



ICAR-DPR NEWS

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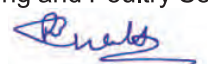
Director's Column



Intensive poultry production is rising in our country to fulfill the animal protein needs of the increasing human population. This Directorate is working on different scientific aspects to support the poultry production of our country. The increasing poultry production results in the generation of large quantity of litter material. Our institute is developing different methods for composting the litter material and use in crop production. Biosynthesis and evaluation of nano zinc particles in poultry mineral nutrition is underway. The protocol for semen cryopreservation of PB-2 broiler breeder semen has been standardized. Multiplex PCR technology for simultaneous and differential detection of oncogenic/tumor viral diseases of chicken was developed. Facility for poultry rearing with moringa cultivation as an Integrated Farming System has been established at the institute premises. I am glad that the Regional Station, Bhubaneswar has been added to this Directorate during

this period expanding the mandated species to duck besides the existing chicken.

A technology "Concanavalin A (Con-A) ELISA kit for Newcastle disease virus Sero-monitoring in chicken" validated by external agencies has been published in Agri innovate website and available for commercialization. The Directorate has organized webinars for the benefit of different stakeholders during this COVID pandemic period. Onsite trainings for farmers were organized under Development Action Plan for SC (DAPSC) and Tribal Sub Plan (TSP) and they were subsequently provided with grownup birds and other necessary equipment. During this period, a total of 7,16,885 improved germplasm were supplied from the Institute and various centres of AICRP on Poultry Breeding and Poultry Seed Project.


(R.N.Chatterjee)
Director

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Regional Station, Bhubaneswar transferred to DPR

The Regional Station, Bhubaneswar was transferred by the Council from ICAR-CARI to ICAR-DPR during July 2020. Thus, duck has been added to the mandated poultry species for the Directorate, besides the existing chicken.



RESEARCH HIGHLIGHTS

Biosynthesis and characterization of zinc oxide nanoparticles

There is concern in use of nano minerals prepared using chemical or physical methods for use in biomedical applications and animal feeding. In this context, biosynthesis of nano minerals using plant extracts in collaboration with NIANP, Bengaluru for use in poultry feeding was attempted. After screening several plants, zinc oxide (ZnO) nano particles were synthesized using moringa and neem leaf extracts. In brief, extracts of moringa or neem leaves were prepared and these extracts were used to reduce zinc nitrate and the obtained product was dried overnight and calcined at 450°C to obtain the ZnO nano particles. The phytochemicals present in neem and moringa leaf extracts acted as both reducing and capping (stabilizing) agents and therefore no separate chemical was used for stabilizing these nano particles. The prepared ZnO NPs were characterized using various techniques such as UV-Vis absorption spectroscopy, Particle size analyser, X-ray diffraction (XRD), and Transmission electron microscopy (TEM). The absorption peak of different green synthesized zinc oxide nano particles were around 330-380 nm. The average particle

size of the biosynthesized nano zinc oxide particles were 10.84 nm and 8.27 nm, respectively. The structural analysis using XRD showed the noticeable peaks at 32°, 34°, 36°, 47°, 56°, 63°, 68°, 69°, 73° and 77°. The diffraction peaks indicated that the biosynthesized nano zinc oxide has crystalline structure. The TEM analysis also showed that most of the particles were in the range of 10-100 nm.

(A. Kannan et al.)

Cryopreservation of semen from PB-2 and control broiler

Semen cryopreservation protocols for two broiler breeder lines, PB-2 and control broiler (CB), were evaluated in separate experiments. Semen of PB-2 broiler breeder line was cryopreserved with 8% ethylene glycol (EG) or 6% dimethylformamide (DMF) in Beltsville Poultry Semen Extender (BPSE). In another experiment, semen from CB population was cryopreserved with 8% EG, 8.2% dextran 10 kDa + 9% dimethylacetamide (DMA) or 8.2% dextran 20 kDa + 9% dimethylacetamide (DMA) in Sasaki diluent (SD). The semen was cryopreserved in 0.5 ml plastic straw and thawed either at 5°C for 100 sec or 37°C for 30 sec as per the experimental protocol and was assessed for motility, live sperm, abnormal sperm and acrosome intact sperm. Post-thaw semen was inseminated, eggs were collected and incubated for obtaining fertility. The cryopreserved samples had significantly ($P < 0.05$) lower sperm motility, live sperm and acrosome intact sperm in both the breeder lines. The fertility obtained in PB-2 line with 8% EG and 6% DMF was 30.19 and 46.58% respectively. The fertility in CB using 8% EG, 8.2% dextran 10 kDa + 9% DMA and 8.2% dextran 20 kDa + 9% DMA were 3.14, 0 and 2.34% respectively. The fertility from cryopreserved semen was significantly ($P < 0.05$) lower in CB line. In conclusion, permeable cryoprotectants (8% EG or 6% DMF) produced acceptable fertility with cryopreservation of PB-2 semen. The permeable cryoprotectant 8% EG or dextran in combination with DMA gave very low fertility in CB line.

(Shanmugam M and R.K. Mahapatra)

Multiplex PCR technology for simultaneous and differential detection of oncogenic/tumor viral diseases of chicken

Avian oncogenic or tumor diseases are common in poultry industry causing significant economic loss. These include three major viral diseases, Marek's disease (MD), avian leukosis (AL) and Reticuloendotheliosis (RE). Apart from causing economic loss due to mortality; production loss, loss of pedigree birds and carcass condemnation are also significant due to these infections. Co-infections of two or more viruses are quite common. These co-infections are difficult to distinguish by clinical presentation and gross pathology, necessitating specific laboratory differential diagnosis. Marek's disease is well controlled by use of vaccines and strict bio-security measures. However, frequent outbreaks were reported from vaccinated flocks due to vaccination failure, evolving new pathotypes etc. At

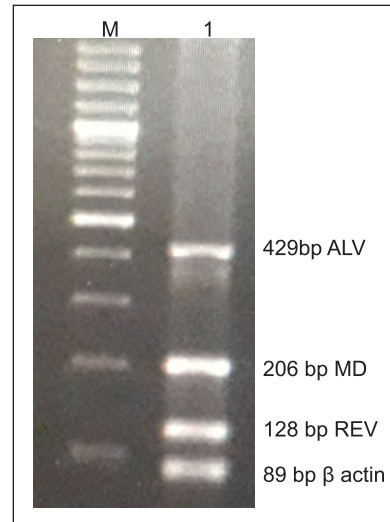


Fig. Gel electrophoresis of multiplex PCR for ALV, MD and REV

M: 100 bp ladder lane

1: positive control showing ALV, MD and REV specific PCR products

present no commercial vaccine is available for protection against ALV and REV infection. The only method adapted is to identify and cull the virus carriers in breeder flocks. Hence, there is a need for quick and high throughput laboratory technique for this purpose. Multiplex PCR is rapid and precise method for simultaneous detection and differentiation of viruses in multiple co-infections. This multiplex PCR technique is developed, optimized and validated with field clinical samples for rapid and simultaneous detection and differential diagnosis of MD, ALV and REV infections. Target genes selected: pp38 gene for MDV, 5' end region of polymerase gene for ALV, LTR gene for REV, and β actin for internal control were selected for designing the primers to increase the specificity and efficiency. The PCR was carried out in single tube reaction carrying all four primer sets with template. The optimum primer concentration of each set was optimized by checker board method. The following PCR products were amplified in multiplex PCR - Marek's disease (206bp), ALV (429bp) and REV (128bp). Internal control primer was included to check the presence of DNA (89bp).

(T.R. Kannaki et al.)

Poultry litter composting by mixing saw chips/dust

Intensive poultry production results in generation of large quantity of poultry litter, which could be converted into compost by mixing with saw chips/dust.

i) Compost preparation with C/N ratio of 35:1

The compost was prepared having C/N ratio of 35:1 by mixing poultry litter with saw chips/dust having relative humidity 50%, pH 5.0 and temperature 34°C. 15 kg of litter was mixed with 48 kg of saw chips/dust. The humidity was maintained at around 50%. The temperature changed due to the growth of the microbes inside the pile. The compost was ready on 70th day. The relative humidity was 45%, pH was 5.5 and temperature was 27°C on 70th day.



Saw chips



Compost with C/N ratio of 35:1

ii) Compost preparation with C/N ratio of 30:1

The compost was prepared having C/N ratio of 30:1 by mixing litter with saw chips/dust as supplement having relative humidity of 50%, pH 5.0 and temperature was 34°C. 18 kg of litter was taken and mixed with 42 kg of saw chips/dust. The final product, compost, was ready on 70th day. The relative humidity was 44%, pH was 5.5 and temperature was 27°C on the final day.



Compost with C/N ratio of 30:1

iii) Compost preparation with C/N ratio of 25:1

The compost was prepared having C/N ratio of 25:1 by mixing litter with saw chips/dust as supplement having relative humidity 50%, pH 5.0 and temperature was 25°C. 25 kg of litter was taken and mixed with 36 kg of saw chips/dust. The final product, compost, was ready on 70th day. The relative humidity was 45%, pH was 5.5 and temperature was 27°C on the final day.



Compost with C/N ratio of 25:1

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

Major concern in poultry industry is the feed cost due to high prices of protein and energy sources and development of antibiotic resistant pathogens due to unwise and excessive use of antibiotics. To overcome these problems, we need to look for cheap and safe alternative sources of protein and energy. *Moringa oleifera* leaves have many qualities like it is a good source of protein and energy. It has got



Night shelter for birds



Gramapriya birds in Moringa field

antimicrobial property and antioxidant effects. The composition of earthworm and Moringa leaves were analyzed. It was found that composition of earthworm constitutes moisture content of 79.86%, dry matter 20.14%, protein 48.10% and fat 8.09% on dry matter basis and the composition of dry Moringa leaves powder includes 18.48% protein and fat 6.13%. Night shelter for the birds for conducting the trial is constructed and 1215 birds are housed.

(R.K. Mahapatra et al.)

EVENTS ORGANISED

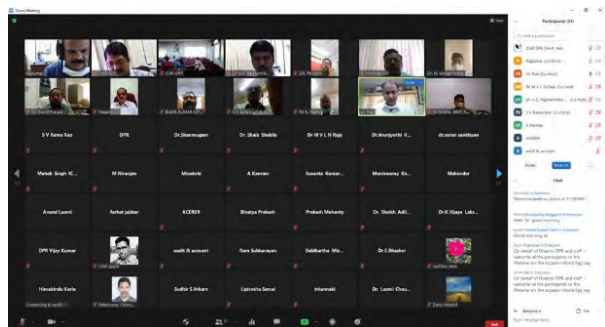
ICAR-DPR Celebrated "WORLD EGG DAY 2020"

ICAR-DPR, Hyderabad organised a webinar on the occasion of the "World Egg Day 2020" with the theme "Egg: A natural immunity booster" on 9th October, 2020. In his opening remarks, Dr. R.N. Chatterjee, Director appreciated the team for organising this webinar at this compelling time. He said egg is the cheapest source of balanced food which is affordable by all sections of the people and which can improve the health of children, pregnant women and elderly people. He said that more and more public awareness should be created to educate about the good qualities of egg consumption and also eradicate the misconceptions and myths regarding the eggs. Mr. V.V. Krishnan, Chief Technical Officer of SKM Egg Products Export (India) Ltd, Tamil Nadu delivered a talk on "Residue free egg production". He elaborated the various regulatory mechanisms followed in our country in producing residue free egg products for local and export market. He also spoke on different possible residues in egg production, their source and ways and means to address these issues in the production line. Dr. Arunjyothi, Scientist (Home

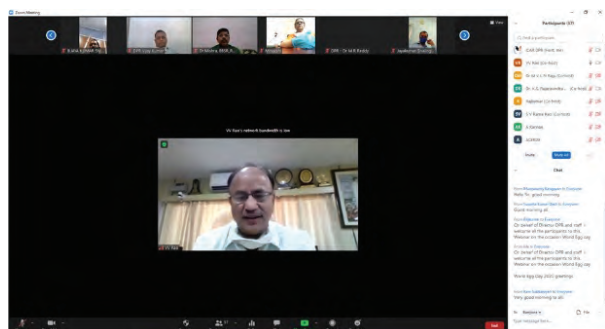
Science), KVK, PVNRTVU, Telangana also delivered a talk on "Role of egg in human nutrition and health". She described the various components of egg and their role in human health. She also described the nutritive qualities of eggs and how they support the wellbeing for different age groups. Dr. P. Mahesh, Director, CPDO, Bangalore also participated in the webinar. The webinar was attended by staff of the Directorate and its Regional Station, Bhubaneshwar, AICRP-PB and PSP centres, SVUs, field veterinarians from various state AHDs and poultry entrepreneurs from all over the country. The programme was coordinated by Dr. U. Rajkumar, Dr. L. Leslie Leo Prince and Dr. K.S. Rajaravindra.

National Webinar on "Entrepreneurial Opportunities in Rural Poultry"

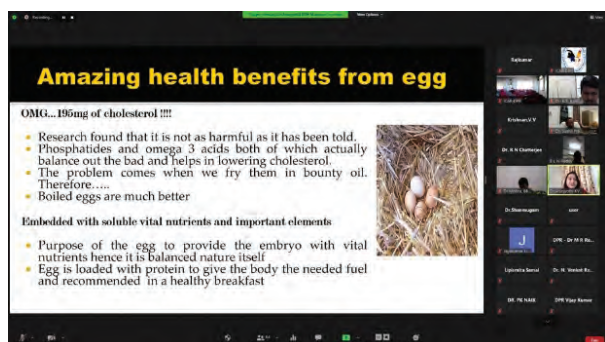
A National Webinar on "Entrepreneurial Opportunities in Rural Poultry" as part of a three days training programme, with an objective to apprise youth about employment and income generation opportunities in rural poultry sector was inaugurated by Dr. R.N.Chatterjee, Director, ICAR-DPR on 3rd November 2020. Dr. R.N.Chatterjee, highlighted the scope and opportunities in this sector and how to achieve the goal of doubling farmers income by 2022. He also emphasized the issue of impact of COVID 19 on income generation and employment in rural India and contribution of poultry sector to mitigate malnutrition. There were 561 applicants from 200 districts of 29 states. About 60% applicants belonged to the Southern region of India followed by Northern region (15.9%), Eastern region



Participants of the webinar



Dr. R.N. Chatterjee, Director addressing the participants



Talk on egg and health benefits



Dr. R.N. Chatterjee, Director delivering inaugural address

(13.9%), Western region (9.3%) and NE region (1.6%). Similarly, about 60% of applicants had the rural background. There was great interest among the youth about the programme because about 62% of them were below 35 years of age and about 32 % applicants were students. During this 3 days programme, different topics such as status and scope of rural poultry in India, commercialization to promote entrepreneurship, business plan, economics and marketing opportunities and small-scale business opportunities were covered by eminent speakers. Dr. U. Rajkumar, Pr. Scientist highlighted the present scenario and future prospects of rural poultry farming and the role of ICAR-DPR in promoting the rural poultry farming in the country. More than 150 persons virtually participated in the inaugural session of webinar through Zoom meeting and Facebook live streaming.

Hindi implementation activities

The Directorate conducted two quarterly meetings of Official Language Implementation Committee on 23-10-2020 and 18-12-2020 in which different issues were discussed for effective implementation of Hindi Language in office. The Directorate conducted two Hindi workshops on 19-09-2020 and 19-12-2020 for upgrading the Hindi skills of staff in day to day routine official work.

The Directorate also celebrated Hindi Fortnight celebrations during 14-28 September 2020 and Hindi Day on 14th September 2020. During these celebrations, different literary competitions were conducted for the staff members. Dr. R.N. Chatterjee, Director highlighted the importance of Hindi language and its vast usage throughout the country. The Director presented cash awards and certificates to all winners.

Independence Day

The Directorate celebrated the Independence Day on 15th August 2020. Dr. R.N. Chatterjee, Director hoisted the National Flag and addressed the staff of the institute and their families.

Mahila Kisan Divas

ICAR-Directorate of Poultry Research organized Mahila Kisan Divas on 15th October 2020. Twenty women farmers participated in this program. They were showed the exhibition unit of the institute where the institute's popular rural poultry varieties were displayed for the benefit of the farmers. The advantages of rearing Vanaraja, Gramapriya and Srinidhi improved varieties over native birds were explained to them. In addition, they were also explained about how rural poultry helps in fetching supplementary income and combats malnutrition in rural areas.

TRANSFER OF TECHNOLOGY

Tribal Sub Plan

Distribution of birds, night shelters and inputs to tribal farmers

The Directorate under Tribal Sub Plan Programme introduced rural/ backyard chicken farming in rural and tribal areas with an aim to improve the living standards of tribal farmers during post COVID-19 Unlock period. The input distribution program was organized at Mankapur (Narnoor Mandal) and Birsaipet-Kolamguda (Uttoor Mandal) villages of Adilabad District on 29-08-2020. A total of 100 tribal beneficiaries were provided with grownup birds (Vanaraja and Kadaknath), night shelters, feed and poultry equipments. A total of 600 birds, 100 night shelters, 900 kg feed, 60 feeders and 60 waterers were distributed. Wearing masks, maintaining social distancing and SOP of COVID-19 as per Unlock guidance was followed. Benefits of backyard farming system were explained to the tribal farmers. Tribal women provided the feedback and impact on the improved germplasm, distributed one year ago. Scientists/Officers from ICAR, DPR and about 100 tribal farmers were present during the programme. For proper safeguarding of birds during night, night shelters were provided to all the beneficiaries.



Input distribution under TSP

Distribution of birds and night shelters to tribal farmers during post-COVID unlock period

The input distribution program was organized at Surpanchguda-Dehgaon (Bazarhathnour Mandal) village of Adilabad District on 16th December 2020. A total of 50 tribal families of Surpanchguda-Dehgaon, Bosra, Yapalguda, Jalluguda, Renguda, Madaguda, Gerjam, Rampoor villages were provided with grownup birds (Vanaraja, Gramapriya and Ghagus), night shelters, feed and poultry equipment. A total of 434 birds, 50 night shelters, 750 kg feed, 50 feeders and 50 waterers were distributed. Wearing masks, maintaining social distancing and SOP as per unlock guidance was followed. Benefits of backyard chicken rearing were explained to the tribal farmers. Tribal farmers of Uttoor Mandal provided the



Input distribution under TSP at Surpanchguda-Dehgaon

feedback and impact of improved germplasm, distributed earlier. Dr. U. Rajkumar, Pr. Scientist & Nodal Officer (STC), Dr. L. Leslie Leo Prince, Pr. Scientist, Dr. B. Prakash, Sr. Scientist, Dr. Vijayakumar, Sr. Scientist and Mr. A.V.G.K. Murthy, AO coordinated the programme. About 125 tribal farmers were present during the programme.

Development Action Plan for SC (DAPSC)

Two input distribution programs were organized in Kottapalle mandal, old Adilabad district under the Developmental Action Plan for Scheduled Castes (DAPSC) to start “Backyard Poultry Farming” so as to improve livelihoods and nutritional security of Schedule Caste (SC) families. A total of 1511 grown up birds, 1200 kg feed, 98 temporary night shelters, 98 feeders, 98 drinkers, pamphlets on back yard chicken farming and 98 packets of medicine and vitamins were distributed to 98 SC beneficiaries to start backyard poultry farming. These beneficiaries had also undergone one day off-campus training on “Backyard Poultry Rearing”.

The Directorate has signed an MOU with ICAR-Central Institute for Subtropical Horticulture, Lucknow on 17-11-2020 for augmenting back yard poultry production for sustainable livelihood security and economic development of SC farmers of West Bengal under DAPSC programme.



Input distribution under DAPSC in Kottapalle Mandal

Training cum Input distribution to SC farmers in Kottapalle Mandal, old Adilabad District, Telangana

Date	No. of Beneficiaries	Inputs distributed
30-09-2020	50 SC Farmer families	791 grown up birds, 600 kg feed, 50 poultry feeders, 50 drinkers, 50 packets of medicine and vitamins, and pamphlets on back yard chicken farming
23-11-2020	98 SC Farmer families	720 grown up birds, 98 temporary night Shelters, 600 kg feed, 48 feeders, 48 drinkers and 48 packets of medicine and vitamins and pamphlets on back yard chicken farming

Technology for commercialization

Technology "Concanavalin A (Con-A) ELISA kit for Newcastle disease virus Sero-monitoring in chicken" for quantifying serum antibodies against Newcastle disease virus was developed and optimized. This technology was validated at NIAB and PVRNTVU, Hyderabad. The kit is useful for poultry industry in (i) assessing quality and efficacy of the ND vaccine used; (ii) to ensure the efficacy of vaccination method followed (iii) to monitor the protective status of birds against ND (iv) to ascertain the need of booster vaccination and its timing (v) to diagnose the NDV field virus outbreak. The technology has been published in Agri innovate website and available for commercialization.

AKMU

The Institute webpage (<http://www.pdonpoultry.org>) was frequently updated and had about 4.2 lakh hits during the period July to December, 2020 with an average of 2275 visits per day. The ICAR-DPR Android Mobile App was maintained and about 1101 users downloaded during the period July to December, 2020. A total of 2590 users downloaded the mobile app up to 31.12.2020 since launching. The Facebook page <https://www.facebook.com/ICAR.DPR.Hyderabad> and Twitter handle were created for dissemination of information.

HUMAN RESOURCE DEVELOPMENT

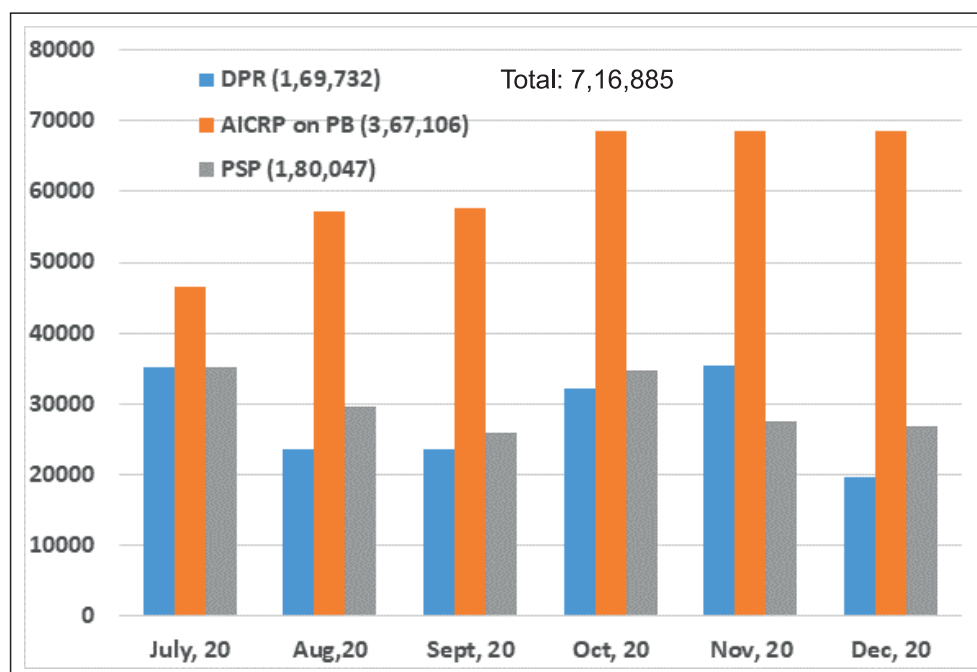
S.No	Name of the Training	Officail(s)	Date	Venue
1	Online training programme on "Stress Management"	Dr. Santosh Haunshi Pr. Scientist	07-10 July 2020	ICAR-NAARM, Hyderabad
2	Online Training Programme on 'Analysis of Experimental Data using R'	Sri P. Santosh Phanikumar Technical Assistant	05-11 August 2020	ICAR-NAARM, Hyderabad
3	Online training on Metabolomics and System Biology	Dr. N. Anand Laxmi Pr. Scientist	05-18 September 2020	Biotechnika Info Labs Pvt.Ltd, Bengaluru
4	Online training programme on "Climate change: Challenges and response for Women Scientists"	Dr. N. Anand Laxmi Pr. Scientist	05-09 October 2020	Lal Bahadur Shatri National Academy of Administration, Mussorie 248179
5	Online training on Bioinformatics	Dr. N. Anand Laxmi Pr. Scientist	05-18 December 2020	Biotechnika Info Labs Pvt.Ltd, Bengaluru.

MEETINGS CONDUCTED

Institutional Animal Ethics Committee Meeting

The XXV Institutional Animal Ethics Committee Meeting was conducted virtually on 20th June 2020. The CPCSEA nominees attended the meeting, where different research protocols were approved.

Germplasm Supply during July-December 2020



Participation in Symposia / Conferences / Seminars / Workshops

Sl.No.	Event	Scientist	Date	Venue
1.	Webinar on Sensitization on uploading of data and new functionalities in KRISHI Repositories	Dr. Santosh Haunshi, Pr. Scientist	15 July 2020	ICAR-IASRI, New Delhi
2.	Virtual Workshop on Recent Advances in feed Evaluation for Poultry	Dr. M.V.L.N. Raju, Pr. Scientist	23-30 September 2020	Massey University, New Zealand and US Soybean Export Council
3.	Online International Workshop on Regulatory Approaches for Animal Biotechnology	Dr. S.P.Yadav, Pr. Scientist	8-9 September 2020 23-24 September 2020 7-8 October 2020	ISAAA
4.	Online International Conference on Climate Change, Environment and Sustainable Development 2020	Dr. S.P.Yadav, Pr. Scientist	2-3 October 2020	International Multi disciplinary Research Foundation
5.	International Webinar on Defeating Biotic Stressors to Safeguard Poultry Production, Health and Food Safety	Dr. A.Kannan, Pr. Scientist Dr. L.L.L. Prince, Pr. Scientist Dr. Shanmugam M, Sr. Scientist	27-28 November 2020	TANUVAS, Chennai
6.	National webinar on Entrepreneurial Opportunities in Rural Poultry	All the Scientists of the Directorate	3- 5 November 2020	ICAR-DPR, Hyderabad
7.	4th Interactive Session for IBSCs registered on IBKP portal	Dr. S.P.Yadav, Pr. Scientist	05 November 2020	DBT, New Delhi
8.	J-Gate@CeRA Online Regional Ambassador and Users Orientation Program - Southern region	Dr. S.P.Yadav, Pr. Scientist	09 November 2020	DKMA-ICAR
9.	Webinar on Defeating Biotic Stressors to Safeguard Poultry Production, Health and Food Safety	Dr. S.P.Yadav, Pr. Scientist	27-28 November 2020	TANUVAS Chennai
10.	Online National Seminar on Big data Analytics	Dr. L.Leslie Leo Prince, Pr. Scientist Dr. S. Jaya Kumar, Sr. Scientist	10-11 December 2020	ICAR- NAARM, Hyderabad

PERSONALIA

- New Joinings** : Dr. S. Jayakumar, Senior Scientist has joined on 01/10/2020 on transfer from ICAR-National Bureau of Animal Genetic Resources, Karnal, Haryana.
Sri G. Madhukar, Sr. Tech. Asst. has joined on 31/10/2020 on transfer from NIASM, Baramati, Pune, Maharashtra.
- Retirement** : Sri A. Subrahmanyam, Tech. Officer has retired on superannuation on 31/08/2020.
- Promotions** : Sri D. Ashok Kumar, S.S.S. has been promoted to Technician (T-1) on 08/12/2020.
- Transfer** : Smt. N.R. Dhanutha, Sr. Tech. Asst. has been transferred to ICAR-CMFRI, Cochin on 31/10/2020.

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To



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