



ICAR-DPR NEWS

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Shri Giriraj Singh, Hon'ble Union Minister of Fisheries, Animal Husbandry and Dairying visits ICAR-DPR, Hyderabad

Shri Giriraj Singh, Hon'ble Minister of Fisheries, Animal Husbandry and Dairying, Govt. of India visited the Directorate on 5th October 2019. He was accompanied by Dr. J.K. Jena, DDG (Fisheries and Animal Sciences), ICAR. The Minister visited the hatchery, pure line and native breed farm, poultry waste management unit and Moringa cultivation farm and reviewed the progress. He appreciated the activities of the Directorate in developing several rural chicken varieties. Later, the Hon'ble Minister laid the foundation stone for committee hall.



Hon'ble Minister unveiling the foundation stone



Hon'ble Minister interacting with farmers and Scientists



Hon'ble Minister distributing Kadaknath chickens to tribal woman farmer

Shri Giriraj Singhji interacted with tribal and scheduled caste farmer beneficiaries and distributed Kadaknath and Improved Aseel chickens along with other inputs under the Scheduled Caste Sub Plan and Tribal Sub Plan. During his interaction with the farmers, the Minister stressed upon rearing more number of low input birds under cluster mode with involvement of entrepreneur at village level. Shri Giriraj Singhji urged the scientists to develop suitable models incorporating measures for minimizing the feed cost such as vermicomposting and moringa cultivation for efficient rearing of low input birds to achieve the target of doubling the farmers' income. He also stressed the need of making clusters of farmers in certain locations of the country, who are being benefited by the varieties developed by the institute.



Director's Column

I am pleased to present the Newsletter of ICAR-DPR for the period of July to December 2019. Sincere efforts are being put by the scientists of this Directorate in developing newer technologies for improving the productivity of low input backyard varieties and sustain the production during challenging environmental conditions. In this regard, the important native breed Aseel has been evaluated for the production of broiler type crosses. Other important research contributions in this period are study on epigenetic methylation and miRNA mediated gene regulation of calcium transport genes in avian uterus, effect of fasting during peak heat stress in layers, production of designer eggs and molecular characterization and phylogenetic analysis of Marek's disease virus.

The institute organized a brainstorming meet on upscaling backyard poultry and other training programs on different aspects of rearing poultry for various stakeholders. Under Scheduled Caste Sub Plan (SCSP) and Tribal Sub Plan (TSP), the institute trained farmers were provided with grownup birds, temporary night shelter and other necessary equipments. During the period, 8,83,831 improved germplasm were supplied from the Institute and various centres of AICRP on Poultry Breeding and Poultry Seed Project. It is heartening that the scientists of this Directorate have brought awards and recognitions for their scientific contributions. This Directorate participated in different exhibitions and appraised different stakeholders about the low input technologies developed at the institute.


(R.N.Chatterjee)
Director

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RESEARCH HIGHLIGHTS

Evaluation of Aseel crosses for broiler traits

The suitability of crosses of Aseel with Vanaraja male line (PD-1), Gramapriya male line (PD-6), Vanaraja female line (PD-2), coloured broiler male (PB1) and female line (PB2) for small scale meat production was studied. A total of five crosses were produced by crossing Aseel males with PD-1, PD-2, PD-6, PB-1 and PB-2 females and evaluated up to 12 weeks of age. The body weight and shank length significantly ($P \leq 0.05$) differed at all ages among the genotypes. Aseel crosses with coloured broiler lines (PB-1 and PB-2) had significantly ($P \leq 0.05$) higher body weight, while Aseel x PD-1 cross recorded higher shank length at



all ages. The protein and moisture content of breast meat did not differ significantly, while fat and ash proportion varied significantly ($P \leq 0.05$) among the crosses. The protein and fat proportion of breast meat ranged from 23.6 to 23.8 % and 3.28 to 3.69 %, respectively. The pH values of the breast meat were in the normal range (5.89 to 6.29) and did not show any significant differences among crosses. The Shear force values (SFV) differed significantly ($P \leq 0.05$) among the crosses with significantly lower SFV recorded in Aseel x PD-6 cross. Hydroxy proline (HP) concentration was significantly ($P \leq 0.05$) higher in Aseel x PB-1 and Aseel x PD-2 crosses. The meat colour differed significantly ($P \leq 0.05$) with respect to yellowness (b^*) and red (a^*) colouration.

The sensory evaluation of meat revealed no significant variations for all the attributes. The proportion of legs, wings, back, neck, meat and bone significantly ($P \leq 0.05$) differed among the crosses. The bone and meat proportion was significantly higher in Aseel x PB-1 cross. Liver proportion was significantly ($P \leq 0.05$) higher in crosses with rural purelines than the broiler crosses. The cluster analysis of means of all the traits revealed the least distance (6.85) between Aseel x PD-1 and Aseel x PD-6. Aseel crosses with PD-1 and PD-6 had suitable body weight, similar phenotypic appearance, ideal carcass traits and optimum meat quality traits with overall acceptability

like native chicken meat. The study concludes that, Aseel x PD-1 and Aseel x PD-6 crosses may be a viable and suitable alternative for native chicken farming with higher productivity. (U.Rajkumar *et al*)

Epigenetic methylation and miRNA mediated gene regulation of calcium transport genes in avian uterus (DST-SERB)

Egg production industry in India and across globe constantly looks for high egg producing chicken lines. The major constraint in development of such high producing lines is that egg shell quality is compromised owing to the high requirement of calcium to meet the proportionate increase in egg production. A recent study provided insights to the differential gene expression in some crucial genes involved in Ca^{2+} transportation across the egg shell gland. However, miRNA mediated, regulatory molecular

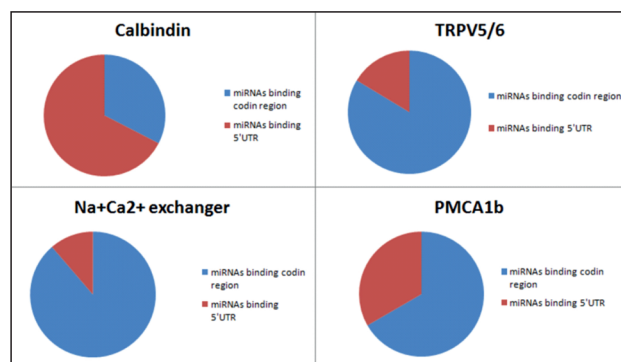


Fig1: In silico prediction of miRNA binding regions in chicken.

mechanisms involved in regulating these genes are unknown. So, in order to give predictive direction we adopted a bioinformatics/in silico comparative study and identified the putative miRNAs regulating the Ca^{2+} transport pathway during egg shell calcification in egg shell glands. We selected 4 crucial genes based on previous studies and predicted miRNAs probably binding and inhibiting these genes using miRDB database and search protocols. We found that a large number of miRNAs are predicted to be targeting these selected genes. It was also found that majority of the predicted miRNA have predicted target sites in the coding region. (Chandan Paswan *et al*)

Effect of fasting during peak heat stress time on WL layers during summer season

Physiologically, body temperature increases after feeding due to specific dynamic activity and since the body of chicken is covered with feathers, the heat dissipation from the body is difficult and hence fasting of chicken during the peak ambient temperature is being recommended as a means to minimize the ill effects of heat stress in chicken during the summer season. An experiment was conducted with WL layers to study the possible benefits of feed withdrawal (restriction) on performance and egg quality variables during summer season (31.96 to 39.37°C

temperature and 20.4 to 59.6% RH). Feed withdrawal was followed in 3 phases, i.e. 9am to 5pm, 11am to 5pm and 1pm to 5pm and another group had ad libitum feed access, and served as the control. Each phase of feed withdrawal was replicated for 12 and each replicate had 20 layers. The experiment was conducted from 67 to 74 wks of age during April and May months, which experience peak temperature in the region. Fasting of layers during 9 am to 5 pm or 11am to 5 pm significantly ($P<0.05$) improved the egg production (EP) compared to the ad libitum fed control group. However, fasting between 1 to 5 pm significantly ($P<0.05$) reduced the EP. Feed intake and feed efficiency (feed intake/egg and FI/EM) improved significantly ($P<0.05$) in the group starved between 9 to 5 pm compared to other groups. Egg quality was not affected. (S.V.Ramarao *et al*)

Production of designer eggs enriched with critical trace minerals

In the production of designer eggs enriched with minerals, interaction among minerals such as iron, zinc and copper play an important role in influencing mineral absorption and retention. Therefore, a study was conducted in White Leghorn layers of 61 wks age to evaluate the effect of supplementing different levels of inorganic iron (ferrous sulphate), copper (copper sulphate) and zinc (zinc sulphate) on layer performance, egg quality traits and egg mineral contents. For the study, 240 White Leghorn layers were selected, randomly divided into 8 treatments with six replicates (five birds per replicate). Experimental groups were T1-control (basal diet), T2- basal diet + iron 150ppm, T3- basal diet + zinc 70 ppm, T4-basal diet + copper 25ppm, T5- basal diet + iron 150ppm + zinc 70ppm + copper 25 ppm, T6- basal diet + iron 150ppm + zinc 70ppm, T7- basal diet + iron 150ppm + copper 25ppm, T8- basal diet+ zinc 70ppm + copper 25ppm. The birds were fed with respective experimental diets during the entire trial period. Basal diet consisted primarily of maize and soybean meal. Feed and water were provided ad libitum. Daily egg production and weekly egg quality traits and egg mineral contents were studied. Results indicated that egg quality traits were not affected by inorganic iron supplementation. However, zinc supplemented group showed significant improvement in egg shell percentage. Zinc and copper supplemented group showed significant improvement in Haugh units. In all the experimental groups (T2-T8), egg iron content increased as compared to control. The highest egg iron concentration was obtained by feeding the laying hen diets with 150 mg iron/kg diet with zinc 70ppm + copper 25ppm as compared to other groups. Three wks after supplementation, iron content in eggs started increasing and reached peak level at 4 to 6 wks and the levels stabilized. From the study, it can be concluded that feeding the laying hen with 150 mg iron/kg diet with zinc 70ppm and copper 25ppm gave the highest concentration of egg iron as compared to other groups without any adverse effect on the performance of laying hens. (A.Kannan *et al*)

Molecular characterization and phylogenetic analysis of Marek's disease virus (MDV)

A total of 93 tumor cases from the deceased birds from 11 pureline coloured broiler and layer breeder flocks during December 2017 to June 2018 were collected for investigation. All the flocks were vaccinated with serotype 3 (HVT) vaccine at day-old at hatchery. All tumor cases were tested for MDV infection through PCR using Serotype-1 specific Meq oncogene gene primers and 34 samples were positive for Marek's disease. PCR amplification along with sequencing of Meq (Marek's EcoRI-Q encoded), lytic antigen Phosphoprotein (pp38) and Viral interleukin 8 (vIL-8) genes was used for molecular characterization of positive field MDV. Phylogenetic analysis of field MDV sequences with MDV nucleotide data base revealed that the field strains mostly clustered with virulent and very virulent MDV reference strains. Further, 132 bp repeat region of Meq gene was also used to confirm the findings.

(T.R.Kannaki *et al*)

Poultry rearing with Moringa and other feed base - an Integrated Farming System

Integrated farming helps in lowering the cost of production. The leaves of *Moringa oleifera*, which is a widely grown plant in India, are good source of protein. In the institute's farm, *Moringa* plants were grown in an area of 19,450sft. A total of 150 Gramapriya birds of 18 weeks of age were housed in night shelter having an area of 345 sft, which was constructed within the *Moringa* plantation. The birds were raised on dried *Moringa* leaf powder (300g/day for the total flock) and other supplementary diets like earthworms, kitchen waste and maggots. The average weight of the birds at the age of 20 wks was 1361g, which has increased to 1515g by 24 wks. The egg production at 24 and 26 wks of age was 42% and 53%, respectively. (R.K. Mahapatra *et al*)



Moringa plantation



Hens foraging in Moringa plantation



Night shelter for hens



Hen feeding on Moringa leaf powder

EVENTS ORGANISED

Brainstorming meeting on Upscaling Backyard Poultry

The Directorate organized a “Brainstorming Meet on Upscaling Backyard Poultry” to improve its share in total poultry production in India on 8-9th August 2019. Higher officials (Director, Additional Directors, Joint Director and Assistant Directors) from 9 state animal husbandry departments and 4 ATARIs (Directors and Principal Scientists) participated in the meeting

Dr. J. K. Jena, Deputy Director General (Fisheries and Animal Sciences), ICAR New Delhi was the Chief Guest. He emphasized the importance of line departments and KVKs in disseminating the technologies developed by ICAR institutes to end users and farmers. Dr. R.S. Gandhi, ADG (Animal Production and Breeding), the Guest of Honour described the various statistics of poultry development and how backyard poultry can help in doubling farmers income. Dr. R.N. Chatterjee, Director, ICAR-DPR narrated in detail the objectives of conducting this meet and how backyard poultry varieties developed by the Directorate and at AICRP centres are improving the socio-economic and nutritional status of farmers across length and breadth of the country. Dr. C. R. Prasanna (IAS), Director, Directorate of Veterinary Services, Chhattisgarh stated the importance of quality germplasm, alternate feed ingredients and developing skilled work force through scientific trainings.



Dignitaries at the Meeting



DDG (FS&AS) addressing the participants

Scientists- Farmers' Meet

The Directorate organized a “Scientists- Farmers' Meet” on 9th December 2019 with an aim to understand the issues and solutions related to egg and chicken meat consumption. The event was organized in collaboration



Scientists Farmers' Meet

with Dr.Chicken, RR Foods, Hyderabad. Dr. V.Ramasubba Reddy, Retd. Professor (Poultry Science), ANGRAU explained in detail about the nutritional value of eggs and chicken and their health benefits. An interactive session was held, where in poultry farmers and technical persons involved in poultry industry interacted and offered suggestions for developing a suitable action plan to create awareness and to counter the false propaganda about chicken egg and meat consumption. A total of 84 participants attended the event, which included the Scientific staff from DPR, faculty and PG/PhD students from PVNR Telangana Veterinary University, representative from National Egg Coordination Committee (NECC), poultry farmers, senior poultry professionals, representatives, field veterinarians and persons involved in marketing chain of the poultry industry.

Introduction of improved backyard chicken with dairy farming in Gujarat

Mixed farming of backyard poultry with buffalo farming was initiated by ICAR-DPR at Dahevan village (Anand) on 26-08-2019 in collaboration with National Dairy Development Board (NDDB) and Anand Agricultural University (AAU), Anand. Dr. R. N. Chatterjee, Director, ICAR-DPR distributed the Gramapriya birds to dairy farmers registered under NDDB programme. The Director interacted with the farmers and highlighted the advantage of rearing improved backyard chicken varieties towards improving the farmer's income. Shri. Meenesh Shah, Executive Director, NDDB addressed the farmers. Executives and technical officers of



Director and other dignitaries with beneficiaries

NDDDB and Dr. F.P. Savaliya and Dr.A.B.Patel, AAU participated in the event. Grown-up birds, night shelter, chick feed and literature in vernacular language on package of practices for rearing backyard chicken under rural conditions were distributed to 10 dairy farmers.

Hindi implementation activities

The Directorate conducted the quarterly meetings of Official Language Implementation Committee on 22-08-2019 and 17-12-2019, in which different issues related to effective implementation of Hindi Language in office were discussed. The Directorate also conducted two Hindi workshops on 7-09-2019 and 18-12-2019 for upgrading the Hindi skills of staff in day to day official work. The Directorate also celebrated "Hindi Pakhwada" celebrations during 03-16 September 2019 and Hindi Day on 16th September



Hindi Pakhwada celebration

2019. During these celebrations, different literary competitions were conducted for the staff. Dr. Akanksha Shukla, Associate Professor, NIRDPR, Rajendranagar, Hyderabad graced the occasion as the Chief Guest and she emphasised the importance of Hindi language and its history. All the winners/runners of different competitions were awarded with cash prizes and certificates on this occasion. Three staff members of the Directorate have also passed "Prabodh Hindi" Training Course during October 2019, which was conducted by Central Hindi Teaching Scheme, Hyderabad.

Swachh Bharat Activities

The Directorate conducted cleaning activities within and outside the institute premises once in a week. Conducted "Swachhta Hi Sewa Campaign" from 15th September – 2nd October 2019, under which different activities were conducted like "Swachhta Hi Sewa" pledge was taken by the staff, Swachh Bharat Quiz was organized, plantation was done by the staff, formed human chain in public place by the staff members to spread awareness about Swachhta among general public. "Swachhata Pakhwada" was organised from 16th December – 31st December, 2019. Organized Kisan Diwas on 23rd December, 2019 where the staff members visited the village Hanuman nagar, near Rajendranagar and shared knowledge about

Swachhata, compost preparation, minimizing the use of plastics etc.



Constitution Day celebration-Rally by staff



Cleaning activity at village

Independence Day

The Directorate celebrated the Independence Day on 15 August 2019. Dr. R.N. Chatterjee, Director hoisted the National Flag and addressed the staff of the institute and their families.



Director addressing the staff

TRANSFER OF TECHNOLOGY

Tribal Sub Plan

The Directorate carried out TSP work in Adilabad district, Telangana as identified by the Govt of India and ICAR for implementation of Tribal Sub Plan. One training program was organized during the period where 21 farmers including women were trained on poultry farming. Each farmer was provided with 10-20 birds, feeders, drinkers, 25-40 kg feed and some essential medicines. Technical inputs and suggestions were provided to the farmers by the DPR scientists and technical officers from time to time. Periodically, scientists visited the farmers and evaluated the performance of the birds and collected the feedback.



Mother unit at Uttoor, Adilabad dt.



Farmer couple in Adilabad dt.



Input distribution in Adilabad dt.



SC Sub Plan

ICAR-DPR initiated the SC Sub Plan work in four districts (Ranga Reddy, Vikarabad, Warangal and Jangaon Districts) of Telangana. Under the plan, four training programmes were organized and 145 farmer families were trained on different aspects of backyard poultry farming. The farmers had hands on training on farm management including brooder preparation, brooding management, grower and layer management. Each farmer family was provided with 16-20 birds, 20-30 kg feed, feeders, drinkers, and some essential medicines. Scientists of the Directorate visited different villages and evaluated the performance of birds under village conditions and provided suitable suggestions to farmers.



Input distribution in Telangana

Trainings conducted/Skill Development

1.	Training on "Backyard Poultry Rearing" to Scheduled Caste farmers under Schedule Caste Sub Plan (SCSP)	31 farmers from Chinchalpet village of Vikarabad district, Telangana	1 day	14 August 2019
2.	Training for Tribal Farmers on Backyard Poultry Rearing under TSP	21 Tribal farmers from Adilabad district, Telangana	2 days	20-21 August 2019
3.	Training on "Backyard Poultry Rearing" to Scheduled Caste farmers under Schedule Caste Sub Plan (SCSP)	25 farmers from Bomraspet and 10 farmers from Chadurpalle village of Vikarabad district, Telangana	1 day	28 August 2019
4.	Training on "Backyard Poultry Rearing" to Scheduled Caste farmers under Schedule Caste Sub Plan (SCSP)	44 farmers from Chinchalpet village of Vikarabad district, Telangana	1 day	25 October 2019
5.	Certified Livestock Advisor Programme on Poultry-Module II (Sponsored by MANAGE)	Veterinarians (15) from all over India	15 days	03-17 December 2019
6.	Training on "Backyard Poultry Rearing" to Scheduled Caste farmers under Schedule Caste Sub Plan (SCSP)	35 farmers from Warangal district, Telangana	1 day	06 December 2019

Poultry India 2019

DPR participated in the “Poultry India 2019” exhibition organized by IPEMA at Hitex, Hyderabad from 27th to 29th November 2019. DPR stall attracted the attention of the delegates and poultry farmers. The technologies developed by the institute, especially the improved chicken varieties; Vanaraja, Gramapriya, Srinidhi and native chickens attracted the poultry farmers. About 4-5 thousand farmers, technocrats and scientists visited the stall in 3 days.

Farmer's day at CRIDA, Hyderabad

DPR participated in the farmer's day organized by ICAR-CRIDA on 3-9-2019, at Hayatnagar, Hyderabad. DPR stall attracted the attention of the farmers and visitors at the exhibition. The literature on the improved chicken varieties was distributed to the farmers.

NASI, Exhibition at ICAR-NAARM

DPR participated in scientific exhibition organized at ICAR-NAARM from 21st -23rd December 2019 on the occasion of the Annual Conference of NASI. About 500 delegates and technocrats visited the DPR stall.

MEETINGS CONDUCTED

Institute Research Committee Meeting

Half yearly IRC meeting for the year 2019-20 was held at the Directorate on 24th December 2019. The meeting was chaired by Dr. R. N. Chatterjee, Director and Dr. T. K. Bhattacharya acted as the Member Secretary. Principal investigators presented the achievements of their respective projects. All the projects were deliberated at length. Chairman, IRC suggested measures for overcoming the difficulties in achieving desired targets.



Half-yearly IRC Meeting

Institute Management Committee Meeting

The 40th Institute Management Committee meeting was held under the Chairmanship of Dr. R.N. Chatterjee, Director on 16th December 2019. Several issues concerning administration and finance were discussed and recommended for approval by Council. The research and extension activities at the Directorate were also discussed in the meeting.

HUMAN RESOURCE DEVELOPMENT

1.	Dr. T.K. Bhattacharya, National Fellow	Priority setting, monitoring and evaluation of agricultural research projects	18-23 July 2019	ICAR-NAARM, Hyderabad
2.	Dr. R.K. Mahapatra, Pr. Scientist	Leading with emotional intelligence	14-18 October 2019	ASCI, Hyderabad
3.	Smt. T.R. Nirmala Veronica, AAO	Assets management	6-8 November 2019	ICAR-IARI, New Delhi
4.	Dr. L. Leslie Leo Prince, Pr. Scientist	Training programme on multivariate analysis using R	22-28 November 2019	ICAR-NAARM, Hyderabad
5.	Dr. B. Prakash, Sr. Scientist Dr. Shanmugam, M., Sr. Scientist Dr. Chandan Paswan, Sr. Scientist	Trainers (TOT) programme under skill training programme	27-29 November 2019	Agricultural Skill Council of India (ASCI)
6.	Shri Mohammed Maqbul, Technical Officer	Automobile maintenance, road safety and behavioural skills for regular drivers of technical grade	27 November - 03 December 2019	ICAR-Central Institute of Agricultural Engineering, Bhopal
7.	Dr. M.V.L.N. Raju, Pr. Scientist Dr. L. Leslie Leo Prince, Pr. Scientist Shri A.V.G.K. Murthy, A.O. Smt. O. Suneetha, PPS	Hands on training on e-office file management system	5-6 December 2019	ICAR-NAARM, Hyderabad
8.	Shri J. Srinivas Rao, ACTO	हिंदी में कंप्यूटर पर बेसिक प्रशिक्षण कार्यक्रम	2-6 December 2019	CHTS, Hyderabad

Distinguished Visitors

- Shri Giriraj Singh, Hon'ble Minister of FAH & D, Govt. of India, New Delhi
- Dr. J.K. Jena, DDG (F&AS), ICAR, New Delhi
- Dr. R.S.Gandhi, ADG (AP&B), ICAR, New Delhi
- Shri Sandeep Sultania, Secretary (Animal Husbandry), Govt. of Telangana
- Dr. S.T.Viroji Rao, Registrar, PVNRTVU, Hyderabad
- Dr. K.M.L.Pathak, Former DDG (AS), ICAR
- Dr. H.R.Rehman, Former DDG (AS), ICAR
- Dr. A.Padma Raju, Former Vice Chancellor, ANGRAU
- Dr. C.S.Prasad, Former ADG (AN&P), ICAR, New Delhi
- Dr. Rick, Professor, Wageningen University, Netherlands
- Dr.Soumya, Asstt. Professor, Wageningen University, Netherlands

AWARDS/RECOGNITIONS

- Dr. Santosh Haunshi, Pr. Scientist received the appreciation certificate from Director General, ICAR, New Delhi, which was awarded to the Directorate for proactively implementing ICAR data management guidelines and uploading of its all technologies for the last 6 years in KRISHI Portal.
- Dr. Santosh Haunshi, Pr. Scientist received the best reviewer award from Indian Journal of Animal Research, Karnal.
- Dr. S.S. Paul, Pr. Scientist received the best poster award (First) for the poster on "Diversity and community structure of gut microbiome in commercial and indigenous Indian chickens determined using high throughput sequencing" authored by S.S. Paul, R.N.Chatterjee, M.V.L.N.Raju, B.Prakash, S.V. Rama Rao, S.P.Yadav and A.Kannan at the International Animal Nutrition Conference (INCAN 2019), Kolkata, 17-19 December 2019.
- Dr. T.K. Bhattacharya received the "Prof. P.K. Pani Research Award" for the best research article "Expression profile of fatty acid synthase gene (FASN) in chicken during juvenile stage" authored by A.R. Prasad, T.K. Bhattacharya, N.G. Sagar, R.N. Chatterjee, P. Kumar, S.K. Bhanja, G. Vishnu and B. Bhushan, published in the Indian Journal of Poultry Science [Vol. 53 (1):11-14] in the field of Poultry Genetics & Breeding, which was conferred during IPSACON-2019 held at College of Veterinary Sciences and Animal Husbandry, Anjora, Durg, Chattisgarh during 11-13 December 2019.



Dr. Santosh Haunshi receiving the appreciation certificate from Director General, ICAR

PERSONALIA

New Joinings

- Dr. M.R. Reddy, Pr. Scientist has joined on 02-12-2019 on transfer from IVRI, Izatnagar.
- Dr. M. Niranjan, Pr. Scientist has joined on 02-12-2019 on transfer from ICAR RC – NEH Region, Umiam, Meghalaya.
- Dr. K.S. Rajaravindra, Sr. Scientist has joined on 02-12-2019 on transfer from North Temperate Regional

Station (Central Sheep & Wool Research Institute), Garsa, Kullu.

- Dr.Vijay Kumar, Scientist has joined on 11-12-2019 on transfer from Central Institute for Research on Goats, Makhdoom, Mathura.

Resignation

- Sri Shivam Sachan has resigned from the post of Stenographer Gr.-III on 20-07-2019.

EDITORIAL BOARD

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Dr. M.V.L.N. Raju, Pr. Scientist
Dr. Santosh Haunshi, Pr. Scientist
Dr. Chandan Paswan, Sr. Scientist
Dr. K.S. Rajaravindra, Sr. Scientist

To



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