Government of India to ensure that the benefits of national development reach the Scheduled Tribe (ST) and Scheduled Caste (SC)

populations. Under TSP, emphasis was placed on involving tribal communities in the planning and implementing of scientific piggery. In the year 2024-2025, a total of 29 such programs were conducted in the tribal-dominated area of Assam, Arunachal Pradesh, Meghalaya and Nagaland, in which a total of 1908 numbers of tribal Pig farmers directly benefited through these programmes. Among these farmers, Pig feed and different small inputs like LED lights, Steel buckets, Gumboots, Pig for breeding, mixer and different scientific leaflets on piggery management in local languages were distributed. Among the 29 capacity-building programs, six nos. of one-day training and demonstration programs, eight nos. of three days residential training programs, one five days program, seven awareness camps and field days program, four Research-Extension-Farmers interface meetings, two Pig Germplasm distribution programs and one health camp. Under SCSP, a total of 122 tonnes of pig grower feed were distributed as key inputs for pig farming. Seven awareness camps were held to educate SC pig farmers on various aspects of pig farming, including housing, reproduction management, feeding practices, market linkages, disease prevention, daily care, and biosecurity measures, particularly to protect against diseases like African swine fever.

Trainings and capacity building

ICAR-NRC on Pig has imparted 24 training programmes during the current year for over 660 participants from across the country. These programmes were indented to cover different aspects of pig production, artificial insemination, pork processing and value addition to provide exposure to participants on the basics of selection of breed/ varieties/strain and breeding strategies for profitable pig farming, feeding of different categories of pigs and use of non-conventional feed stuffs for swine feeding, care and management of different categories of pigs, exposure to semen lab, semen collection, processing and evaluation of boar semen for Artificial Insemination, housing requirement for scientific pig farming, common diseases of pigs and their management including vaccination schedule, farm cleaning, disinfection, routine farm operation practices, castration and needle teeth clipping of piglets and different methods of administration of medicines in pig, and demonstration of formulation of feeds for different categories of pigs.

Technology transfer and Business Incubation Support

Throughout the year, the institute has successfully developed and granted several technologies, formalized collaborations by signing MoUs with stakeholders and organizations, and participated in four national and regional exhibitions to showcase its innovations. The newly developed technologies across various domains will further strengthen intellectual property management within ICAR, enhance technology transfer, and play a pivotal role in improving the economic status of pig farmers through innovation-driven solutions. During the year, 2 patents were granted and 04 patents were filed. Also, 03 numbers each of Trademarks were registered and filed during the year. In addition, 02 numbers of copyrights were registered and 05 applications were filed. Further, 01 design was registered and 01 was filed in the current year.

Agri Business Incubation Centre of ICAR-NRCP has offered its entrepreneurs substantial technical assistance during the reported period. In order to facilitate the entrepreneurs to scale up their initiatives, the ABI centre has offered them proactive, beneficial business support in the form of

technical consulting, mentor connections, guidance, and trainings to develop contemporary technology-based business ideas and models in business domains. During the year 2024, two numbers of EDPs were organized where a total of 37 participants from 12 states participated. Special sessions were arranged for issues pertinent to FSSAI licensing/registration; NABARD and NLM project guidelines and different funding options available for the entrepreneurs viz. AHIDF, RKVY, Angel investors etc. The participants were also encouraged to join Agri-Business Incubation (ABI) Unit, ICAR-NRC on Pig for incubation of their businesses and ideas. Graduation Ceremony cum Industry Meet was organized on 4th September, 2024, where the institute has awarded graduation certificates to 5 entrepreneurs who have successfully completed their incubation programme with the institute and initiated their business. Institute has initiated a special call for Expression of Interest (SwineNEST 1.0) from interested entrepreneurs for Incubator support through Agri-Business Incubation (ABI) centre of the Institute, while 'Stu-GNITE 1.0' was aimed at addressing a plan to foster innovation, creativity, and entrepreneurship among students. In addition, a software named 'FoSaRiCa' (Food Safety & Risk calculator) was developed as a platform that ranks the risks of various food by taking into account the interactions between the variables that increase the risk of foodborne illness.

PG Diploma in pork value chain management

During the year 2024, institute has started a Post Graduate Diploma in Pork Value Chain Management which is a specialized program offered by the ICAR-National Research Centre on Pig (NRC on Pig), located in Guwahati, in collaboration with the ICAR-Indian Veterinary Research Institute (IVRI) in Izatnagar, Bareilly. This unique diploma program provides an in-depth understanding of the pork value chain, focusing on the management, processing, preservation, and quality control aspects of the pork industry. It aims to equip professionals with the necessary skills and knowledge to enhance the pork production, processing, and marketing processes, thus improving the sustainability and efficiency of the pork industry. The program is designed to span two semesters and covers a comprehensive range of thematic areas essential for developing a holistic understanding of the pork value chain. These thematic areas are structured to provide theoretical knowledge, practical exposure, and skill development in the various aspects of pork production, processing, and value addition.

Krishi Vigyan Kendra

The Krishi Vigyan Kendra Goalpara has conducted 44 training programmes in horticulture, animal science, home sciences, agri-engineering covering 1260 number of participants during the year. The training programmes conducted for farmers and farm women were 25 nos. covering 738 participants; training for rural youth were 15 nos. covering 402 participants; training for extension functionaries were 02 nos. covering 74 participants; long duration vocational training were 3 nos. covering 45 participants and skill development trainings were 3 nos. covering 184 participants. KVK Goalpara is well equipped with a Farm machinery bank and is maintaining a custom hiring centre for greater benefit of the farming community of Goalpara district. Production of seed and planting materials is another important activity of KVK Goalpara. During the reported period, 80

kg of foxtail millet and 30 kg of niger was produced in KVK farm. A total of 5500 numbers of disease free planting materials of tapioca, vegetables and 116 kg of ginger rhizomes were produced in KVK Farm.

Women centric programmes

The women scientists and staff of ICAR-National Research Centre on Pig (NRC), Rani, Guwahati, in collaboration with Marwari Hospital, Guwahati, organized a one-day health check-up camp and health awareness program for tribal women farmers and their families. A dedicated medical team from Marwari Hospital facilitated the health check-up sessions and provided free medicines to the beneficiaries. A total of 33 tribal women farmers engaged in pig rearing from Umsur village, Assam, participated in the program along with their families. The women staffs of ICAR-NRC on Pig played a key role in ensuring the success of the initiative. As part of the program, pig health kits containing six essential veterinary supplies mineral mixture, vitamin supplements, dewormer, antiseptic ointment, potash, and cotton roll were distributed to the tribal women farmers to support the health and productivity of their livestock. This initiative underscored ICAR-NRC on Pig's commitment to empowering tribal women farmers by enhancing health awareness and strengthening their knowledge of livestock management practices.

Swachh Bharat

The Swachhata Hi Seva 2024 campaign at ICAR-National Research Centre on Pig, Guwahati, Assam, witnessed a remarkable blend of activities emphasizing environmental cleanliness, social responsibility, and community involvement from 17th September to 2nd October, 2024. From tree plantations, cleanliness drives, and workshops, to public awareness initiatives, the program saw participation from staff, scientists, students, and the community. Notable events like the 'Ek Ped Maa Ke Naam' plantation drive, Eco-art initiative, and outreach programs such as 'Swachhata Ki Pathshaala' highlighted both the qualitative impact on mindset change and quantitative achievements in environmental conservation and public hygiene. With more than 50 saplings planted, extensive public outreach, and multiple community-driven cleanliness initiatives, the campaign not only improved the environmental landscape but also instilled a lasting sense of responsibility among participants. The wide range of activities—from health camps to cultural events—fostered awareness about cleanliness and sustainability, leaving a tangible and impactful legacy in both the campus and local communities.

AICRP on Pig

The Institute continued regular monitoring of the progress of AICRP on Pig project (18 centers) through technical and financial monitoring in consultation with the council and conduction of review meet. The AICRP project is continuing in different centers across the country to study the performance of pigs in different agroclimatic condition, to develop region-specific package of practices including quality germplasm and to conserve the indigenous germplasm.

Others

The Institute has conducted meetings of Quinquennial Review Team, Research Advisory, Institute Research committee, Institute Animal Ethics Committee and Institute Management Committee regularly. The Institute also observed various official functions such as Republic Day, Independence Day, International Yoga Day, Hindi Pakhwada, Institute Foundation Day and World Environment Day. Various social events were also organized by the Recreation Club for the staff. Various initiatives were taken to maintain the office and campus premises clean and environment friendly.