



ICAR-DPR NEWS

SARDAR PATEL OUTSTANDING ICAR INSTITUTION
ISO 9001:2015 Certified Institute



TRAINEES HOSTEL INAUGURATED

The newly built Trainees Hostel was inaugurated by Dr. Trilochan Mohapatra, Secretary, DARE and DG, ICAR on 22nd September 2018. The Hostel has 10 rooms and is

meeting the accommodation needs of the trainees of various training programmes being conducted at the institute.



Dr. Trilochan Mohapatra, Secretary, DARE and DG, ICAR inaugurating the Trainees Hostel

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Director's Column



I am pleased to present the Newsletter of ICAR-DPR for the period of July to December 2018. Scientists of the institute are striving to develop newer technologies, improve the productivity and find solutions to the low productivity of the low input backyard poultry farming using improved varieties or indigenous chicken breeds. The notable developments made by the institute are development of biobanking of indigenous chicken breeds through cryopreservation of primordial germ cells (PGCs), studying the immunogenicity and protective efficacy of iron inactivated killed vaccine against fowl cholera in chicken, polymorphism in TAP 1 gene in indigenous breeds and efforts to mitigate the

summer stress through supplementation of yeast culture in native and exotic chickens and estimating the genetic parameters through Animal Model (REML) for body weight gain in a broiler female line. Besides research, the institute organized training programs on different aspects of poultry rearing for various stakeholders.

Under Tribal Sub Plan (TSP), grownup chicks of Vanaraja were distributed to a total of 137 farmers in various tribal hamlets of Adilabad district, Telangana. A total of 2,48,032 improved chicken varieties and indigenous chickens were

supplied from the Institute during the period. Under AICRP on Poultry Breeding and Poultry Seed Project, a total of 3,58,778 and 2,73,711 numbers of germplasm, respectively were supplied. I am happy that the Scientists of the Directorate received various awards during the period.



(R.N. Chatterjee)
Director

RESEARCH HIGHLIGHTS

Cryopreservation of PGCs of Indigenous chicken breeds for biobanking

Primordial germ cells (PGCs) are the precursors for developing functional gametes in chicken and other animals and hence, provide great promise for their use as genetic resources of chicken to resurrect the live animals. One of the most important methods of ex situ conservation of chicken breeds/lines is cryopreservation of primordial germ cells (PGCs). The PGCs were collected from the embryo of HH stage 15 of Aseel and Nicobari breeds and standardized the protocol for culturing the PGCs on feeder cell lines. The expression of marker genes (VASA, SOX, Nanog, BLIMP etc.) in PGCs was analysed and the PGC were cryopreserved in liquid nitrogen for 3 months. About 60-70% viability of PGCs was observed after cryopreserving PGCs for three months. The results were highly repeatable. The PGCs were transferred into the donor embryo of stage 15 and chicks were developed. The rate of resurrection with PGCs was 8.3%. Thus the protocol of cryopreservation of PGCs has been standardized and PGCs of two indigenous chicken breeds have been cryopreserved. The technique of cryopreservation of PGCs has the potential to conserve the chicken breeds without maintaining the whole flock of birds for further resurrecting the live birds.

T.K. Bhattacharya, Divya D.,
Renu Shukla and R.N. Chatterjee

Immunogenicity and protective efficacy of Iron inactivated *Pasteurella multocida* A:1 killed vaccine against Fowl Cholera in chicken

The efficacy of iron inactivation upon *Pasteurella multocida* A:1 isolate in combination with different adjuvants was evaluated. Field isolate of fowl cholera was grown in BHI broth with or without iron supplementation. SDS-PAGE analysis of *Pasteurella* antigen grown with iron depleted and enriched medium showed prominent expression of outer membrane peptides (OMPs) in iron enriched medium. Scaled up culture with 5X 10⁸ CFU/ml equivalent to 2.5 mg of antigen per dose was calculated and used for preparation of experimental vaccines. Formalin inactivated and mixed with APS adjuvant (FIA), formalin inactivated-Freund adjuvant (FIF), Iron inactivated and adjuvanted with iron (III), Iron inactivated from iron supplemented media and adjuvanted with iron (ISII) and commercial oil emulsion vaccine (CV), and control were used in the study. A total of 120 birds (n=20/group) of 2 weeks age were immunized with these vaccines and booster were given at 3rd and 6th

week with respective vaccine. Protective antibody titres were induced by iron inactivated vaccine from 4th week of immunization. Upon booster doses, it induced significantly higher (P<0.05) antibody response. Specific antibody titres were assessed by iELISA in the serum at weekly intervals. The birds were challenged (n=6 /group) with 5x10⁴ CFU/ml by intranasal route. The iron inactivated experimental vaccine gave equivalent protection as that of commercial vaccine upon challenge infection.

T.R. Kannaki

SNPs in the different exons of Tapasin and transporter associated with antigen processing (TAP-2) gene

Single-strand conformation polymorphism (SSCP) studies for Ghagus, Dahlem Red and Brown Nicobari breeds were carried out in different exons of Tapasin and TAP2 gene. The exons of Tapasin gene were polymorphic and a total of 8 different haplotypes and 17 haplogroups were observed and the cumulative frequency of haplogroup h1h5 was found to be highest (0.386). In TAP2 gene, haplotype h3 frequency was the highest (0.348) followed by h1 (0.332). A total of 15 haplogroups were observed and the cumulative frequency of haplogroup h3h3 was the highest (0.175). In Tapasin gene, in Dahlem Red breed, out of 13 haplogroups, seven haplogroups viz. h1h2, h1h4, h1h5, h1h6, h2h4, h2h5 and h3h5 were significantly different with body weight at 2 and 6-13 weeks of age. In Ghagus breed, out of 11 haplogroups, h1h2 haplogroup was significantly different with haplogroups h1h5 and h1h6 in HI titre, whereas haplogroup h1h2 was significantly different (P<0.05) with haplogroups h1h4 and h1h5 with lymphocyte count at 11th week of age. In Nicobari breed, out of 11 haplogroups, h1h5 haplogroup differed significantly to haplogroups h1h6 and h1h7 in body weight at 1-3 and 7-9 weeks of age. Similar trend was observed for HI titre.

S. P. Yadav and T.R. Kannaki

Genetic gain analysis using animal model in a synthetic coloured broiler female line

Performance data of 18,083 synthetic coloured broiler female line (PB-2) chicks hatched during last five generations (S-23 to S-27) was analyzed using Animal Model (REML) by fitting additive, maternal additive and environmental effects. Inclusion of a maternal genetic effect in the models noticeably improved goodness of fit for all juvenile traits. Estimates of heritability (h²) for body weight at hatch, 2 weeks, 4 weeks and 5 weeks of age (BW₀, BW₂,

BW4 and BW6) were 0.06, 0.19, 0.15 and 0.14, respectively. Maternal heritability estimate (m^2) for body weight at hatch (BW0) was 0.32. Negligible coefficients of maternal environmental effect (c^2) from 0.05 to 0.08 were estimated for all the juvenile traits, other than BW0, which had an estimate of 0.17.

Genetic trend lines were plotted by average of breeding value of body weight at 5 weeks and egg production up to 40 weeks of last five generations. The genetic gain of 7.8 g and 0.95 eggs per generation was obtained for body weight at 5 weeks and egg production up to 40 weeks. It could be concluded that inclusion of maternal effects (both genetic and environmental) improved the accuracy of genetic evaluation for early age body weights. Positive genetic gain indicated that the selection was effective in traits under selection.

Leslie Leo Prince

Changes in different physiological parameters in PD-3 and Nicobari chickens during summer

During summer, the thermoregulatory system of the body

adjusts a variety of physiological mechanisms. PD-3 chicken line is a lineage of Dahlem Red exotic breed and Nicobari is an indigenous breed. In PD-3 chickens during summer (37- 29°C, RH 46-59%), the lipogenic genes Steroyl Co A desaturase and Fatty acyl synthase were expressed more ($P<0.05$) in liver and brain when compared with the yeast culture supplemented group. The receptors for hormones, leptin, Ghrelin and GH were upregulated ($P<0.05$) in liver, brain and magnum in the control group when compared with the yeast culture supplemented group. In Nicobari chickens, increased plasma leptin ($P<0.05$) and plasma ghrelin ($P<0.01$) hormones was observed, whereas in the yeast supplemented group, an opposite effect was observed. Supplementation of yeast culture also had a protective effect on the histomorphology of the jejunum, indicating nil or mild necrosis of villi of the jejunum, whereas in control group, the necrosis observed was of medium severity. Supplementation of yeast culture during post summer period caused significant increase ($P<0.05$) in body weight and egg weight.

N. Anand Laxmi, R. K. Mahapatra and M. Shanmugam

TRANSFER OF TECHNOLOGY

Induction of Improved Chicken Farming in tribal villages in Aspirational Districts Programme under Tribal Sub Plan

ICAR-DPR introduced rural/ backyard chicken farming with improved chicken variety Vanaraja in Adilabad district, Telangana with an aim to improve the income and living standards of tribal farmers under Tribal Sub Plan (TSP) Programme. The program was initiated at Kolamguda (Thatiguda) and Koshagutta Villages on 21st July 2018. Dr. R. N. Chatterjee, Director inaugurated the programme in these villages by distributing grown-up Vanaraja chicks along with feed and poultry equipment. A total of 57 tribal beneficiaries were provided with 10-20 Vanaraja birds, 15kg feed, one feeder and one waterer each. Potential benefits of backyard farming and its management practices under free range backyard system were explained to the tribal farmers. Scientists/Officers from ICAR-DPR, Assistant Director (Animal Husbandry), Khanapur and

Veterinary officials were present during the programme.

Second batch of input distribution was organized at Kolamguda- Birsaipeet village of Utnoor Tehsil on 15th September 2018. Team of Scientists and Officers of this Directorate attended the event. A total of 35 tribal beneficiaries were provided with 12-14 Vanaraja birds, 15kg feed, one feeder, one waterer and medicine kit per each beneficiary. Again on 9th November 2018, input distribution program was organized at Kolamguda-Dharmajipet village of Utnoor Tehsil. A total of 45 tribal beneficiaries were provided with 10 Vanaraja birds, 15kg feed, one feeder, one waterer and medicine kit per each beneficiary.

Apart from this, a mother unit facility was established at ITDA, Utnoor to grow the chicks during nursery phase up to 6 weeks of age. ITDA has created a facility to rear 3000 chicks. The first batch of chicks was introduced on 12th December 2018.



Director and staff of the Institute with TSP beneficiaries

ICAR- DPR PARTICIPATED IN EXHIBITIONS

Poultry India 2018

DPR participated in Poultry India 2018 exhibition organized by IPEMA at Hitex, Hyderabad from 28th to 30th November 2018. The improved chicken varieties developed by the institute such as Vanaraja, Gramapriya, Srinidhi, etc. attracted the poultry farmers. About 4-5 thousand farmers, technocrats and scientists visited the stall in 3 days.

Farmer's day at IIRR

The institute participated in the Farmer's day organized by ICAR-IIRR, Hyderabad on 3rd November 2018. The literature on the improved chicken varieties was distributed to the farmers.

Kisan Mela, Motihari

ICAR-DPR participated in the Pasu Arogya Mela from 23rd -25th December 2018 at KVK Pirakothi, Motihari, Bihar. About 2500-3000 farmers visited the stall. The technologies displayed at the exhibition attracted many farmers and visitors.

TRAININGS CONDUCTED / SKILL DEVELOPMENT



Trainees with Director and faculty members

Certified Livestock Advisor Program on Poultry (Module – II)

The Directorate in collaboration with National Institute of Agricultural Extension Management (MANAGE), Hyderabad, organized a Training Programme on “Certified Livestock Advisor Program on Poultry (Module – II)” during 22nd October – 5th November 2018. A total of 13 Animal Husbandry officers from 8 states attended the programme. The trainees were exposed to various aspects of poultry production such as breeding, nutrition, management and health care practices. Field visits were organized to commercial and backyard poultry units.

Modern poultry management for established Agripreneurs

A refresher training programme on “Modern poultry management for established Agripreneurs” in collaboration with MANAGE, Hyderabad was organized during 24th to 27th November 2018. The program was sponsored by MANAGE, Hyderabad under Agri-Clinics and Agri-Business Centres (AC & ABC) scheme. A total of 40 agripreneurs from different states attended the training programme. A field visit to a commercial poultry unit was arranged for the benefit of the participants.

MEETINGS CONDUCTED

Institute Research Committee Meeting

The half-yearly IRC meeting for the year 2018-19 was held on 27th November 2018 under the chairmanship of Dr. R.N. Chatterjee, Director. The mid-term progress of the research projects was deliberated and the Chairman emphasized on exploring technologies in the field of poultry science research for doubling farmers' income.

Annual Review Meeting of AICRP on Poultry Breeding and Poultry Seed Project

The Annual Review Meeting of All India Coordinated Research Project (AICRP) on Poultry Breeding and Poultry Seed Project (PSP) was organised on 23rd and 24th August at ICAR Research Complex for NEH Region, Umiam, Meghalaya. Dr. J. K. Jena, Deputy Director General (Animal Science) graced the occasion as Chief Guest. He urged upon the scientists to work hard to fulfill the dream “Doubling Farmers Income” of Hon'ble Prime Minister of India. Dr. R. S. Gandhi, ADG (AP&B), ICAR, New Delhi emphasized on the need of production and dissemination of superior backyard poultry germplasm for nutritional and livelihood security of rural masses. Dr. R.N. Chatterjee, Director, appreciated the performance of the PSP centres located in different parts of the country. Dr. A. Sharma, Director, ICAR-NBAGR, Karnal and Dr. S. Rajkhowa, Director, ICAR-NRC on Pig, Guwahati also expressed their views on this occasion. Dr. N. Prakash, Director, ICAR Research Complex for NEH Region, Umiam delivered the welcome address. Centre In-charges of 12 AICRP and 12 Poultry Seed Project Centres covering different states of the country participated in the review meeting.



Annual review meeting of AICRP on Poultry Breeding and Poultry Seed Project in progress

IAEC meeting

XXII Institutional Animal Ethics Committee Meeting was conducted on 29th September 2018, wherein proposals on animal experiments were reviewed and approved.

Institute Joint Staff Council (IJSC) Meetings

The 4th and 5th meetings of 10th IJSC (Institute Joint Staff

Council) were held on 11th September 2018 and 31st December, 2018.

Institute Management Committee Meeting

The Institute Management Committee meeting was held on 19th September 2018.

OTHER ACTIVITIES

Hindi Implementation Activities

During the period under report, two Hindi workshops were conducted on 24th November 2018 and 22nd December 2018 for upgrading the Hindi language skills of staff in their



Director receiving the prize of Town Official Language Implementation Committee-2

day to day official work. A Parangat teaching course for 11 officers of this Directorate was organized by Central Hindi Teaching Scheme at ICAR-DPR during 1st November to 3rd December 2018. All these officials passed in the course with distinction. The Directorate also celebrated Hindi Fortnight during 14-28 September 2018 and Hindi Day on

14th September 2018. The Institute received third prize of Town Official Language Implementation Committee-2, Hyderabad for the year 2018.

Swachh Bharat Activities

Under the Swachh Bharat Abhiyan, the Directorate conducted cleaning activities once in a week within and outside the institute premises. "Swachhta Hi Sewa" campaign was conducted from 15th September – 2nd October 2018 by organizing different activities in the institute campus, schools, adopted village and other nearby villages and tourist spots. Further, Swachhta Pakhwada was also conducted from 16th December – 31st December 2018.



Staff taking out awareness rally on Swachhta

HUMAN RESOURCE DEVELOPMENT

Trainings undergone by ICAR-DPR staff

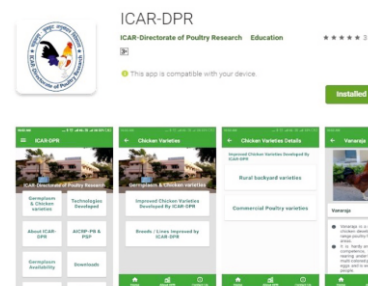
S.No	Title of the Training	Name of the Staff and Designation	Duration	Place of the Training
1	Poultry Production and Health	Dr. Chandan Paswan, Sr. Scientist	15 Jul to 25 Sep 2018	EICA, Egypt
2	Training programme on AST-WHONET and launch of the Network project of ICAR-INFAAR	Dr. D. Suchitra Sena, Pr. Scientist	23-25 Jul 2018	IVRI, Izatnagar
3	Summer School on "Innovations in livestock sector for doubling farmers income: strategies and opportunities in meat value chain"	Dr. M. Shanmugam, Sr. Scientist	25 Jul to 14 Aug 2018	ICAR-NRCM, Hyderabad
4	Intellectual property valuation and technology management	Dr. S.S. Paul, Pr. Scientist	24 to 29 Aug 2018	NAARM, Hyderabad
5	Training Programme on analysis of experimental data	Dr. A. Kannan, Pr. Scientist	6 to 11 Sep 2018	NAARM, Hyderabad
6	Advances in Web and Mobile application development	Dr. Leslie Leo Prince, Sr. Scientist	5 to 10 Oct 2018	NAARM, Hyderabad

ICAR-DPR Mobile App

An Android Mobile App was developed on “ICAR-DPR”. The Mobile application provides information about Institute (History, Vision, Mission and Mandate), Director and Staff, Germplasm developed, Breeds and Lines improved, Technologies developed, AICPR on Poultry Breeding, Poultry Seed Project, Germplasm Availability and Price, Latest news, Downloads (Pamphlets on improved varieties) and Contact Details.



QR Code for Mobile App



DISTINGUISHED VISITORS

- Dr. Trilochan Mohapatra,**
Secretary, DARE & Director General, ICAR
- Shri B. Pradhan,**
Additional Secretary & Financial Advisor, DARE/ICAR
- Dr. J. K. Jena,** Dy. Director General for Sand (AS),
ICAR
- Dr. S.C. Mohapatra,**
Founder Director, PDP
- Prof. Purnendu Biswas,**
VC, WBUAFS

AWARDS/RECOGNITIONS

Dr. Kannaki, T. R., Sr. Scientist received the best oral presentation award-2018 at AAHP, Chandigarh. Dr. Kannaki, also received the best oral presentation – First and Second prizes at IPSACON-2018 at Port Blair.



Dr. Kannaki receiving the best oral presentation award at AAHP, Chandigarh

PARTICIPATION IN SYMPOSIA/CONFERENCES/SEMINARS/WORKSHOPS

S.No	Symposia / conferences / seminars /meetings / workshops	Scientist(s) / Officer(s)	Duration / Date	Venue
1	International Meeting on Veterinary and Animal Science	Dr. N. Anand Laxmi, Pr. Scientist	6 – 7 Aug. 2018	Dubai, UAE
2	Hindi workshop (Town Official Language Implementation Committee-2, Hyderabad)	Dr. S.P. Yadav, Pr. Scientist	8 Aug 2018	NFDB, Hyderabad
3	Annual Review Meeting of A.I.C.R.P. on Poultry Breeding & Poultry Seed Project	Dr. R.N. Chatterjee, Director Dr. U. Rajkumar, Pr. Scientist Dr. Leslie Leo Prince, Sr. Scientist	23 - 24 Aug 2018	ICAR Research Complex for NEH Region, Umiam
4	Workshop on “Genomic selection”	Dr. T.K. Bhattacharya, National Fellow	17 Sep 2018	ICAR-IVRI, Izatnagar
5	Fourth Biennial Conference & National Symposium of AAHP on “The way forward to ensure Food security and food safety”	Dr. D. Suchitra Sena, Pr. Scientist Dr. T.R. Kannaki, Sr. Scientist	26 - 27 Oct 2018	Mohali, Chandigarh
6	Training Workshop for Vigilance Officers of ICAR institutes	Dr. M.V.L.N. Raju, Pr. Scientist	31 Oct & 1 Nov 2018	NAARM, Hyderabad

S.No	Symposia / conferences / seminars /meetings / workshops	Scientist(s) / Officer(s)	Duration / Date	Venue
7	पाठ्यक्रम हिंदी भाषा अल्पकालिक(गहन) पारंगत 20 पूर्ण कार्य दिवस	Dr. S.P. Yadav, Pr. Scientist	1 Nov to 3 Dec 2018	Department of Official language (GOI) at ICAR-DPR
8	Meat Tech 2018 Conference on “ Technology Trends & Opportunities in Meat & Allied Industries for a New Pink Revolution”	Dr. R.K. Mahapatra, Pr. Scientist Dr. S.P. Yadav, Pr. Scientist Dr. Leslie Leo Prince, Sr. Scientist	2 Nov 2018	Confederation of Indian Industry, ITC Kakatiya, Hyderabad
9	XXXV Annual Conference of IPSA and National Symposium, IPSAACON-2018 on “Rural Poultry Production: Challenges for sustainable entrepreneurship development.	Dr. R N. Chatterjee, Director Dr. U. Rajkumar, Pr. Scientist Dr. D. Suchitra Sena, Pr. Scientist Dr. Santosh Haunshi, Pr. Scientist Dr. B. Prakash, Sr. Scientist Dr. T.R. Kannaki, Sr. Scientist Dr. S. K. Bhanja, CTO	15 - 17 Nov 2018	ICAR-CIARI, Port Blair, Andaman and Nicobar Islands
10	BIS workshop on “Outside labora- tories (OSLs) under its laboratory recognition scheme (LRS2018)”	Dr. T.K. Bhattacharya, National Fellow	16 Nov 2018	BIS, Chennai
11	International Symposium and VIII-IMSACON-2018	Dr. T.K. Bhattacharya, National Fellow	22 - 24 Nov 2018	WBUAFS, Kolkata
12	Knowledge Day Seminar by Poultry India	Dr. SV. Rama Rao, Pr. Scientist Dr. M.V.L.N. Raju, Pr. Scientist Dr. B.L.N. Reddy, Pr. Scientist Dr. U. Rajkumar, Pr. Scientist Dr. T.K. Bhattacharya, Pr. Scientist Dr. R.K. Mahapatra, Pr. Scientist Dr. Santosh Haunshi, Pr. Scientist Dr. S.P. Yadav, Pr. Scientist Dr. A. Kannan, Pr. Scientist Dr. L.L.L. Prince, Sr. Scientist Dr. M. Shanmugam, Sr. Scientist Dr. T.R. Kannaki, Sr. Scientist	27 Nov 2018	Novotel, Hitech City, Hyderabad
13	XXVII Annual Conference of Society of Animal Physiologists of India	Dr. N. Anand Laxmi, Pr. Scientist	27-28 Nov 2018	NDRI, Karnal, Haryana
14	Interactive Meet on Characterization and Registration of Animal Genetic Resources in India organized by NBAGR	Dr. Santosh Haunshi, Pr. Scientist Dr. L.L.L. Prince, Sr. Scientist	16 Nov 2018	BIS, Chennai
15	3rd National Workshop of Officer In-charge, Data Management, ICAR Research Data Repository for Knowledge Management	Dr. Santosh Haunshi, Pr. Scientist	4 Dec 2018	NASC Complex, New Delhi
16	First National Genetics Congress (NGS)	Dr. T.K. Bhattacharya, National Fellow Dr. S.P. Yadav, Pr. Scientist	14-16 Dec 2018	IARI, New Delhi
17	Interactive session on 'One Health: Unprecedented Opportunities and Challenges'	Dr. D. Suchitra Sena, Pr. Scientist Dr. M. Shanmugam, Sr. Scientist	17 Dec 2018	ICAR-NRCM, Hyderabad

S.No	Symposia / conferences / seminars /meetings / workshops	Scientist(s) / Officer(s)	Duration / Date	Venue
18	National seminar on “IoT Inspired Food Safety and Residue Detection (Sensfood)” Organized by C-DAC, Kolkata.	Dr. A. Kannan, Pr. Scientist	18 Dec 2018	Indismart Hotel, Salt Lake, Kolkata
19	National Conference on Native Chicken production: Opportunities for conservation, productivity enhancement and commercial exploitation in view of global warming	Dr. R.N. Chatterjee, Director Dr. U. Rajkumar, Pr. Scientist Dr. Leslie Leo Prince, Sr. Scientist	19 - 20 Dec 2018	Madras Veterinary College, TANUVAS, Chennai
20	Seminar on “Sustainability of small farmer in changing Agricultural Scenario” organized by RICAREA, Hyderabad	Dr. S. V. Rama Rao, Pr. Scientist Dr. M.V.L.N. Raju, Pr. Scientist Dr. B.L.N. Reddy, Pr. Scientist Dr. T.K. Bhattacharya, National Fellow Dr. Anand Iaxmi, Pr. Scientist Dr. S.S. Paul, Pr. Scientist Dr. U. Rajkumar, Pr. Scientist Dr.T.K. Bhattacharya, Pr. Scientist Dr. R.K. Mahapatra, Pr. Scientist Dr. S.P. Yadav, Pr. Scientist Dr. A. Kannan, Pr. Scientist Dr. L.L.L. Prince, Sr. Scientist Dr. M. Shanmugam, Sr. Scientist Dr. T.R. Kannaki, Sr. Scientist	22 Dec 2018	PJTSAU, Hyderabad
21	Technical Seminar by Poultry Vet Federation	Dr. T.R. Kannaki, Sr. Scientist	28 Dec 2018	Namakkal

PERSONALIA

NEW JOININGS

- **Shri P. Santosh Phani Kumar** has joined as Technical Assistant on 23/07/2018.
- **Kumari N. Siva Dharani** has joined as Lower Division Clerk on 19/11/2018.
- **Shri R. Ganesh** has joined as Lower Division Clerk on 24/11/2018.

RETIREMENT

- **Dr. R.V. Rao**, C.T.O. has retired on superannuation on 31/07/2018.

OBITUARY

- **Shri G. Vijay Kumar**, SSS has passed away on 02/12/2018.

EDITORIAL BOARD

Dr. Santosh Haunshi, Pr. Scientist
Dr. M.V.L.N. Raju, Pr. Scientist
Dr. M. Shanmugam, Sr. Scientist
Dr. S.P. Yadav, Pr. Scientist

To



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