

# CITATIONS

ICAR AWARD CEREMONY

16 JULY 2020



Indian Council of Agricultural Research  
New Delhi

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नरेन्द्र सिंह तोमर

NARENDRA SINGH TOMAR



कृषि मंत्री, भारत सरकार  
AGRICULTURE & FARMERS WELFARE  
MINISTER, GOVT. OF INDIA  
& PRESIDENT, ICAR SOCIETY

## संदेश



मुझे यह जानकर हर्ष है कि भारतीय कृषि अनुसंधान परिषद ने वैज्ञानिकों, किसानों, संस्थानों और कृषि पत्रकारों के उल्लेखनीय योगदान को मान्यता प्रदान करने के लिए विभिन्न पुरस्कारों की स्थापना की है। भारतीय कृषि अनुसंधान परिषद के इस 92वें स्थापना दिवस के अवसर पर 20 विभिन्न श्रेणियों के 161 पुरस्कार प्राप्तकर्ताओं के प्रयासों को मान्यता प्रदान की जा रही है। इसमें 3 संस्थान, दो एआईसीआरपी, 14 कृषि विज्ञान केन्द्र (केवीके), 97 वैज्ञानिक, 30 किसान, 6 पत्रकार और 9 प्रशासनिक कर्मचारी सम्मिलित हैं।

मुझे प्रसन्नता है कि परिषद, पुरस्कार प्राप्तकर्ताओं के उल्लेखनीय योगदान पर एक पुस्तिका भी प्रकाशित कर रही है। वर्तमान संदर्भ में जब हमें नई चुनौतियों का सामना करना पड़ रहा है, कृषि क्षेत्र में नई और बेहतर प्रौद्योगिकियों का अंगीकरण सर्वाधिक महत्वपूर्ण हो गया है। मुझे विश्वास है कि हमारे सभी कृषि वैज्ञानिक, अनुसंधानकर्ता, विद्वान शिक्षक, विस्तार पदाधिकारी, किसान और अन्य सभी हितधारक इस तथ्य से भलीभांति अवगत होंगे और इस अवसर का लाभ उठाएंगे तथा समस्याओं के समाधान और जटिल चुनौतियों से प्रभावी तरीके से निपटने में सामूहिक योगदान देंगे।

मुझे यह कहने में सुखद अनुभूति हो रही है कि माननीय प्रधानमंत्री श्री नरेन्द्र मोदी जी के नेतृत्व में कृषि एवं अन्य क्षेत्रों के बीच असमानता दूर करने के गहन प्रयास किए गए हैं। आज हमारा देश अनाज उत्पादन के मामले में न केवल आत्मनिर्भर हुआ है, बल्कि आवश्यकता से अधिक उत्पादन करने में भी समर्थ बन गया है। हमारे देश में लगभग 86 प्रतिशत लघु एवं सीमांत किसान हैं, और सरकारी योजनाओं, कार्यक्रमों एवं सुविधाओं तक उनकी आसान पहुंच बहुत आवश्यक है। इसे सुनिश्चित करने में कृषि विज्ञान केन्द्र और कृषि वैज्ञानिक महत्वपूर्ण भूमिका निभा रहें हैं।

मैं परिषद के प्रयासों की सराहना करते हुए आशा व्यक्त करता हूँ कि पुरस्कार प्राप्तकर्ताओं की उपलब्धियों से समस्त हितधारकों के साथ अन्य लोगों को भी प्रेरणा मिलेगी और देश में कृषि-विकास के सभी क्षेत्रों में वैज्ञानिक प्रयासों एवं चोन्मेष को बढ़ावा मिलेगा।

(नरेन्द्र सिंह तोमर)



परशोत्तम रूपाला  
PARSHOTTAM RUPALA



राज्य मंत्री  
कृषि एवं किसान कल्याण  
भारत सरकार  
MINISTER OF STATE FOR AGRICULTURE  
& FARMERS WELFARE  
GOVERNMENT OF INDIA

## संदेश



मुझे यह जानकर असीम हर्ष का अनुभव हो रहा है कि भारतीय कृषि अनुसंधान परिषद ने कृषि संस्थानों, वैज्ञानिकों, किसानों तथा कृषि जगत के पत्रकारों में से उत्कृष्ट उपलब्धियाँ हासिल करने वाले व्यक्तियों को मान्यता प्रदान करने के लिए कई पुरस्कार शुरू किए हैं। मुझे यह जानकर भी खुशी हो रही है कि भारतीय कृषि अनुसंधान परिषद के 92वें स्थापना दिवस के अवसर पर दिनांक 16 जुलाई, 2020 को सम्मानित किए जाने वाले पुरस्कार विजेताओं के उल्लेखनीय योगदान पर परिषद एक पुस्तिका भी प्रकाशित कर रही है। कृषि क्षेत्र में नवीनतर तथा बेहतर प्रौद्योगिकियों के निरंतर विकास ने न केवल देश में हरित, श्वेत और नील क्रांतियों के युग का सूत्रपात किया है जिससे हम अधिकांश कृषि जिंसों के मामले में आत्म-निर्भर बन गए हैं, बल्कि कई जिंसों के मामले में हमारा उत्पादन सरप्लस हो रहा है। इन लाभों को बनाए रखने के लिए तथा उन्हें और मजबूत बनाने के लिए, हमारे वैज्ञानिकों, शिक्षक एवं कृषक समुदाय के समर्पित प्रयास आवश्यक हैं।

मुझे पूर्ण विश्वास है कि हमारे कृषि वैज्ञानिक, अध्यापक, विस्तार पदाधिकारी और कृषक समुदाय के सदस्य कृषि उत्पादन और उत्पादकता को और आगे बढ़ाने में सामूहिक रूप से योगदान प्रदान करने में कोई कोर-कसर नहीं छोड़ेंगे और बदलती जलवायु के कारण हमारे समक्ष प्रस्तुत हो रही नित नई और बड़ी चुनौतियों का समाधान करने में हमारी सहायता करेंगे। ये पुरस्कार तथा मान्यता इस क्षेत्र की वृद्धि एवं विकास के कार्य से जुड़े सभी श्रेणियों के व्यक्तियों में वैज्ञानिक उद्यम को प्रोत्साहित करने के लिए और अधिक प्रेरणादायक सिद्ध होंगे। मैं आज के ये शुभ अवसर पर सभी पुरस्कार विजेताओं को हार्दिक बधाई और शुभकामनाएं देता हूँ।

(परशोत्तम रूपाला)





कैलाश चौधरी  
KAILASH CHOUDHARY



कृषि एवं किसान कल्याण  
राज्य मंत्री  
भारत सरकार  
MINISTER OF STATE FOR AGRICULTURE  
& FARMERS WELFARE  
GOVERNMENT OF INDIA

## संदेश



यह नोट करना उत्साहवर्धक है कि भारतीय कृषि अनुसंधान परिषद ने व्यक्तियों/वैज्ञानिकों की टीमों, विस्तार पदाधिकारियों, प्रगतिशील/नवोन्मेषी किसानों, कृषि से जुड़े पत्रकारों के साथ-साथ देश में कृषि के अनुसंधान, विकास और प्रोत्साहन में संलग्नी विश्वविद्यालयों/संस्थानों तथा कृषि विज्ञान केन्द्रों की योग्यता और उपलब्धियों को मान्यता प्रदान करने एवं उनके बीच स्वस्थ प्रतिस्पर्धा सृजित करने के लिए कुल 23 पुरस्कार प्रारंभ किए हैं। ये पुरस्कार और सम्मान देश में कृषि अनुसंधान, शिक्षा और विस्तार और में श्रेष्ठता को प्रोत्साहित करने में महत्वपूर्ण भूमिका निभा रहे हैं। मुझे यह जानकर और भी खुशी हो रही है कि दिनांक 16 जुलाई, 2020 को भारतीय कृषि अनुसंधान परिषद के 92वें स्थापना दिवस के अवसर पर सम्मानित किए जाने वाले पुरस्कार विजेताओं के महत्वपूर्ण योगदान को रेखांकित करने के लिए परिषद द्वारा एक पुस्तिका का प्रकाशन किया जा रहा है। मेरा दृढ़ विश्वास है कि कृषि विज्ञानों सहित किसी भी क्षेत्र में उत्कृष्ट उपलब्धियों के लिए पुरस्कार और प्रोत्साहन, सृजनात्मक और नवोन्मेषी सोच को बढ़ावा देने के लिए अनिवार्य हैं जिससे अन्ततः नई और बेहतर प्रौद्योगिकियों तथा कौशल का विकास होता है। मुझे विश्वास है कि इन पुरस्कारों से पुरस्कारों की विभिन्न श्रेणियों के बीच प्रतिस्पर्धा सृजित होगी और कृषि उत्पादन एवं उत्पादकता में स्थायी वृद्धि करने के हमारे लक्ष्यों को प्राप्त करने के लिए पुरस्कार विजेता प्रौद्योगिकियों, ज्ञान और कौशल को विकसित करने की दिशा में कार्य करने के लिए प्रेरित होंगे जिससे हमारे लोगों की खाद्य और पोषणिक सुरक्षा सुनिश्चित होगी और किसानों की आय को दोगुना करने का लक्ष्य प्राप्त किया जा सकेगा।

शुभकामनाओं सहित।

(कैलाश चौधरी)



डॉ. त्रिलोचन महापात्र

Dr. T. MOHAPATRA



Secretary, Department of Agricultural Research  
& Education and Director General  
Indian Council of Agricultural Research  
New Delhi 110 001

## FOREWORD



Incentivizing individual employees and teams for their outstanding performance, across organizations, make them more efficient, responsive and productive apart from improving their level of job satisfaction. The awards, besides recognizing merit and accomplishments, generate healthy competition among individuals, groups and institutions to strive and attain still higher levels of excellence in their respective areas of work. The Indian Council of Agricultural Research has been recognizing and rewarding the institutions, scientists, teachers, farmers and agricultural journalists every year. It is satisfying to note that during this year; 161 awardees under 20 different categories have been selected. These comprise three Institutions, two AICRP, 14 KVKs, 94 Scientists, 31 farmers, 6 journalists and 10 staff members of various ICAR Institutes. It is heartening to note that of the 141 awarded persons 19 are women. Among the Agricultural Universities and Deemed universities, Govind Ballabh Pant University of Agriculture & Technology, Pantnagar has been bestowed upon the Best Agriculture University Award for the rapid strides in all spheres of teaching, research, extension and innovations, ICAR- Central Marine Fisheries Research Institute, Cochi has been awarded the Best Institution Award among the large institute category whereas, the ICAR-Central Institute for Research on Cotton Technology, Mumbai has been adjudged the best ICAR institution among smaller ICAR Institutes category.

All India Coordinated Research Project on Sorghum, Hyderabad and All India Coordinated Research Project on Maize, Ludhiana have been jointly conferred Chaudhary Devi Lal Outstanding All India Coordinated Research Project Award 2019. Rafi Ahmed Kidwai Award has been bagged by 6 scientists for outstanding contributions in Crop/Horticultural Sciences, NRM/ Agricultural Engineering and Animal/Fisheries Sciences respectively, two of whom are from outside NARES. Lal Bahadur Shastri Outstanding Young Scientist Award 2019 has been bagged by 4 scientists one each in Crop/ Horticultural Sciences, Animal/Fisheries Sciences and Social Sciences. Jawaharlal Nehru Awards for high quality Ph.D. thesis are being given to 18 scholars. There are 3 awardees for Panjabrao Deshmukh Woman Scientist Award. The Vasant Rao Naik Award for Outstanding Research and Applications in

Dryland Farming Systems for 2014 has gone to research team from CAZRI, Jodhpur. Dr. Devvrat Singh, ICAR-Indian Institute of Soybean Research, Indore (M.P.) has been conferred NASI-ICAR Award for contributions in developing equipments to encourage mechanization & reduce drudgery. Deendayal Upadhyay Krishi Vigyan Protsahan Puruskar for KVKs at National Level has been jointly bagged by Krishi Vigyan Kendra, Datia, Madhya Pradesh and Krishi Vigyan Kendra, Venkataramannagudem, Andhra Pradesh for outstanding extension/ outreach activities having significant impact in developing agriculture and allied sectors of the district.

The awards in the best KVK at Zonal level were also bagged by 12 outstanding KVK's in different zones. Jagjivan Ram Abhinav Kisan Puruskar has been awarded to 15 farmers, one at National level and 14 at Zonal level. The N.G. Ranga Award for Diversified Agriculture has been awarded to Shri Raghupat Singh, a farmer from Moradabad (UP) for his outstanding achievements in diversified farming. Two farmers one each from Rajasthan and MP, one among whom is woman are being recognized for their outstanding contributions in promoting organic farming. Deendayal Upadhyay Antyodaya Puraskar for small and marginal farmer category has been bagged by 13 outstanding farmers 1 at National and 12 at zonal levels. Fakhruddin Ali Ahmed Award for Outstanding Research in Tribal Farming Systems has been bagged by 4 teams of the Scientists one each from ICAR-Indian Institute of Spices Research, Kozhikode, Kerala, ICAR Research Complex for NEH, Tripura Centre, AICRP on Dryland Agriculture IGKV, Jagdalpur and ICAR-Central Arid Zone Research Institute, Regional Research Station, Leh (Ladakh). Swami Sahajanand Saraswati Outstanding Extension Scientist Award has gone to 3 scientists, one each from Manipur, Telengana and Tripura for their outstanding work with the farming community towards promotion of the sustainable development models.

The authors of 4 technical books in Hindi, one each on Crop Science/Horticulture, National Resource Management/Agricultural Engineering, animal/ Fisheries Sciences and Social Sciences have been selected for Dr. Rajendra Prasad Puruskar. Six professors/scientists have been selected for the Bharat Ratna Dr. C. Subramanian Best Teacher Award in the fields of Crop/Horticultural Sciences, NRM/Agricultural Engineering, Animal/Fisheries Sciences and Social Sciences. Six journalists comprising of 4 from Print and 2 from electronic media have been given the Chaudhary Charan Singh Award for agricultural journalism 2019. Nine staff members of various ICAR Institutes 3 each in administrative and supporting categories and 4 in technical category are also being recognized for their contributions to the system. I congratulate all the award winners and their family members and hope that these awards will encourage them to attain newer heights in future and also inspire their colleague to emulate them in pursuit of excellence. I wish to thank all the Chairmen and the members of the Award Judging Committees for the wonderful job. Our greetings to the NARES family on the occasion.

8 July, 2020  
New Delhi



(T. Mohapatra)

Dr. SHIV PRASAD KIMOTHI  
Assistant Director General  
(Coordination)



भारतीय कृषि अनुसंधान परिषद  
कृषि भवन, डा. राजेन्द्र प्रसाद मार्ग  
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New Delhi - 110001

## ACKNOWLEDGEMENT



Indian Council of Agricultural Research (ICAR) acknowledges the outstanding contributions of Institutions, AIRCPs, Scientists, Women Scientists, Teachers, Students, Innovative Farmers, Journalists covering research, teaching and innovation and Technical Books in Hindi every year by giving away cash award, citation and certificate. The first of these awards was given in 1956. With the passage of time, new awards were added. ICAR and NASI has instituted NASI-ICAR Award for Innovation and Research on Farm Implements from the year 2013 in order to reduce drudgery of farm women. At present, there are total 23 categories of awards of which 20 are annual, 1 biennial, 1 given once every 5 years and 1 open award. In the year 2019, extraordinary contributions of 161 individual scientists, teachers, farmers, extension experts, journalists, administrative personnel and Institutions, are being recognized in 20 different categories. The procedure for selecting the awardees involves many steps of meticulous planning and diligent efforts. The ICAR Awards were advertised in the month of Oct.-November, 2019. Applications/nominations were received till 31st December 2019. The documents were scrutinized and classified either subject area or geographical zone wise as per guidelines of the awards. The soft copies of the documents along-with criteria for evaluation were sent to the Award Judging Committee members and Chairpersons. The committees were chaired by eminent scientists of national stature and consisted of experts in different disciplines and from different parts of the country as members. In view of the extraordinary situation caused

by Corona Pandemic, the Judging Committees this year met through video conferencing in June, 2020 for finalizing the recommendations.

I express my sincere gratitude to Hon'ble Agriculture & Farmers Welfare Minister, Shri Narendra Singh Tomar ji, Shri Parshottam Rupala Ji & Shri Kailash Choudhary Ji for their patronage, constant encouragement and support to the Council in various activities. I am grateful to Dr. T. Mohapatra, Secretary DARE and DG, ICAR, Shri Sanjay Singh, AS (D) and Secretary, ICAR and Shri B. Pradhan, SS(D) and FA DARE/ICAR for continuous encouragement and guidance at all stages. The dedicated efforts made by all the Chairmen and members of the ICAR Award Committees in objectively evaluating each individual application carefully and providing suggestions are gratefully acknowledged. The painstaking efforts made by the staff of Award Cell especially Ms. R. Banerjee, Dr. Anjani Khulbe, Sh. Umed Singh, Mr. D.D. Sharma, Sh. Ram Singh and Shri Vinay Kumar in scrutinizing the applications, organizing the meetings deserve special mention.

7th July, 2020  
New Delhi



**(Shiv Prasad Kimothi)**

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## SARDAR PATEL OUTSTANDING ICAR INSTITUTION AWARD 2019



*Award 2019*

The Indian Council of Agricultural Research (ICAR) was set up on 16<sup>th</sup> July, 1929 on the recommendation of the Royal Commission on Agriculture. It was recognised in 1965. Over the years it has developed a large research and training infrastructure and operates through 100 Institutes including Bureaux, PDs & National Research Centres (NRCs) and 71 Agricultural Universities.

In order to recognize the outstanding performance by the ICAR Institutes, Deemed Universities of ICAR, Central Agricultural University and State Agricultural Universities, three Awards of ₹ 10.00 lakh each, are given to two ICAR Institutes/NRCs/Project Directorates/National Bureaux (one to large and other to small) and one to State Agricultural University/DUs/CAU. The award has been named after Sardar Vallabhbhai Patel (1875-1950), the first Deputy Prime Minister and Home Minister of India. For the awards of the three categories viz. (i) ICAR's National Institutes/Large Institutes (scientific cadre strength more than 60) (ii) ICAR's NRCs/Project Directorate etc./small institutes (scientific cadre strength up to 60) and (iii) State Agricultural Universities/DUs/CAU. 20 eligible applications were received in response to the open advertisement, the recipient of awards are:



**ICAR-CENTRAL MARINE  
FISHERIES RESEARCH INSTITUTE**  
KOCHI, KERALA

**ICAR-CENTRAL MARINE FISHERIES RESEARCH INSTITUTE, KOCHI, KERALA** has been awarded Sardar Patel Outstanding ICAR Institution Award 2019 in the category of Large Institute. The ICAR-Central Marine Fisheries Research Institute (ICAR-CMFRI), the largest fisheries research institute in the region, through its seven decade long committed R&D efforts has been able to sustain the marine fish production by way of its uniquely twin role of generating fisheries governance/policy oriented knowledge system as well as resource augmenting and conservation oriented technological options that transform the marine space as a frontier food production system. Mandated for developing time series database on marine fish production from the EEZ of the country, their biology, distribution, abundance, fishery forecast, potential yield, and stock assessment, the Institute has been assisting the Central Government as well as maritime states in formulating and implementing management measures for sustainable production. The mariculture technologies developed for open sea cage farming of high value marine finfish and shellfish, bivalves and marine ornamentals have bolstered the coastal livelihood-cum-nutritional security and women empowerment. The Institute also addresses issues of ecosystem health, biodiversity conservation, marine biotechnology, and coastal pollution. The HRD and out-reach extension programmes of the Institute have an enduring impact on the sector. The CMFRI has demonstrated its competence, commitment and mission to the overall fisheries development, fulfilling the Blue Economy aspirations of the nation. ICAR-CMFRI has emerged as a global leader in research and development related to tropical marine fisheries and mariculture. The outstanding work carried out by the Institute truly deserves the recognition of this award.

**ICAR-CENTRAL INSTITUTE FOR RESEARCH ON COTTON TECHNOLOGY, MUMBAI** has been awarded Sardar Patel Outstanding ICAR Institution Award 2019 in the category of Small Institute. ICAR-CIRCOT, is a premier institute of ICAR working under the Agricultural Engineering SMD, with sanctioned strength of 50 scientists. The institute is mandated to carryout Basic and Strategic research on processing cotton and its agro residues, development of value added products & cotton quality assessment besides providing skill development, incubation services and functioning as referral laboratory. ICAR-Central Institute for Research on Cotton Technology (CIRCOT), Mumbai established in 1924 evolved as the premier institute with a vision for Global Excellence in Cotton Technology. Making an exciting beginning in 1928 by identification of cotton fabrics excavated from the Mohenjo-Daro of Indus Valley in 3000 B.C. and now reaching a status of establishing India's First Nanocellulose Pilot Plant in 2015. CIRCOT has made significant contribution for the development of ginning sector, promotion of cotton through development of cotton rich blends, calibration cotton & norms for cotton quality assessment, Environment friendly wet processing technologies, functional finishing technologies for cotton textiles and value addition to biomass for its commercial utilization. CIRCOT is an NABL accredited laboratory providing commercial testing services to the cotton industry. The institute generates revenue through technology commercialization, research consultancy, skill development programmes, incubation services and commercial testing services. Institute has a vibrant Agri-business Incubation Centre that nurtures vibrant and sustainable start-ups. CIRCOT undertakes skill development programme and provides incubation service in ginning technology, nanotechnology, microscopy, biomass utilization, chemical & material characterization, fabric comfort, textile technology etc. to create employment opportunities and establishment of start-ups. CIRCOT's role for development of cotton sector in African countries is noteworthy. CIRCOT is geared up towards sustainable cotton processing and value addition in harmony with Human health, Society and Environment.



**ICAR-CENTRAL INSTITUTE FOR  
RESEARCH ON COTTON TECHNOLOGY,  
MUMBAI**



**GOVIND BALLABH PANT UNIVERSITY  
OF AGRICULTURE AND TECHNOLOGY,  
PANTNAGAR, UTTARAKHAND**

**GOVIND BALLABH PANT UNIVERSITY OF AGRICULTURE AND TECHNOLOGY, PANTNAGAR, UTTARAKHAND** has been awarded Sardar Patel Outstanding ICAR Institution Award 2019 in the category of University. G. B. Pant University of Agriculture & Technology, Pantnagar has contributed significantly for excellence in agricultural research, teaching and extension through innovative efforts and endeavours in all possible fronts which is visible through its significant achievements and ranking at global, national and state level. The University has the credit to rear significant number of students who qualified JRF, SRF, ARS, and ICAR-NET successfully. Besides it, the placement scenario from the University has also been encouraging. The rigorous and systematic efforts taken by the University to upbringing excellence in the system has been remarkable with feedback system, awards and recognitions for students and faculty at College and University level, soft skill and language skill efforts and in house teaching quality enhancement endeavours. The efforts made at the research front has also been spectacular with large number of improved varieties of crops developed and breeder seed of these varieties spread across the country among different Universities and institutions which has supported meticulously in food and nutritional security efforts. The University won and utilized competitive grants through 465 externally funded projects to further the goals of research and development in 2019. The Community Radio Service run by the University has won National Community Radio award thrice in recent years.

## CHAUDHARY DEVILAL OUTSTANDING ALL INDIA CO-ORDINATED RESEARCH PROJECT (AICRP) AWARD 2019



*Award 2019*

The Council has several All India Coordinated Research Projects (AICRP). In order to recognize the outstanding performance of the AICRP and its cooperating centres for enhancement of agricultural productivity, one award of ₹3.0 lakh (₹2.0 lakh for main coordinating unit and ₹1.0 lakh for the best centre) is given to the All India Coordinated Research Project. The Award has been named after Chaudhary Devi Lal (1914-2001) who had been the Deputy Prime Minister and Agriculture Minister of India. In all 9 eligible applications were received in response to the open advertisement. The details about the winning AICRP along with major achievements are as follows:



**ICAR-INDIAN INSTITUTE  
OF MILLET RESEARCH  
HYDERABAD**

**THE ALL INDIA COORDINATED RESEARCH PROJECT ON SORGHUM (AICRPS), ICAR- INDIAN INSTITUTE OF MILLET RESEARCH, HYDERABAD** has been conferred Chaudhary Devi Lal Outstanding All India Coordinated Research Project Award 2019. Research carried out under AICRP-Sorghum during 2014-19 led to release of 9 high yielding pest and disease tolerant hybrids apart from 18 varieties at national (7 hybrids & 10 varieties) and state level. Multi-cut forage variety CSV33MF released in 2016 out yielded SSG 59-3 after 38 years. Besides, 4 single-cut, 2 sweet sorghum and 3 special purposes varieties (BMR, hurda & papad making) were released. Four old cultivars (CSH14, CSH16, CSH24MF & CSV29R) were recognized as landmark variety by ICAR in 2019. Over 36 value added products were developed and popularized. Technology demonstrations at farmers' fields registered over 89.9% improvement in yield over local practices and commercialization of these technologies generated 90.0 lakh revenues. Productivity of rabi and kharif sorghum increased by 43% and 11.5% respectively as compared to 2000-05. Extensive quality linkages and interactions among clientele including scientists, farmers, universities, national and international institutions, state and center department of agriculture and private partners involved in this programme has strengthened the system and improved efficacy. AICRP-Sorghum has achieved its leadership status in the field of sorghum research and development through quality publications, training, linkages, salable technologies, as evident by MoUs with diverse partners including research and educational organization, private companies and start-ups.

THE ALL INDIA COORDINATED RESEARCH PROJECT ON MAIZE (AICRPM), ICAR-INDIAN INSTITUTE OF MAIZE RESEARCH, LUDHIANA has been conferred Chaudhary Devi Lal Outstanding All India Coordinated Research Project Award 2019. The AICRP on Maize has been dedicatedly involved in developing technologies for maize since 1957. It has developed over 400 cultivars and Improved production technologies, which have contributed over 300% Increase in productivity in last 60 years reaching 2965 kg/ha during 2018-19. The most conspicuous achievement has been made during current decade registering yield enhancement of 59.7 kg/ha/year. Some of the popular field corn cultivars released through the project are DHM117& -121 COMH-6 & 9, PMH-1, 3& 6, DMAH- 1301, -1305 among others. Work on biofortification has given rise to several nutritionally enriched hybrids like Shaktimaan series, HQPM-1 & -7, APQSH9, Pusa HM-8& -9 etc. Specialty corn research yielded popcorn hybrids BPCH6, DMPCH 1402: baby corn hybrids VLBC-27, IMBH-1532 &-1530; sweet com hybrids FSCH-75, ASKH-4 to name a few. AICRPM has developed improved location specific production technologies. Zero till maize has been proved to be a boon in conservation agriculture. In recent past the project has taken a lead role in awareness creation and combating the menace of new invasive pest, fall armyworm.



**ICAR-INDIAN INSTITUTE  
OF MAIZE RESEARCH  
LUDHIANA**

## PANDIT DEENDAYAL UPADHYAY RASHTRIYA KRISHI VIGYAN PROTSHAHAN PURASKAR 2019 (NATIONAL & ZONAL)



*Award 2019*

Indian Council of Agricultural Research (ICAR) has instituted one National and 11 Zonal awards with nomenclature Pandit DeenDayal Upadhyay Rashtriya Krishi Vigyan Protshahan Puraskar (National / Zonal) to promote healthy competition among Krishi Vigyan Kendras (KVKs) at Zonal and National Level for application of science and technology in agriculture, provide incentives for improving the efficiency and performance of KVKs for espousing the cause of farming community and to promote a sense of Institutional pride among KVKs for large scale application of scientific methods and appropriate technologies for enhanced productivity, profitability and sustainability of farming systems. In view of the pivotal role envisaged for the KVKs in the National Missions on Doubling Farmers Income and Building New India, these awards assume special significance. KVKs are playing and shall continue to play key role in ensuring rapid growth, development and transformation of Indian agriculture. There would be one National award comprising of ₹25.00 lakhs and eleven Zonal awards of ₹7.50 lakhs each, certificate and citation



## NATIONAL

**KRISHI VIGYAN KENDRA, DATIA, MADHYA PRADESH** has been awarded Pandit Deen Dayal Upadhyay Rashtriya Krishi Vigyan Protshahan Puraskar-2019 at National level which it shares with Krishi Vigyan Kendra, Venkataramannagudem, Andhra Pradesh. Krishi Vigyan Kendra, Datia is working for livelihood security and enhancement of productivity and profitability through increase in net farm income in district. The KVK has taken many initiatives under its mandatory activities OFT, FLDs, CFLDs technology demonstrations and capacity building programmes on farmers' fields in adopted villages. As a result of execution of these different activities the adoption of improved technologies has been increased by the targeted farmers. The yield of rice, maize, wheat, black gram, chickpea, field pea, sesame, groundnut and mustard increased by 16.38, 93.00, 97.46, 52.00, 36.05, 36.31, 57.60, 18.24 and 23.87 percent under improved technologies in comparison to farmers practice. The yield of vegetable crops was also increased by 21.64 to 44.44 percent under improved technologies. Fodder crop yield and milk production also increased under improved technologies. Kharif onion, summer green gram, short duration pigeon pea, oat, and napier grass also introduced in adopted village to enhance the productivity and profitability and income of the farmers. Area under irrigation was also increased by creation of rain water harvesting structures viz. farm ponds, poly bag check dam and renovated check dam. Irrigated area increased from 5 to 25 percent during kharif and 15 to 30 percent during rabi season. Soil health cards were also provided to every house hold in adopted villages to balance use of fertilizer dose. Micro Irrigation System was also popularized in adopted village to enhance the water use efficiency. Vocational trainings were provided to rural youth to skilled up to them in various farm related activities for self-employment generation. Several trained rural youths started their own entrepreneurship like poultry, fishery, value addition of milk, round the year flower production, seed production and mushroom production.

## NATIONAL

**KRISHI VIGYAN KENDRA, VENKATARAMANNAGUDEM, ANDHRA PRADESH** has been awarded Pandit Deen Dayal Upadhyay Rashtriya Krishi Vigyan Protshahan Puraskar-2019 at National level which it shares with Krishi Vigyan Kendra, Datia, Madhya Pradesh. The KVK under Dr YSR Horticultural University has taken up various activities for agriculture, horticulture, fisheries, animal husbandry and home science with a focus on transfer of technology through extension activities and is working in 25 mandals within the district. Thirty six villages including eleven tribal villages were adopted in the district to conduct location specific extension activities i.e., OFTs, FLDs, Trainings, demonstrations etc. A total of 155 villages in the district were approached with total farmer coverage of 10,977. Three hundred and nine On-farm trials (OFTs), 973 Front line demonstrations (FLDs), 261 training programmes and 572 other extension activities were conducted covering 46,792 farmers to promote the best/location specific technologies for improving yields and reducing the cost of cultivation. A Total of 1134 field diagnostic visits were conducted in the disciplines of agriculture, horticulture, animal husbandry, fisheries and allied sectors covering about 5817 farmers to address the location specific problems and remedies were suggested. KVK completed the ICAR-TSP project on related to livelihood improvement of the villagers through introduction of backyard poultry rearing, apiary, integrated fish culture cum horticultural/ poultry and of improved vegetable cultivation in Tribal areas. Through processing & value addition millet based malt and biscuits were prepared and registration under FSSAI with the brand name "SRI FOODS" which was supplied to 26 tribal welfare schools in this agency area. The KVK is successful in create sustainable employment and economic security to tribal families apart from that conducted many programs for the benefit of tribal rural people. Composite fish culture was introduced by KVK in tribal areas for the first time in rainwater harvested tanks. They are imparting trainings to the practicing farmers/ farm women, rural youth and field level extension functionaries by following the methods of "Teaching by doing" and "Learning by doing". The KVK is educating the farmers/rural youth/ women/ fisherfolk/ technicians/ Extension functionaries through organizing on-campus and off-campus trainings. Apart from this the KVK is involved in conducting field diagnostic visits, organizing and participating in many melas and exhibitions, providing added training facilities in the areas for home making and nutrition education for rural community. Two farmer field schools (FFS) were also conducted on oil palm and vegetables to train the farmers on their field together with four long duration vocational training programs to address the various problems and to improve the skill of the rural youth and to make them as entrepreneurs. The KVK has started Youtube video channel KVK, Venkataramannagudem and a website [www.kvkvrgudem.ac.in](http://www.kvkvrgudem.ac.in) to increase the outreach for effective dissemination of technologies.

## ZONAL

### ZONE - I

**KRISHI VIGYAN KENDRA, AMRITSAR, PUNJAB** has been awarded Pandit DeenDayal Upadhyay Rashtriya Krishi Vigyan Protshahan Puraskar-2019 for Zone I together with Krishi Vigyan Kendra, Leh-II, Ladakh. KVK, Amritsar is situated on Northern side of the city on Majitha Road with a total land of 7.80 ha of which 0.25 ha is under buildings, 1.00 ha under demonstration units, 0.75 ha under Mela ground, 5.30 ha under crops, 0.25 ha under Nutrition and Herbal garden and 0.25 ha under miscellaneous & other activities. KVK has administrative building. Soil and Water testing laboratory. Home science laboratory, Poly house/ Net house, Nutrition and Herbal Garden, Goatry and Poultry Unit, Farm Godown, Rain Water Harvesting system, Piezometer, Plant health diagnostic services, Seed Sale shop and Mela ground. Bee Keeping, Mushroom production and Food processing units are under construction. The Crop Residue Management program by the KVK has resulted in wheat crop sown in 20,000 ha acre with Happy Seeder and the adoption of PAU recommended varieties has become more than 96 % in paddy and 99% in wheat. The KVK work in alliance with State department of Agriculture and Horticulture, Agriculture Technology Management Agency, IFFCO, NFL, Nehru Gyna Kendra, and participates as experts in camps and training programs organized by these departments. KVK has conducted Frontline demonstrations on production technology of Gobhi Sarson, variety GSC 7 (36 demonstrations) Gram variety PBG 7 (43 demonstrations) Summer Moong variety SML 832 (34 demonstrations). In the year 2018-19, KVK scientists have published two news bulletins, six research papers, three technical bulletins, six popular articles, one technical folder and submitted monthly, quarterly and annual reports as required. The KVK organized sixteen vocational and sixty two short duration trainings every year for skill enhancement and knowledge up-gradation of the farming community. They have also organized ten in-service trainings for extension functionaries for their capacity building. There are fourteen self-help groups and one FPO functioning in the district with KVK assistant. Sixteen success stories of progressive farmers associated with KVK have been published in various publications in the year 2018-19.

## ZONE - I

**KRISHI VIGYAN KENDRA, LEH-II, LADAKH** has been awarded Pandit DeenDayal Upadhyay Rashtriya Krishi Vigyan Protshahan Puraskar-2019 for Zone I together with Krishi Vigyan Kendra, Amritsar. Since the establishment in September 2013, this KVK Leh-II (highest KVK in India) has been developed as knowledge and resource centre of agricultural technologies in short span of five years. KVK has set up its demonstration units on greenhouses, trench, low tunnels and vermi-compost. KVK is providing services on animal & sheep husbandry, vegetable crops, fodder production, soil testing and postharvest technologies. KVK has provided seeds of various vegetables, animal feed (more than 200 qt), livestock medicines (on demand and urgency), fodder seed (200 qt) and Alfa-alfa (30-40 kg) to farmers and herders every year. In addition, 20 greenhouse of farmers were made functional for vegetable cultivation. Low cost technology like low tunnel were standardised for cole crops, leafy and early nursery raising which gained popularity among farming community due to its easy installation and is successfully adopted by farmers of this region. The KVK is creating self-employment opportunities and entrepreneurship development among rural youth and women folk through various skill development training and awareness programmes such as machine spinning, machine knitting, vermicompost production, quality seed production, organic growing, medicinal plants growing, vegetable nursery growing, baking, dairy products, pickle making, etc. Women folk have started up with knitting and spinning ventures in 2 villages successfully. The technologies and inputs being provided by the KVK during the last 5 years are low tunnel technology, mulching technology, quality seeds of suitable varieties of vegetables and cereals, cattle feeds, livestock medicines, spinning and knitting machines, butter churner, farm implements, etc. With the establishment of KVK in Changthang region, now farmers are able to grow 34 vegetables compared to 5-6 vegetables earlier. Maximum yield of 1276 Q/ha in cucumber in farmers greenhouse is a remarkable success. Nutrient supplementation recommendations have been given to the herders for increasing general health and pashmina production in goats. KVK has carried out atleast 15-20 capacity development programmes for the farmers for onsite production of farm inputs.

## ZONE - II

**KRISHI VIGYAN KENDRA, PALI-MARWAR, RAJASTHAN** has been awarded Pandit DeenDayal Upadhyay Rashtriya Krishi Vigyan Protshahan Puraskar-2019 for Zone II. The research and extension work done by KVK, Pali has shown an innovative extension approach by creating the linkages among the farmers of the district and simultaneously comprehending economic viability of agriculture under semi-arid conditions of Pali district. The KVK has generated comprehensive information on understanding the production system economic viability, prospects and constraints of emerging agriculture and farming system in the country and highlight the factors that make agriculture a viable enterprise. A large number of farmers associated with the project were fine tuned into a success stories having viable and profitable enterprises which served as role model for other farmers also. In fact, the KVK has created a large awareness among the farmers, entrepreneurs, NGOS and institutions and has proved to be a successful campaign for promotion of agriculture and related enterprises in entire district and Rajasthan.

### ZONE - III

**KRISHI VIGYAN KENDRA, BASTI, U.P.** has been awarded Pandit DeenDayal Upadhyay Rashtriya Krishi Vigyan Protshahan Puraskar-2019 for Zone III. KVK Basti is a unique institution in the district for the assessment of farmers' problem along with solution through training, demonstration and assessment of new technologies. The farm based model providing real life field condition for learning and teaching in-built research-extension linkage involves participatory management with a well-educated and competent multidisciplinary scientific team to solve the problems at root levels along with feedback and forward linkages. The most significant contribution of KVK is the introduction of newly released high yielding varieties through seed replacement in district. The KVK replaced approximately 60-65% of old varieties seed of different crops. Rural income has been enhanced with the adoption of diversified agriculture related occupations. Increase is witnessed mainly with vegetable production, medicinal plant cultivation, mushroom production and integrated farming system module for different size of holdings. Through KVK intervention 40 vermi-compost unit, 95 milk and milk products unit, 121 goatry unit, 6650 breed improved, 46 modern fish pond, 34 fruit plants nursery unit, 132 vegetable seed production units, 36 medicinal plant units, 21 bee keeping units, 26 farmers under seed production (TPS) potato were established. With this the farmers are getting job opportunity and earning Rs. 1,60,000 - 5,00,000 per year depending on their units. With the efforts of KVK, 60 fruit plant nurseries were developed in the district at commercial level. Keeping of the view of demand and scope of planting materials, State Govt. also established a high tech nursery with the collaboration of Israel Govt. under Indo Israel Project near the KVKs for providing elite planting materials. The ZT machine has been popularized in Basti district. With the continuous efforts of KVK scientists, a 'Mushroom Hub' has been developed in last 3 years. Landless, small and marginal farmers are getting a sizeable income from the sale of mushroom in the district. With the efforts of KVK, approximately 114 fisheries units have been developed in the district. KVK has initiated live stock up-gradation programme with the help of Dept. of Animal Husbandry and BAIF. KVK has developed four models of IFS including landless, labourers and these models are benefitting the farmers of the district for enhancing their income.

## ZONE - IV

**KRISHI VIGYAN KENDRA, GUMLA, JHARKHAND** has been awarded Pandit DeenDayal Upadhyay Rashtriya Krishi Vigyan Protshahan Puraskar-2019 for Zone IV. Since beginning KVK Gumla has made tremendous work in agricultural technology transfer through rigorous efforts in term of assessing the real time farmer's farming problem and finding the way to solve their solution as per available resources in tough areas of Gumla. KVK has succeeded not only in educating the tribal farmers of the district but handholding skills for entrepreneurship development too. Which resulted in achieving the higher productivity, profitability and sustainability in almost all the major crops. "Bora-Bandh" is one of the most vibrant initiative of KVK, which has not only opened the eyes of the planners but farmer's too, to know how the low cost initiative change the shape of farming and succeeded in enhancing the area under Rabi and Summer crop. This way the cropping intensity has increased and farmer's has succeeded in achieving the double or triple fold income. KVK has also succeeded in empowering women through skilling in value addition and development of market channel. In past thirteen year KVK has left no stone unturned to find a sustainable solution for forest dweller tribal farmers in bringing the gross happiness on their faces.

## ZONE - V

**KRISHI VIGYAN KENDRA, KALYAN, WEST BENGAL** has been awarded Pandit DeenDayal Upadhyay Rashtriya Krishi Vigyan Protshahan Puraskar-2019 for Zone V. Krishi Vigyan Kendra, Kalyan has been established in 1992 for functioning in Purulia district of West Bengal under the management of Kalyan affiliated to Ramakrishna Mission Lokasiksha Parishad, Narendrapur, Kolkata-103 to serve the farming community following the ideals of Swami Vivekananda and regulations of ICAR. In Purulia which is a drought prone district KVK has adopted water conservation and crop diversification as developmental strategies leading to construction of 22 check dams, 15 water harvesting pond, Gully control in 26 ha, Silvi-pastoral, orchard development and afforestation in 40.6 Lakh ha, encouraging entero-forestry (Tasar and Lac) in 35 ha, tie ridge in 24 ha and renovation of 22 ponds involving approximately 10,000 farmers through participatory approach with the convergence with ADMI, GVT, BCKV and other line departments. Women empowerment has been promoted with the involvement of 306 nos. of SHGS, 2 mahadal, 16 mahila dairy cooperatives, 1 lac grower association and 3 nos of FPOS. 14 technologies have been assessed and disseminated amongst the farming community by means of Frontline Demonstration, followed by further percolation through Comprehensive District Agricultural Action Plan, SREP (ATMA) and RAFTAAR which are being adopted by 206 tribal villages of Purulia. KVK Kalyan activities were undertaken with cluster based approach involving 07 clusters working across 103 villages. An approximate of 44 tonnes of seed, 7.16 q planting material, 1.53 lakh seedlings, sapling, sugarcane seedlings 20000, Vermicompost -2 tonnes, mushroom-29, chicks-500 nos were produced and distributed every year from KVK instructional farm. New initiatives like establishment of oil extraction plant (9 lakhs), solar power operated borewell (3 lakhs), construction of implement shade (25 lakhs) with new agricultural implements (4-row multi-crop planter, Xyrovator, Motorized Weeder, Fertilizer Spreader, Power Thresher, Paddy transplanter, paddy harvester, power sprayer- 10 lakhs), Mushroom spawn production unit (3 lakhs), Polyhouse (3 lakhs) were taken. Azolla production unit, Renovation of Soil and Water testing lab, Vermi compost unit, Food Processing Unit and Agricultural Museum were also established by the KVK.



## ZONE - VI

**KRISHI VIGYAN KENDRA, NAMSAI, ARUNACHAL PRADESH** has been awarded Pandit DeenDayal Upadhyay Rashtriya Krishi Vigyan Protshahan Puraskar-2019 for Zone VI. KVK Namsai acts as a resource centre for Frontline extension at district level. It helps the farming community in production and supply of seed and planting material, organize FLDs, OFTs on latest technologies, organizes Capacity building programmes for farmers, rural youths and extension functionaries of line departments. KVK also organizes Awareness programmes, Exposure visits, Kisan gosthis, Krishak sammelan, Technology week, etc. Also helps farmers in becoming a successful Entrepreneur. KVK have strengthened the farmers by bringing about awareness on improved production & protection technologies, making available latest technologies to them at district level. The KVK has established strong functional linkages with several State and Central Government organizations for successful implementation of its activities. Besides, KVK has participated actively in the preparation of Strategic Research and Extension Plan (SREP) of Agricultural Technology Management Agency (ATMA) for implementation in Namsai district as a partner along with other departments. These linkages have proved very crucial for the smooth conduct of KVK activities and implementation of various. KVK Namsai has been involved in establishment of 2 FPOs (Livestock Producer Grower & Spices & Condiment) under the sponsorship of NABARD. KVK has established Custom Hiring Centre for providing the tractor and farm equipment, Scientific Goattery Unit for improvement of goat breed through cross breeding with Sirohi and Jamunapari, Scientific Piggery Unit & Integrated Faring System Model for scientific and profitable piggery & Integrated farming. Kadaknath, Kalingo Brown and Japanees Quial unit were established at KVK, Namsai which help to motivate the farmers, SHGs, FPCs to run their activity profitability and commercially. The KVK has also established a Fish cum Piggery unit, 2 Farm School, started Development of Poultry village. KrishiVigyan Kendra has organized Krishi Kalyan Abhiyan-I and II and has distributed Soil Health Card to farmers from 50 different villages of Namsai District. The Kendra has also actively participated in different awareness cum interaction programmes. Rural youth were provided hands on training for skill enhancement and entrepreneurship development in Quality seed grower, Artificial Insemination, Scientific Pig Rearing, Honey-bee farming, Backyard poultry, Mushroom cultivation, Protected Cultivation of Vegetables and Vermi-composting by KVK Namsai. All together 649 no. of rural youths were trained under total 23 training programmes for rural youth.

## ZONE - VII

**KRISHI VIGYAN KENDRA, IMPHAL EAST, MANIPUR** has been awarded Pandit DeenDayal Upadhyay Rashtriya Krishi Vigyan Protshahan Puraskar-2019 for Zone VII. KrishiVigyan Kendra, Imphal East has achieved its mandate of Technology Assessment, Required refinement, its demonstration for wider application and capacity development during the last five years. The focus on increasing productivity and cropping intensity in the district were given top priority by the KVKK, with demonstration on SRI, crop diversification, crop intensification, seed production programmes, varietal evaluation, IFS, INM, IPM, IDM use of location specific tools and implements such as drum seeder (from four rows to eight rows upgraded version) and drudgery reduction technology for farm women in agriculture and allied activities. In the last five years, KVK, Imphal East demonstrated SRI using HYV CAU R1 and the technology has made horizontal spread upto 280 ha with 28.6% yield increase. Likewise among the oilseeds, the technology of Improved Zero Tillage Cultivation of Rapeseed Mustard in the rice fallow areas could make a horizontal spread of 1200 ha with 339 productivity enhancement. The externally funded project of NICRA in the adopted villages has benefitted many farmers that increased the farmer's income by 3 to 4 folds. During the reporting period, 15 nos. of Low Cost Mushroom Houses, 18 nos. of Pig Stys with wallowing tank, 22 nos. of Low Cost Vermicomposting units, 10 units of Jalkund were constructed in the farmer's field. Improving the skills of the youths, farmers and farm women, another prioritized area has trained 9635 no. of beneficiaries from 317 training programmes under different disciplines. Altogether, the KVK have conducted 46 nos. of On Farm Trials and 78 nos. of FLDs under different thematic areas of crops, livestock & fishery and other enterprises benefitting 179 and 698 farmers of the district respectively. Under the KVK, there are 25 nos. of Farmer's Club and 18 nos. of Self Help Groups, which have been acting as a contact point for all technology transfer and demonstration besides mobilization of collective commodity production and marketing.

The NITI AAYOG, Government of India ranked KVK, Imphal East in the Category A during 2017. KVK, Imphal East was judged the Best Stall Awards three times during 2014 to 2018 and Second Best Stall Awards during 2014 and 2019 for various Kisan Melas organized by different Institutes and Government Departments in showcasing proven technologies promoted by KVK, Imphal East for the economic upliftment of the rural community. Moreover, five farmers of Imphal East District has been recognized and awarded by different institutes, organizations for their outstanding contribution in different fields of Agri and Allied Activities.

## ZONE - VIII

KRISHI VIGYAN KENDRA, BEED-I, AMBAJOGAI, MAHARASHTRA has been awarded Pandit DeenDayal Upadhyay Rashtriya Krishi Vigyan Protshahan Puraskar-2019 for Zone VIII. KVK Beed has succeeded in inculcating scientific orientation in farmers to form decision making attitude. It has succeeded in creating innovative attitude in farmers which had led to create interest and desire to seek changes into their own operations as and when found practicable and feasible. The KVK interventions helped in enhancing knowledge level which in turn led to higher level of agriculture production technologies and elevated living standards. The KVK has successfully ventured into technology diffusion which is a key factor to attain food security besides providing farmers a competitive edge over traditional farming facilitating better living standards. The experiential learning process has helped the poorest of the poor to raise their living standards. Thus KVK has played a proactive role in transferring area specific, feasible new technologies at field level with economic and social beneficial impact.

## ZONE - IX

**KRISHI VIGYAN KENDRA, UJJAIN, MADHYA PRADESH** has been awarded Pandit DeenDayal Upadhyay Rashtriya Krishi Vigyan Protshahan Puraskar-2019 for Zone IX. The organizational development in KVK led to establishment of Instructional Farm and Progeny Orchard, Hi tech Horticulture Unit, Water Technology Park, Integrated Farming System Unit and Seed Godown. The KVK conducted 246 training programmes in different disciplines of agriculture benefited 5665 practicing farmers & farm women. Similarly 42 special training programmes for rural youths either practicing farmers or school dropouts were organised and were attended by 753 participants. The KVK also organised 33 in-service trainings programmes of varying duration benefiting 721 extension functionaries & vocational trainings of medium duration (one week to onemonth) either independently or with the help of Agriculture Department, Ujjain. The centre initiated longitudinal OFTs of local importance in their respective disciplines. Under this mandatory work total 80 technologies were assessed & 1417 farmers were benefited. FLDs on oilseeds were laid on Soybean during Kharif and Mustard in Rabi season. During the last five years 475 demonstrations on Soybean in Kharif and 73 demonstration on Mustard in Rabi seasons were organized on Farmers field. This KVK started a special intensified programme from 2015-16 namely Cluster FLDs for promotion of pulse particularly chickpea and continued till dated on Oilseed and pulses both. Under this tremendous programme a total of 806 farmers were benefitted bifurcated 306 for soybean in kharif season and 499 for chickpea and mustard in rabi season. This resulted into a tremendous increase in productivity of the oilseeds and pulses. The KVK is able to bring significant impact in terms of shift in cropping pattern, net income, employment generation, and improving social status. There was a shift in the cropping pattern from low crops to high value crops like; Soybean JS-33 (110 days) - wheat (two crop in a year); Soybean JS-95-60 (85 days) - Onion /Potato/ Garlic - Chickpea/Wheat. Besides the seed, seedling and sapling, KVK is also providing services to farmers for improving the breeds of goat particularly for Sirohi breed. During the year 2017-18 and 2018-19, 145 services provided for goats under breeds improvement programme. The KVK has started SMS under Kisan Mobile Sandesh (KMS) programme for dissemination of valuable information related to their needs.

## ZONE - X

**KRISHI VIGYAN KENDRA, WYRA, KHAMMAM, TELENGANA** has been awarded Pandit DeenDayal Upadhyay Rashtriya Krishi Vigyan Protshahan Puraskar-2019 for Zone X. KVK Wyra, has served the farming community during the last 5 years very ably and effectively by introducing number of HYVs in various crops viz., rice, pulses, oilseed crops, chilli and other horticultural crops; transferred number of need based and low cost technologies with an objective of improving the farmers' income in specific and district economy in general. The greatest contribution of this centre lies in the working in close association with the farmers on one hand and in harmony with the officials of DOA/DOH/AH and other line departments in transfer of technologies and also in disseminating specific technologies to mitigate the effects of drought, natural disasters, pest and disease epidemics besides organizing regular field visits and farmers training programmes, demonstration, timely advisee during the crop period. This institution has played a pivotal role in educating the farmers on the use of inputs effectively and efficiently to reduce the cost of cultivation and improving the productivity. After the establishment of KVK, Wyra all the extension functionaries working with DOA/DOH/AH and other private agro input agencies were updated with latest technologies and interventions as a part of regular interaction meetings and trainings. The scientists of this centre have firm linkages with all the line departments and stake holders involved in agricultural development and will go in a long way for welfare of the farming community. Most of the progressive farmers from all the mandals of the district are well aware of the visibility of KVK, Wyra of its services and are regularly approaching the scientists either by person or by mobile for getting advises and up to date information on field problems. KVK, Wyra has become the nodal point in the erstwhile and present district for technical advisee in agriculture and horticulture not only to the officials of DOA/DOH/AH but also to the large part of farming community.

## ZONE - XI

**KRISHI VIGYAN KENDRA, BAGALKOTE, KARNATAKA** has been awarded Pandit DeenDayal Upadhyay Rashtriya Krishi Vigyan Protshahan Puraskar-2019 for Zone IX. KVK Bagalkot is involved in dissemination technologies on crops like Groundnut, Sunflower, Chickpea, Pigeon pea, Green gram, Sorghum, Millet. KVK is promoting integrated farming system by establishing a ready model with more than 25 units (inclusive of dairy, poultry, goat unit) which are functioning in symbiosis with each other. This model is serving as teaching tool to farmers who visit KVK. Sugarcane being the major crop of the district KVK is promoting newly released Sugarcane varieties. Nutrient management green manuring, root grub management through bio agents, and in-situ vermin-culture to avoid trash burning in sugarcane crop have been demonstrated, KVK is promoting eco-friendly technologies by producing vermin-compost, vermin-wash, earth warm and supplying to farmers. Bio agent's production for supplying to farmers of the district is an important activity of the KVK. Soil health cards are being distributed to all the farmers who visit KVK for soil and water testing laboratory, more than 35000 soil samples have been analyzed and 6200 soil health cards have been distributed to farmers till today. KVK is extensively involved in producing quality seeds soybean, chickpea, sorghum, wheat, onion and providing to University and farmers. Under Seed-hub project funded by NFSM on pulse production, KVK is producing chickpea, pigeon pea and green gram seeds with farmers' participation in farmers' fields, and promoting pulse production in the district. L-49 variety of Guava, Bhagya(KDM-1) variety of drumstick were popularized by KVK. Sheep and goat rearing enterprises have also been promoted by KVK by conducting training for more than 3000 farmers. KVK is the first to introduced hydroponic technology to entire North Karnataka. KVK has first time introduced wheat variety of DWR-162 (Wheat), DDK-1029 (Dicocum Wheat), Arka Kalyan variety (Onion), JG-11 and JAKI-9218 variety (Chickpea), TS-3R (Pigeon pea). KVK is also involved in organizing Rabi mela special event to create awareness on Rabi crops, KVK has its own website and replying online queries raised by farmers. KVK is also catering to needs of farm women by organizing training, entrepreneurship programmes, demonstration of drudgery reducing equipments to women training programmes for extension functionaries are being conducting regularly in turn to address the need of farmers. Under Skill development programme, dairy, sheep and goat rearing, organic agriculture skills are being promoted Through FPO- KVK linkage technological back to piping to FPOs sponsored by department of horticulture is regularly being carried out at six FPOs more than 5000 farmers were covered under this programme on the whole KVK is acting as a change agent in agriculture scenario of the district.

## **N.G. RANGA FARMER AWARD FOR DIVERSIFIED AGRICULTURE 2019**



*Award 2019*

The Council has instituted the N.G. Ranga Farmer Award for diversified agriculture in order to recognize the distinguished farmers for their outstanding contributions in the field of diversified agriculture. The award is aimed at creative and innovative approaches resulting in enhancement of production and productivity, resource conservation and application of improved farming techniques/practices in different disciplines of agriculture. The award carries a cash prize of ₹ 1.00 lakh and given annually. The award has been named after Late Prof. N.G. Ranga (1900-1995). A total of 35 applications were received in response to the open advertisement, the recipient of award is:

**SH. RAGHUPAT SINGH**, Vill. Samathal, Dist. Muradabad, U.P. has been awarded N.G. Ranga Farmer Award for Diversified Agriculture-2019 for his progressive and innovative approach towards farming. Sh. Raghupat in his farm has developed 23 varieties of Rajma. He at his own level has also refined the seeds of gram, lemon, bitter gourd, bottle gourd, brinjal, lady's finger into improved varieties. He has developed a variety of Bottle gourd which bear 1.5 meter long fruit. This has brought lot of appreciation and awards in various exhibitions and fairs. He has also developed two varieties of Lobia, one with one meter and another with 60 cm of pod length. He has preserved the germplasm of local varieties of colocasia. He has validated various traditional practices followed by ancestors on his farm practically. He has adopted new technologies on his farm like use of improved varieties of Pusa, vegetable cultivation in pots, seed production of vegetables, rajma, lobia etc.,. cultivation of medicinal plants. He has also been active in modifying the technologies like mulching in crops, different type of nursery preparation, intercropping in various crops and seed production technology. He is using organic manure in his farm and also managing the pest and diseases through biopesticides. He has benefitted about 5000 farmers by distributing the improved seeds developed by him. His contribution has been recognized at various levels and he is awarded several awards at district, state and national level.



**Sh. RAGHUPAT SINGH**  
Muradabad, UP



## JAGJIVAN RAM ABHINAV KISAN PURASKAR/ JAGJIVAN RAM INNOVATIVE FARMER AWARD 2019 (NATIONAL/ZONAL)



*Award 2019*

ICAR instituted this award for Innovative farmers at National and Zonal levels in order to recognize the outstanding contribution of innovative farmers for initiatives in development, adoption, modification and dissemination of innovations and improved technologies for increased and sustained productivity, improve resource use efficiency and higher profitability. These awards have been named after Late Sh. Jagjivan Ram (1908-1986) who was the Deputy Prime Minister and Union Minister for Food and Agriculture in the Union Cabinet.

**National:** One annual national award of ₹ 1.00 lakh in any of the areas of agriculture and allied sciences + equal amount of travel grant across the country to promote his achievement are given to farmers at national level.

**Zonal:** Eleven annual awards of ₹ 0.50 lakh each + equal amount of travel grant to promote his achievement and motivate farmers in his respective zone. The geographical area of each zone is given in the guidelines of the award.

76 eligible applications were received in response to the open advertisement. The winners in National and the Zonal levels are:

## NATIONAL

**MAJOR MANMOHAN SINGH VERKA**, a progressive farmer from Amritsar Punjab has been awarded ICAR-Jagjivan Ram Abhinav Kisan Puraskar, 2019 at the National level. Major Verka, a well known name in the farming community of North India, pioneers in horticulture and forestry based farming system besides also keeping a small animal component. He practices poplar based agro-forestry with intercrops. Among the new technologies developed/ refined by him include; intercropping of sugarcane and turmeric in poplar plantation till poplar trees attain full growth, new technique of Sugarcane transplanting by raising nursery from single bud technique and transplanted at 4ftX2ft distance with Cauliflower, peas and mustard as intercrops, high density plantation in Pear by planting orchard at a distance of 13x26 feet and 14x28 feet, retaining young pear plants in nursery for two years and then transplanting the field, which saves 2 years of orchard field for other crops. New innovative practices adopted by him include; mechanical washing, waxing and grading of kinnow fruit, drip irrigation system in kinnow, underground irrigation system, use of paddy straw as mulch in turmeric crop for control of weeds as well as for conservation of soil moisture, yearly pruning, FYM application and twice a year whitewashing of the orchard. He is also producing certified seed of wheat for Punjab State Seed Corporation, National Seed Corporation and IARI, New Delhi. The new technique of sugarcane transplantation through nursery raised from single bud saves valuable time besides reducing seed rate appreciably. He has further modified the technique of raising nursery in the standing sugarcane crop by removing its top thus obviating the need to grow nursery in the beds. The efforts of Major Verka have earned him widespread recognition in the entire agricultural fraternity. He is the member/ office bearer of several farmers' bodies and holds several awards and recognitions including N.G. Ranga award for diversified agriculture bestowed upon him by the Indian Council of Agricultural Research.



**MAJOR MANMOHAN  
SINGH VERKA**  
PUNJAB

## ZONAL

### ZONE-I

**SMT. YANGCHEN DOLMA** from Ladakh has been awarded ICAR-Jagjivan Ram Abhinav Kisan Puraskar, 2019 from Zone I. In a region like Ladakh where agricultural activities are confined from the month of May to October, practicing protected cultivation has enabled her to grow variety of off season leafy vegetables like Spinach, Chinese cabbage etc even in the month of Feb and March when temperature falls to -1 to -17 degrees Celsius. The high yielding and hybrid vegetable seedlings raised by her are purchased by the fellow farmers in her own and adjoining villages. This has brought about a vegetable revolution in the area. She has adopted area specific technologies that include trench for all season vegetable cultivation, nursery raising, mulching of vegetable crops, raising cucurbit seedling in poly-bags, compost/vermin-compost making, post harvest processing in fruits and vegetables. The major interventions adopted and promoted by her in the area include; raising vegetable seedlings, off season Vegetable cultivation in protected structures, turning waste into wealth through compost/vermin-compost, growing more vegetable crops on same piece of land (twice in a year), solar driers for drying and processing of fruits and vegetables, use of apricot harvest nets to maintain the quality of fruits, mulching to manage the problem of weeds effectively, farm Pond to overcome the shortage of water in cold season in which water is stored through a bore well, early sowing of vegetables/off season vegetable production in protected structures/processing of fruits and vegetables and the use of bio control agents for prevention of diseases and pests, watering the crops early. Due to her efforts, she is very well recognized by the farming community of the area.



**SMT. YANGCHEN DOLMA**  
LADAKH



**SH. JAGDISH CHANDRA PRAJAPAT**  
CHITTORGARH, RAJASTHAN

## ZONE-II

**SH. JAGDISH CHANDRA PRAJAPAT**, a progressive farmer from Chittorgarh, Rajasthan has been awarded ICAR-Jagjivan Ram Abhinav Kisan Puraskar, 2019 from Zone II. Shri Prajapat was motivated to grow strawberry for their higher prices in market. With the help of Krishi Vigyan Kendra, Chittorgarh he learnt cultivation practices of strawberry and started strawberry cultivation initially in a small area which he subsequently raised upto 2.0 ha in 2016. He introduced five varieties (Sweet Charley, Karma Rosa, Winter, Kamita Nabila and Tambia) of plants (runners) from Mahablasewar, Maharashtra and planted the runners on raised bed with mulching sheet and drip irrigation system. He applies fertilizers through the fertigation unit developed by him at his farm. He sells his entire produce in Delhi market which earns him handsome returns. Through his hard work and dedication he has created a niche for himself and the farmers in the region are approaching him for learning the skills and adopting at their orchards.

## ZONE-III

**SH. VIGYAN SHUKLA**, an innovative farmer from Banda, Uttar Pradesh has been awarded the -Jagjivan Ram Abhinav Kisan Puraskar, 2019 from Zone III. He practices integrated farming growing field & horticultural crops with dairy farming. Vegetables like cauliflower, cabbage and carrot are grown on raised beds. He practices field crops in 2.0 ha, horticulture in 0.5 ha and dairy in 1.5 ha earning a net profit of RS. 8.08 lakhs from the activity. He has been propagating new high yielding varieties of crops, vermi-compost, FYM and green manuring which have benefitted the productivity of crops their profitability and sustainability at the fields of the farmers adopting the system. Leguminous green fodder cultivation has improved milk production and animal health. Mr. Shukla is creating awareness of new package of practices and technologies among farmers through interacting and delivering lectures. Over 150 farmers adopting the model on dairy, vermi-composting, paddy, wheat and vegetables cultivation. They also visit frequently at farmer's field and try to adopt methods and technologies adopted by him in his field. Mr. Shukla have worked as master trainer in vermicompost unit established under Paramparagat Krishi Vikas Yojan (PKVY) and about 2200 vermicomposting unit have been established under the scheme. He delivered lectures on organic farming in Gosthis organized by different Line Departments of District. Use of green manuring in paddy transplanting has helped in enhancing the productivity of paddy and wheat. It also helped in managing the weed, disease and soil fertility besides helping in the control of soil borne insect and diseases.



**SH. VIGYAN SHUKLA**  
Banda, Uttar Pradesh



**SH. SHIV PRASAD SAHANI**  
Siwan, Bihar

## ZONE-IV

**SHRI SHIV PRASAD SAHANI**, an innovative farmers from Siwan, Bihar has been jointly awarded ICAR-Jagjivan Ram Abhinav Kisan Puraskar, 2019 from Zone IV with Dr. Ram Shankar Singh. Shri Sahani has developed an innovative formulation for controlling the menace caused by Nilgay (Blue Bull) in the agricultural crops incurring heavy losses to the farming community every year. The formulation uses debris of fish and egg. Among other innovations developed by him include, fish feed by rotting flour of wheat, paddy, etc. and increasing the shelf life of wheat by using chili and garlic. He has also developed indigenous preparation to be used as medicines for curing several diseases in livestock.

## ZONE-IV

**DR. RAM SHANKAR SINGH**, an innovative farmer from Muzaffarpur, Bihar has been jointly awarded ICAR-Jagjivan Ram Abhinav Kisan Puraskar, 2019 from Zone IV with Shri Shiv Prasad Sahani. Sh. Singh initiated line Zero tillage wheat in year 2010 by Zero till seed drill cum fertilizer machine. During the last 9-10 years, he has disseminated this technology in 300 ha land in Marwan block as well as Kanti and Kudhani blocks. Line sowing of Green gram and Rai using Zero till seeds drill cum fertilizer Machine was also started by him during 2013. By this technology production of Green gram and Rai increases up to 12 to 17 % and 22 to 27 % respectively. This technology has spread in 250 ha in Green gram and 45 ha in Rai in the adjacent block and more farmers are adopting the technology each year. These efforts of Shri Singh have earned him widespread recognition in the area including from the district authorities who have included his practice in the package and practices for cultivation of Green gram for spreading of this technique throughout the district. Another intervention on community nursery started during 2011 has given better returns within a month than the cultivation of paddy. This technology is already benefiting 250 to 300 farmers for timely transplantation of paddy. Several farmers have visited his farm through ATMA and other agencies for exposure.



**Dr. RAM SHANKAR SINGH**  
Muzaffarpur, Bihar



**SH. SUDAM SAHU**  
Bargarh, Odisha

## ZONE-V

**SH. SUDAM SAHU**, an innovative farmer from Bargarh district in Odisha has been awarded ICAR-Jagjivan Ram Abhinav Kisan Puraskar, 2019 from Zone V. Shri Sudam Sahu has contributed towards the well being of the society and the agricultural community of the district by introducing healthy and nutritious crops in the rotation besides reducing the cost of production. Due to his efforts involving promotion of organic manures and biopesticides, judicious use of, fertilizers and pesticides, the cost of cultivation has been reduced upto 50%. He has collected and conserved 925 local paddy germplasms since 2014. He also screened out a large number of varieties for traits like stress tolerance, both the biotic and abiotic as well as other properties like, aroma, colour, richness of protein, minerals etc. Out of 10 varieties of black rice, he screened Kalabati variety to be the most suitable for the region. He also developed draught tolerant paddy variety Sunahariya, aromatic paddy variety Kusumkali-1, Kusumkali-2, fine paddy variety Dasmati. He also screened out one BPH tolerant variety Talmuli after screening several varieties. These varieties have been already adopted by more than 1200 farmers in 72 villages of 12 blocks besides being adopted by over 60 other agencies. His efforts have earned him a number of awards and recognitions from different agencies. He is a role model for the entire farming community of the region.



## ZONE-VI

**SH. BIPUL HALOI**, an innovative farmer from Nalbari District, Assam has been awarded ICAR-Jagjivan Ram Abhinav Kisan Puraskar, 2019 from Zone VI. In the year 2010-2011, Mr. Haloi initiated the scientific cultivation of tuberose in an area of 0.026 ha from which he could earn Rs. 50,000.00. He extended his area under flower cultivation in the year 2012 to 0.2 ha, incorporating marigold also. His earning increased more than Rs. 2 lakhs in that year from sale of both flower and planting materials. Since, scientific cultivation of flower especially tuberose was a new venture in Nalbari district; he did not have to face any hurdle for marketing of tuberose from the first year itself. Proximity of Nalbari district to the state capital, Guwahati was a favourable factor for him. In 2012, he expanded area under flower cultivation up to 0.5 ha. Such initiatives and recognition of Mr. Haloi attracted quite a few farmers and youths of his village Balitara as well as of the district to start commercial cultivation of flowers for livelihood and entrepreneurship development. As on today, the commercial cultivation of flower has become a source of income for several youths. Production of planting materials by cutting marigold and production of tube rose corm is being carried out simultaneously.



**Sh. BIPUL HALOI**  
Nalbari, Assam



**SH. NEPAL DEVNATH**  
Brahmanpuskuni, West Tripura

## ZONE-VII

**SH. NEPAL DEVNATH**, an innovative farmer from Brahmanpuskuni, West Tripura has been awarded ICAR-Jagjivan Ram Abhinav Kisan Puraskar, 2019 from Zone VII. Shri Devnath took an initiative to transform his low-lying paddy land into vegetable based farming by adopting a raised and sunken bed technology developed by ICAR NEH, with added structures of bamboo Machan (raised platform) with nylon ropes on top. He realized that the income he was earning from his small kitchen garden (400 m<sup>2</sup>) was almost equal to income from 1 kani (0.16ha) of paddy fields. After converting land to raised and sunken bed, he adopted Sem- Spine gourd and Sem - Ash gourd systems on machan made on raised beds and understory space he utilized to grow intercrops like okra, cowpea, brinjal etc. He started earning nearly Rs. 3 lakhs/ kani (6.25 kani = 1 ha) as net profit against of Rs. 50,000/ha (Rs.8000/kani) from monocropping of rice. ICAR took initiative to disseminate this technology as an initiative towards Government of India's vision for doubling farmer's income by 2022. The farmer adopted hand pollination in spine gourd once he observed a decrease in productivity due to declining population of honey bees and/or during early flowering stages when male to female flower ratio is less. With the help of ICAR, Tripura Centre, he changed his intensive chemical based pest management practice into need based eco-friendly system. He has also established a fish-cum-duck unit at his farm with assistance which has further increased his profitability.

## ZONE-VIII

**SH. VINOD GOPAL BHARVE**, an innovative farmer from Valpoi, Sattari, Goa has been awarded ICAR-Jagjivan Ram Abhinav Kisan Puraskar, 2019 from Zone VIII together with Smt. V.B. Rudraksha. Shri Bharve has developed integrated arecanut based farming system on 6 ha area which has arecanut - 6000 nos., Coconut - 2000 nos., Banana - 6000 nos., Black pepper - 3000 no., Nutmeg - 05 Nos. and Cinnamon - 02 nos. He has installed automatized drip irrigation unit which supplies water in the morning, evening and night time with the censor based setting of on 75m and off 405m time with 3 times a day cycle. This helps in reducing water stress and saves water to the extent of 60% as compared with the traditional methods. The adoption of this practice besides saving of water has also enabled better controls weeds (upto 90%) and reduces intercultural cost. His efforts have been recognized from various quarters.



**SH. VINOD GOPAL BHARVE**  
Sattari, Goa



**SMT. VIDYA BABURAO RUDRAKSHA**  
Beed, Maharashtra

## ZONE-VIII

**SMT. VIDYA BABURAO RUDRAKSHA**, an innovative organic woman farmer from Beed, Maharashtra has been awarded ICAR-Jaggiwan Ram Abhinav Kisan Puraskar, 2019 from Zone VIII together with Shri V.G. Bharve. The farmer is practicing the following innovative methods at her farm. A practicing organic farmer she uses jivamrit, vermin-compost, cow urine, besides, using pond soil at her farm. She uses the waste decomposer, compost mixer, green manuring along with intercropping system for increased crop production. To control soil erosion, she practices planting Neem trees and green grass on the bunds she has also been taking crops on the sloppy lands. Drip and irrigation system has further helped in improving the already better water holding capacity of her organic fields. For meeting the organic manure requirements she raises indigenous cows. She has also been actively involved in the post harvest value addition of farm produce especially the turmeric, pigeonpea, chickpea and green gram and converting them to various products and selling them directly to the consumers. She is cultivating traditional varieties of wheat i.e. Sarbati and Bansi. Her efforts have been recognized in the form of appreciation and recognitions received from various quarters. She has been a role model for the other farmers especially the women farmer of the area.

## ZONE-IX

**SH. VISHAL KATRE**, an innovative farmer from Balaghat, Madhya Pradesh has been awarded ICAR-Jagjivan Ram Abhinav Kisan Puraskar, 2019 from Zone IX. Shri Khatare has adopted new and innovative practices and management strategies including; paddy cultivation with modified SRI method for paddy cultivation, use of organic manure like vermicompost & vermiwash and growing of scented coriander. His efforts towards saving resources /inputs include; production of Green Chickpea in summer season which has helped to enrich his soil with nutrients and organic carbon besides improving water holding capacity and reducing the water loss through evaporation. He imparts training and encourages exposure visits of interested farmers to his farming site. He participates in the informal training & interactive sessions on SRI production to share his ideas with fellow farmers. Planting of Marigold flower on bunds is another noble and innovative method he has practiced to prevent insect attacks in the crops. His efforts on organic cultivation of Paddy with modified SRI method in Kharif and Rabi season followed by organic cultivation of Chickpea, wheat & scented Coriander and the Pigeon pea and vegetable cultivation on bunds of paddy field have been well recognized at various fora.



**SH. VISHAL KATRE**  
Balaghat, Madhya Pradesh



**SMT. RUPIREDDY LAXMI**  
Telangana

## ZONE-X

**SMT. RUPIREDDY LAXMI**, an innovative farmer from Telangana has been awarded ICAR-Jagjivan Ram Abhinav Kisan Puraskar, 2019 from Zone X. She pioneers in the Direct seeded Rice cultivation. A dedicated article on her successful Journey on direct seeded paddy was carried by The Hindu Daily News Paper (14.01.2019). Her efforts were also recognized by Pandit Jaishankar Telangana State Agricultural University by giving her appreciation certificate from Northern Telangana Zone during Rythu Sadassu Programme (2018-19). During the Mahila Kisan Diwas Programme (2018-19), Krishi Vigyan Kendra, Jammikunta has given best woman farmer certificate from Karimnagar dist. She has also received the best women farmer award-2019 in the category of "Achievement of highest yield in agriculture crops-Paddy" from PJTSAU, Hyderabad on the occasion of University Foundation Day.

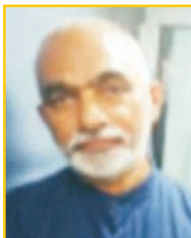
## ZONE-XI

**SH. S.C. THIMMAIAH**, an innovative farmer from Nallur village of Kodagu district in Karnataka has been awarded ICAR-Jagjivan Ram Abhinav Kisan Puraskar, 2019 from Zone XI together with Sh. T. Purushothaman. A very active farmer, Shri Thimmaiah has been practicing integrated farming system with different crops. Shri Thimmaiah popularized Integrated farming system in the district. He popularized paddy cultivation in fallow lands (due to labor shortage) by advocating direct seeding and broadcasting of paddy, popularized organic interventions for reducing cost of cultivation in paddy, vegetables and spice crops. Through practicing IFS model substantial saving in resources could be achieved. His organic interventions have reduced the cost of cultivation by 30 per cent. Mechanization in paddy has been introduced to more than 200 farmers covering an area of 1000 acres in the district. Following the adoption of Integrated Farming system - outbreak of disease and insect pest infestation has reduced. His achievements have been well documented by AIR, print, electronic media particularly in converting paddy fallow lands into paddy cultivation through mechanization. He has also been helping other farmers of the area in different ways.



**SH. S.C. THIMMAIAH**  
Kadagu, Karnataka

## ZONE-XI



**SH. T. PURUSHOTHAMAN**  
Kerala

**SH. T. PURUSHOTHAMAN**, an innovative farmer from Kerala has been awarded ICAR-Jagjivan Ram Abhinav Kisan Puraskar, 2019 from Zone XI together with Sh. S.C.Thimmaiah. One of the leading shrimp farmers of Kerala today who started primarily with shrimp culture, his farm today is founded on a holistic approach adopting a zero water exchange system of indigenous shrimp culture on rotational basis; tiger shrimp *Penaeus monodon* during monsoon, Indian white shrimp *Fenneropenaeus indicus* during summer and farming diversified multi-trophic species ranging from brackishwater finfishes (Asian seabass, pearlspot, milkfish, pompano, ornamental fish in cages and pens), green mussel (*Perna viridis* in ropes), mud crab (*Scylla serrata* in lined pens) and horticulture on farm bunds using pond sludge. His farm uses optimal resource conservation methods using zero water exchange system, rainwater harvesting to meet freshwater requirements and solar power to meet part of his energy requirements. He leads from the front as an active fish farmer, supporting and counselling his fellow farmers on farming methods initially through direct personal communication, then through community talks and farmers meets gradually leading to the formation of a farmers co-operative, ADCOS (Aquaculture Development Cooperative Society) in northern districts of Kerala which today encompasses and supports aquafarmers. His popularity among fellow farmers reflects in him being the founders and holding leadership positions in state level aqua farmers federations- KAAF, AICS- Agricultural improvement Cooperative Society and Mahadevagrama Cooperative Store through which he works for the cause of aqua farmers. His is a model farm open to academic, scientific institutions, students and fellow farmers for extension activities and academic purposes. His desire to enhance and update scientific information on the latest developments in aqua farming led him to start release of the first Malayalam magazine on aquafarming "Jalakarshakan". A leading farmer who bases his farming on scientific principles, an avid advocate of farming indigenous species, the founders of India's first aqua farmers co-operative "ADCOS" and editor of the first Malayalam magazine on aqua farming "Jalakarshakan", Shri Purushothaman stands out not just as a successful aqua farmer but also a person owning a strong sense of camaraderie towards his farming community. He received the best farmer award on a state level in the year 2013 and 2017 from the state fisheries department and from ICAR-CIBA in 2019 for innovation in shrimp farming. He has been invited to talk in several farmers meets and write popular articles on policy issues and scientific technological innovations in aquaculture. Despite all the accolades, he takes pride in being an ambassador of indigenous shrimp species and a successful aqua farmer who despite the many disease challenges facing the shrimp farming sector was able to consistently reap good harvests by adhering to scientific farming principles over the past two decades.



## **PANDIT DEENDAYAL UPADHYAY ANTYODAY KRISHI PURASKAR AWARD 2019 (NATIONAL & ZONAL)**



*Award 2019*

In order to recognize the contributions of marginal, small and landless farmers for developing sustainable integrated models of farming, the ICAR has instituted Pandit Deendayal Upadhyay Antyoday Krishi Puraskar (National/Zonal) annually. For National level there is one award comprising of ₹1,00,000/- (Rupees one lakh only) and Award Certificate to be given annually. At zonal level there are total eleven awards: one for each zone of ATARIs comprising of ₹ 50,000/- (Rupees fifty thousand only). This year 51 applications were received through open advertisement.

## NATIONAL



**SH. NARPINDER SINGH**  
Bathinda, Punjab

**SH. NARPINDER SINGH**, a progressive farmer from Moga, Punjab has been awarded Pandit DeenDayal Upadhyay Antyodyay Krishi Puraskar (National), 2019. Shri Narpinder Singh established his individual enterprise of about 1100 bee-hives in the name of 'Dhaliwal Bee Farm' in the year 2004. With adoption of diversification in apiculture he produces honey, pollen and queen bees. He increased his profit by packing honey according to bee flora with labels: Litchi Honey, Safed Honey, Multiflora Honey, Acacia Honey, Jamun Honey, Garlic preserve, Ginger Honey, Vinigar honey. He earns a profit of Rs 17 lacs/annum from beekeeping. He markets encapsulated dried pollen pellets for human consumption @ Rs 6000/kgas compared to Rs 500/kg of dried pollen. He innovated "Dhaliwal bottom board" which is replacement of Varroa bottom board for beekeepers which costs around Rs. 85 as compared to Rs. 400 of latter. Apart from this, he earns around Rs. 23,500/annum from mushroom production (Dhingri) and Rs. 35,000/annum from poultry. He grows organic sugarcane, turmeric, wheat, ragi and vegetables. He sells organic jaggery and turmeric with net profit of Rs. 63,000. Additionally, he has given various radio and TV talks on successful Bee-keeping at DD Jalandhar and Air Jalandhar. His success story has been published in book Punjab de Sirkadhudamikisan published by Directorate of Extension Education, PAU, Ludhiana. He has conducted method demonstrations of his innovation i.e. 'Dhaliwal bottom board' involving beekeepers of district Moga and many beekeepers have adopted it. He also helps budding bee keepers by providing practical guidance. To make enterprise profitable, he opened two retail shops one provided by ATMA "ATMA HUT" and other "KISAN HUT" a space provided Punjab Mandi Board with the efforts of Krishi Vigyan Kendra, Budh Singh Wala, Moga. Some of the new initiatives taken by him are that he started selling honey of all the member beekeepers of Progressive Beekeepers Association jointly under brand name "Diamond" and publicized through pamphlets and calendars. He has helped register a large number of beekeepers under National Bee Board. He is a prominent voice of bee keepers from all over the country. He has put forth the problems of beekeepers in Prime Minister Office, National Bee Board and FSSAI. He has received ICAR- Pandit DeenDayal Upadhyay Antyodyaya Krishi Puruskar Zonal Award (2018), IARI Innovative Farmer Award (2018), Sardar Surjit Singh Dhillon Award by Punjab Agricultural University, Ludhiana (Sept, 2018), Appreciation award by Department of Agriculture, Moga (2014) and many more.

## ZONAL

### ZONE - I

**SH. KARAN SINGH**, a progressive farmer from Solan, H.P. has been awarded jointly with Shri Chamkaur Singh of Moga, Punjab for the Pandit DeenDayal Upadhyay Antyodyay Krishi Puraskar, 2019 from Zone-I. Shri Karan Singh has set an example in commercial production of nursery of fruit plants along with the protected cultivation of flowers. He converted his professional skill acquired from Dr YS Parmar University into entrepreneurship in the protected cultivation. The farmer has 3000 sq. meter of area under polyhouse and has become an inspiration for the young farmers that agriculture can also be profitable, if modern technologies are adopted. He is earning a net profit of Rs. 13 lakh from 3000 m<sup>2</sup> area and has been recognized for producing quality flower of carnation. Another feather in his cap is added by the production of quality nursery of fruit plants. viz., apple, plum, pear, pomegranate, kiwi, apricot, peach nectarine and persimmon. He is gradually increasing the number of propagated plants of fruits from 3000 No.(2013) to 25000 No. (2018-19). Each quality plant is sold for Rs. 150/plant thereby earning the net profit of Rs 12 lakh. He has developed his own bud wood orchard and is continuing to plant new varieties of fruit plants in his orchard. Farmer has a model orchard where he has planted 1500- 2000 plants of different varieties of apple, 200 plants of kiwi and 150 plants of plum. His farm is under drip irrigation and uses mulches, soilless media, growing bags and mulch mat. In 2014, Mr. Karan Thakur was conferred the Best Farmer Award by Agriculture Technology Management Agency (ATMA), Solan, H.P. Many Departments viz., Horticulture, Agriculture and National Institute of Agricultural Extension Management, Hyderabad have published his success stories to motivate young farmers of the district. The farmer has become a role model for the various unemployed youths in District Solan. Many farmers contact him for guidance and he readily helps them through consultancy and diagnostic field visit. His contribution do not end in Himachal but he is providing consultancy along with true to the type planting material to the farmers of Uttarakhand, J&K and North Eastern states also. He has also become role model in practical demonstration of carnation growing, kiwifruit nursery plants and training & pruning of apple and stone fruits. Despite getting selected for Horticulture Extension Officer, he preferred to be a farmer to provide employment to rural youth by expanding his enterprise. He has turned his dreams into reality and is also helping other farmers to achieve their goals.



**SH. KARAN SINGH**  
Solan, Himachal Pradesh



**SH. CHAMKAUR SINGH**  
Moga, Punjab

## ZONE - I

**SH. CHAMKAUR SINGH**, a progressive farmer from Moga, Punjab has been awarded Pandit DeenDayal Upadhyay Antyodyay Krishi Puraskar, 2019 from Zone-I along with Shri Karan Singh of Solan, Himachal Pradesh. He is a progressive farmer who takes keen interest in greenhouse management and climate control, designing a kitchen garden and plant protection and has participated in trainings like Horticulture Training Centre, Talegaon, Pune (1-7 January, 2010), PAMETI (5-6 November, 2015), Plant protection training course (KVK, Moga, 2016-2017 & 2018-2019). He is an active member of various associations like, Fruits and vegetable growers committee, PAU, Ludhiana, Kheti Virasat Mission, Farmer produce processing society, Moga, Kisan processing and marketing Self Help Group, Moga, Natural Farming, Moga. He has given various radio and TV talks on organic natural farming at DD Jalandhar and Air Jalandhar. His success story has been published in book Punjab de Sirkadhudamikisan published by Directorate of Extension Education, PAU, Ludhiana. His contributions have been recognised by various bodies/ associations which include, Society for conservation of natural resources, Moga (May, 2012), Department of Soil and Water Conservation, Moga (June, 2013), Punjab Dairy Development Board, Moga (March, 2014) and by KhetiVirasat Mission during Millet Festival (January, 2019).

## ZONE - II

**SH. KULBIR SINGH**, a prominent Bee farmer from Kurukshetra, Haryana has been awarded the Pandit DeenDayal Upadhyay Antyodaya Krishi Puraskar, 2019 from Zone-II. He is closely engaged in mass multiplication of Queen Bee and the Vocational training for Bee keepers. Shri Kulibr Singh besides, bee keeping also specializes in poultry, mushroom, vegetable farming, dairy and rodent management. He represented Haryana farmers in NABARD National Seminar for Doubling of Farmers' Income. He is a member of state level FPO of Master Bee Keepers, Executive member of Haryana Dairy Farmers Association, President of the Society of Bee Keeping, Kurukshetra and a Master trainer farmer for bee keeping and hi-tech vegetables. His outstanding achievements have earned him recognitions from KVK Kurukshetra; first prize in crossbred calf rally, felicitation from KVK Kaithal as progressive farmer. He is a life Member of National Bee Board and Haryana Kheti and Modern Farming.



**SH. KULBIR SINGH**  
Kurukshetra



**SH. AGYA RAM VERMA**  
Basti, Uttar Pradesh

### ZONE - III

**SH. AGYA RAM VERMA**, a progressive farmer from Basti, Uttar Pradesh has been awarded the Pandit DeenDayal Upadhyay Antyodyay Krishi Puraskar, 2019 from Zone-III. Shri Agya Ram Verma is a progressive farmer and has developed new technologies like Mobile Solar Pump and Captanbasti combine harvester machine. He has developed new crop varieties viz. Captan Basti Sugarcane, A.R. 64 Wheat, Captan Basti Dhan. He has received recognitions from various quarters including Agriculture Department of U.P. State, Farm and Food, Delhi Press; Vibrant Gujarat; NDU&T, Faizabad; Uttar Pradesh; Horticulture and Food Processing Department U.P. for adoption of new technologies, achieving high yield and various other excellent work in the field of agriculture. He has also been awarded ICAR-Jagjivan Ram Innovative Farmer Award-2018 (Zonal) for his outstanding contribution as a farmer in the field of agriculture.

## ZONE - IV

**SH. GANDURA ORAON**, a progressive small farmer from Ranchi, Jharkhand has been recommended for the Pandit DeenDayal Upadhyay Antyodyay Krishi Puraskar, 2019 from Zone-IV. Sh. Oraon has over the years developed into the role model for fellow farmers of the region in adoption of integrated farming system model including, cultivation of cereals, vegetables, flowers, duck, poultry, etc through which he is now earning over 7.8 lakhs per annum as compared to a paltry Rs. 25,000 a few years ago. He motivated 30 farmers to start production of certified seed and as a result in 2016 they produced 600qtls of certified seed. He has become an entrepreneur and is offering jobs to many agricultural labourers thus preventing them from migration. He has motivated hundreds of farmers of his village as well as nearby villages to adopt flower cultivation, improved vegetable cultivation, beekeeping etc. He helped more than 100 villagers to get KCC and more than 200 villagers for getting FASAL BEEMA YOJANA. Mr. Gandura explored so many places for improving his agricultural skills such as IFFCO, Gandhinagar, Gujarat; Anand, Gujarat; NRRI, Cuttack, Odisha. Department of Agriculture, Cooperation & Animal Husbandry, GOI also sponsored his visit to Israel to learn advances in farming techniques.



**SH. GANDURA ORAON**  
Ranchi, Jharkhand



**SH. CHANDAN RAY**  
Coochbehar, West Bengal

## ZONE - V

**SH. CHANDAN RAY**, a progressive small farmer from Coochbehar, West Bengal has been awarded the Pandit DeenDayal Upadhyay Antyodyay Krishi Puraskar, 2019 from Zone-V. He is a graduate and has acquired advanced trainings on various aspects including dairy husbandry, training for enabling SHG members to graduate into microenterprise, training on Yanmar Rice Transplanter, extraction and quality management of Jute and allied fibers, improved method of potato cultivation, conservation agriculture, and innovative agri-entrepreneurship. He has adopted and propagated the technique of transplanting paddy through Paddy Transplanter in his area. Besides, as master trainee, he has provided trainings to the fellow farmers on the application of zero tillage technology, improved potato seed (foundation and certified seed) production. He has taken efforts to establish Rice Seedling factory employing 50 rural women, training more than 1500 farmers on Conservation Agriculture. He has trained more than 1200 rural youth and women on Biofloc Fish Farming, more than 500 rural women on poultry farming (Karaknath) and more than 500 rural youth on Small Scale Poultry farming. His efforts have been recognized in the form of Krishak Samman (Best farmer) Award from Govt. of West Bengal (State Award) and Best Farmers Award (District) from Uttar Banga Krishi Viswavidyalaya.



## ZONE - VI

**SH. BIJU KALITA**, a small progressive farmer from Nalbari district of Assam has been awarded the Pandit DeenDayal Upadhyay Antyodyay Krishak Puraskar, 2019 from Zone-VI. He is a multifaceted personality and has acquired special skills in breeding and seed production of carps, exposure visit, scientific fish culture practices in Andhra Pradesh, training programme for fish farmers, training programme on piggery, and training programme on employment generation through agriculture and allied activity, and training programme on efficient water management. His success stories have received wide coverage in regional media and newspapers including, Dainik BatoriKakot, Edinor Sangbad, Dainandin Barta, DainikAxom, DainikAxometyc. He has been a regular invitee to the All India Radio, Guwahati; in Krishi Jagat & Zila Rehrup Doordarshan Kendra, Guwahati under Krishi Darshan. His success stories have also received coverage in private TV channels- News live & News Assam for adoption of Integrated Farming System (IFS)based on Livestock-Fish-Horticulture, Improved Poultry breed (Vanaraja/Kamrupa), Improved Pig breed (Hampshire), Improved Duck breed (Khaki Campbell/Chara chemballi), Improved Dairy breed (Cross breed), Rearing of composite carp species mainly Catla, Rohu, Mrigal, Grass carp, Silver carp and common carp, Introduction of additional horticultural crops (banana, Assam lemon vegetable & tube rose) on the unutilized bank of the ponds and adjacent, Bio resource flow model for recycling of livestock dung used as feed for fish and pond water for irrigating of horticultural crops, and entrepreneurship through FRP Carp hatchery. His efforts have earned him Best Progressive Fish Farmer award of Nalbari district from the Govt. of Assam on the occasion of Republic Day 2017. He has also earned a certificate of appreciation by Chief Minister of Assam on the occasion of state level Krishan Divas in 2017.



**SH. BIJU KALITA**  
Nalbari, Assam



**SH. ATHEO LOTH**A  
Wokha, Nagaland

## ZONE - VII

**SH. ATHEO LOTH**A, a progressive farmer from Wokha, Nagaland has been awarded the Pandit DeenDayal Upadhyay Antyodya Krishi Puraskar, 2019 from Zone-VII. The farmer, till 2014, was practicing traditional Jhum farming (shifting cultivation) with paddy, maize and vegetables and had an overall annual farm income of approx Rs. 50,000. After attending a five-day training on Integrated Farming System (IFS) at ICAR-KVK Wokha, he developed an integrated farming system model in his Jhum land with the components of agro-forestry, fish pond, livestock, horticulture and homestead in the year 2015-16. The different component of the his farming systems includes crop (field crops, fruits, vegetables, spices, multi purposes tree, fodder etc), water harvesting pond (irrigation, aquaculture, integration of fish livestock, multiple water use etc), livestock rearing (piggery, poultry, dairy, duckery, rabbitry), homestead farming (Oyster mushroom cultivation, value addition of fruits, honey bee, etc), nutrient recycling (vermi-composting) and protected cultivation. After establishment of IFS model in Jhum, his annual income has is risen to over Rs 3,28,700. He transformed his non profitable Jhum cultivation to settled/permanent agriculture with high income which gave round the year employment and improved of livelihood status, health and education of children. He gave employment to fellow farmers as labours in various farm activities. Horizontal dissemination of IFS model to 10 nos of tribal Jhumias from 5 nearby villages. His success story has earned him widespread recognition. He was selected to deliver an oral presentation on the success of IFS model in Jhum farming of Wokha district and was felicitated during the conference on "Farmers First for conserving Soil and Water Resources in North East Region (FFCSWR)" at Veterinary college, AAU, Khanapara campus, Guwahati. He also represented the state of Nagaland to attend the Innovative Farmer's Conclave organized by ICAR New Delhi during 16 to 17th July, 2019 at NASC, Complex, New Delhi.

## ZONE - VIII

**SH. PRALHAD GULABRAO VARE**, coming from average farmer's family in a small village Malad near Baramati has been awarded for the Pandit DeenDayal Upadhyay Antyodyay Krishi Puraskar, 2019 from Zone-VIII. Shri Vare started working in his family farm at a very young age. His analytical mind could not adjust everything in traditional agriculture. He took help of experts in the agricultural field as well as attended several training programmes, seminars, lectures related to agriculture field and started implementing whatever he learnt in his own field. He started getting good results in terms of reduction in agricultural input costs as well as getting higher income by way of better price for his crops and also through side businesses like dairy to support his agricultural activities. Shri Vare did not stop at development of his own field. He formed 4 organizations-Vagheshwar Farmers Group, Malad, Jijau Farmers Club, Malad Gunwad, Laxmi Farmers Self Help Group, Malad and Baramati Farmer's Producers Company Limited to spread his message to other farmers staying in nearby villages. Through his zeal, hard work and ability to carry people around him and to achieve higher results in agriculture, he has been extremely successful in this sector. He conducted soil testing campaigns in villages and soil health programmes. Due to his efforts 90 % of nearby farmers adopted drip irrigation in farming.



**SH. PRALHAD GULABRAO VARE**  
Baramati, Maharashtra



**SH. JIYALAL RAHANGDALE**  
Balaghat, Madhya Pradesh

## ZONE - IX

**SH. JIYALAL RAHANGDALE**, an innovative small farmer from Balaghat, M.P. has been awarded for the Pandit DeenDayal Upadhyay Antyodyay Krishi Puraskar, 2019 from Zone-IX. The farmer in his 2 ha of land, has adopted the practice of Ferti-drip Irrigation. He is also maintaining fish and Poultry, besides, cows and goats at his farm. He has developed organic fertilizer and bio-pesticide formulations and is adopting hormones (Lure) & maintains Vermi-compost unit with Vermi wash. He is cultivating water chestnut in paddy field and fish production with Azolla. Among the new farming Organic farming, Drip Irrigation, Inter cropping Banana with Chilli, were introduced first time in Balaghat District, together with Summer squash, coloured chilli, Broccoli, Sweet corn, etc.; Paddy vegetable cropping system, Paddy-Wheat-Moong cropping system, Biogas and Vermicompost for organic farming. The innovative techniques he has adopted include; organic produce- Jivamrit, Ghana- Jivamrit, Seengh-khad, samadhi Khad, Jaivik-Keetnasak, Jaivik-Harmone, Pesticides to Bio-Pesticides, vermi-compost and vermiwash. He has shifted from the farming of traditional Corn to Sweet Corn and Cabbage & Cauliflower to Broccoli which has helped him to increase his earnings. From is 2ha land he is able to earn a gross annual income of Rs. 7,20,960/- and net income of Rs. 4,91,808/-. He has developed into a role model for other farmers and after visiting his farm, about 30 farmers form 19 villages have started self sustainable farming system. His farm has been selected as Mukhya Mantri Khet Thirth of the district. Farmers of district as well as state and other states like Chhattisgarh and Maharashtra are visiting his farm to see the organic practices devolved and adopted by him. He is selling Worms (Vermi-Compost) and Seed of crops to the farmers. His selection of pigeon pea variety JIYA-1 is very popular among farmers of the district. The seed of variety was sold to farmers on prime price @ Rs. 1200/- per Kg. Department of Agriculture Govt. of MP is using him as a resource person to train the farmers of district. He is an active member of NGO, Beej Utpadak Samiti. His contributions have been recognized in the form of several awards/recognitions which include; District Level Best Farmers Award by CM Govt. of MP (2009), Vibrant Gujarat Award District Level Best Farmer Award by the then Chief Minister of Gujarat (2013), JNKVV, Krishak Fellow Award by Minister of Agriculture (2015), Govt. of MP, Bala Saheb Krishi Alankaran from Bala Saheb and Bhaurao Devras Seva Nyas, Karanja, Balaghat (2016). Awarded Krishi Uday, biggest exhibition award on agriculture and horticulture, JNKVV, Jabalpur (2019) and has been selected as best 3 farmers among 4500 farmers across the nation for Dhanuka Innovative Agriculture Award (2018).

## ZONE - X

**SMT. T. RAMANA**, an innovative woman farmer from West Godavari, Andhra Pradesh has been awarded for the Pandit DeenDayal Upadhyay Antyodyay Krishi Puraskar, 2019 from Zone-X. Smt. Ramana practiced mono cropping with paddy and maize in her 3 acres of land for ten years till 2015. The income was not sufficient to meet the family requirements. With the guidance of Krishi Vigyan Kendra in the year 2015 she has divided her land into different components like 2 acres to fish pond, 1.0 acres for cashew cultivation, 1.0 acre land under pandal for growing vine vegetables and remaining 1.0 acre for vegetables like Chilli, Brinjal and Okra based on the market demand and agricultural crops like Maize etc. Apart from above she has also adopted poultry farming with 100 birds i.e., Grama Priya and Aseel, sheep farming. By implementing these interventions, her annual income increased and now she is as a role model for the remaining farmers. With this interventions, most of the farmers from other villages following the same and as on date more than 20 farmers have adopted this technologies for their livelihood and enhanced income. For her significant contributions in promoting IFS in agriculture, she has earned District Level Best Woman Farmer Award during 2018-19 on the Occasion of Mahila Kisan Diwas. She also bagged the outstanding performer award instituted in the name of Smt. J. Sarojini Devi Award-2019 for promoting Horticulture-animal husbandry.



**SMT. T. RAMANA**  
Godavari, Andhra Pradesh

## ZONE - XI



**SH. S.B. RAJAPURE**  
Karnataka

**SH. S.B. RAJAPURE**, a small but progressive farmer from Karnataka has been recommended for the Pandit DeenDayal Upadhyay Antyodyay Krishi Puraskar, 2019 from Zone-XI. Sannayamanappa Rajapure is well recognized farmer for his unique farming system where he adopted Integrated Farming System in his limited land of 0.5 ha. Integration of horticulture and animal husbandry enterprises is the success formula of this farmer. Sh. Sannayamanappa is consistently generating profits from last 15 years. He practices 'Slated Flooring for Sheep & Goat Farming", which not only give space for sheep & goats but also to poultry and other ornamental birds beneath the elevated slated floor. He has significantly reduced the cost of production by using manures produced in his own farm. Silaging is also practiced since many years which has also helped in reducing the dependency on dairy feed. The farmers visiting his farm not just get motivation but also receive great ideas. He has been invited at many occasions to speak on agriculture related programmes all over the district. Information of his farm activities has appeared in 12 state news papers. UAS Dharwad, UHS Bagalkot and UAS Bengaluru have published his success stories in their Progressive Farmer Compendiums. 4 Kannada TV channels (TV9, Suvarna, Public TV, ETV Annadata) have broadcasted his farming success story. He is the resource person for "Farmer to Farmer "Training programme organized in KVK and a regular contact farmer KVK Tukkanatti. He is the Member for District ATMA Committee. Yamanappa is the board member of Vivekananda Horticulture FPO, Rajapar. His achievements in the field of integrated horticulture and animal enterprises have been recognized in the form of State Level 'Krishi Pandit Award' in 2016-17 Govt. of Karnataka, 'Best Farmer Award' from ATMA in 2017-18, best Horticulture Farmer Award' in 2016 from Dept. of Horticulture, Belagavi. Many organizations and cooperative have felicitated this farmer for his outstanding achievement in farming.

## HALDHAR ORGANIC FARMER AWARD 2019



*Award 2019*

In order to recognize the outstanding contributions of the farmers in the area of organic farming, ICAR has instituted an annual award titled Haldhar Organic Farmer Award. The award consists of the Cash Prize of ₹ 1,00,000/- (Rupees One Lakh only), Citation and the Certificate. Any farmer involved in organic farming and related activities in the area of field / horticultural/ medicinal crops, milk production and allied activities, with at least 5 years of experience is eligible. This year 21 applications were received through open advertisement.



**Smt. SARIKA PATIDAR**  
Barwani, Madhya Pradesh

**SMT. SARIKA PATIDAR**, Borlai, Distt. Barwani, Madhya Pradesh has been awarded Haldhar Organic Farmer Award-2019 which she shares with Sh. Surendra Awana, for her outstanding contribution in organic farming. In her 13.5 hectares of farm she takes field crops like Cotton, Maize, Wheat, Gram; horticultural crops like Custard Apple, Acid lime, Onion etc. together with Bamboo and dairy farming. She started crop cultivation with organic way and manage insect-pest organically through jevik pesticides free without chemical fertilizer, insecticide and pesticide and applied for organic registration. She got Certification as Organic Land from Madhya Pradesh State Organic Certification Agency, which resulted in increased productivity as well as profitability with less expenditure and get quality production, also by using other organic resources which is effective for making her land more fertile which resulted in increasing sustainability and also helps in disease control. In her farm she developed Organic pesticides (Neem Ark, Satparni, Waste Decomposer) and used it to control insect, pest and diseases. She used Farm Yard Manure (FYM) & Vermi-composting in horticulture crops. She is very enthusiastic in adopting new technologies on her farm and therefore one can find use of Drip Irrigation, Sprinkler Irrigation, Solar Water Pump, Solar System for House, Biogas, Vermi compost, Nadep compost, Water Storage Tank, Jivamrit Filter Machine, Waste Decomposer, Neem Cake and Oil Machine, Pheromone Traps & Yellow Sticky Traps and Modern Dairy Farm. She is very innovative in modifying Drip Irrigation technology for Horticulture in her farm by making 2 Drip Lateral Lines Both sides of Plant (1 Inline+1 Dripper 14 Liter Line), fully irrigated land (One Drop More Crop). Many farmers from district and other adjoining area visited the Custard Apple farm and almost 165-190 farmers adopted the horticulture crops of custard apple almost in 350 hectare in the region. The fellow farmers also seeking for converting their land to organic land and cultivating their crops in organic way with the technical guidance of Krishi Vigyan Kendra Barwani. She has also participated in a training sessions of "Organic Farming and Modern Technology" at "Krishak Mitra and Krishak Didi Prashikshan, Khargone". Students from Rural Agricultural Work Experience RAW/READY of KVK Barwani also visited and completed their 6 months internship and got experience in our farms since last three years. In Chief Minister Tirth Yojana many farmers visited and got the training of custard apple gardening. She has observed that through organic farming soil health of her farm has improved, increased net income and water level of the land. Almost 285 farmers have adopting new technologies from her farm after visiting the field of Custard Apple farming, organic farming, Solar water Pump. She has received several certificate of appreciation from Krishi Vigyan Kendra, Barwani and Department Horticulture.



**SH. SURENDRA AWANA**, Village-Bhairana, Distt.-Jaipur, Rajasthan has been awarded Haldhar Organic Farmer Award-2019 which he shares with Smt. Sarika Patidar, for his outstanding contribution in organic farming. The farmer is cultivating his 10 hectare of land with field crops, horticultural crops, agroforestry, dairying and fisheries. For organic farming he has been producing 750 tons of bio-fertilizers per year, 4000 L/year of bio-pesticides, 200 tons of vermin-compost/year. He has invented Bullock drawn Chaff cutter, Hoeing and weeding by camels. The bio-fertilizer, bio-pesticides, dairy bio-products, agronomy and horticultural crops produced on farm by the farmer has been certified Rajasthan State Organic Certification Agency (Govt. of Rajasthan). The farmer has developed a Biodiversity Centre for the area and a smart Module Integrated Farming System which has been adopted by Department of Agriculture and SAUs of Rajasthan. He is using indigenous technology for organic farming on the basis of zero-budgeting and also producing biofertilizer and biopesticides; harvesting rain water for farm and collecting it in pond for use in irrigation, fish cultivation and for other purposes. The farmers, extension workers, Scientists from nearby area visit the farmers' field for learning the technology and inventions done by him, especially bio-fertilizers for organic farming, bio-pesticides to control insect-pest of field and horticultural crops; azola for dairy animals which enhance the milk production of Gir cattle; vermicomposting, Bullock drawn Chaff cutter used for cutting of fodder and straw for animals, Hoeing and weeding by camels without use of weedicides, producing and using ghee, butter and paneer from Gir cow milk, marketing of self-produced dairy products, fish & its waste, and products like fruits, vegetables, medicinal products etc. The total 500-600 farmers have been inspired by these technologies and are motivated to adopt organic farming and other technology. Apart from this his farm is also regularly visited by the trainees of Agriculture and Animal husbandry Dept., Govt. of Rajasthan and is also identified for various practical work and learning purposes. The farmer has observed in the due course that by practicing organic farming the production at his farm has gone up by 25% and the soil health and water level of his farm has also improved. The farmer for his dedicated efforts towards organic farming has been honoured several times at National and State level.



**SH. SURENDRA AWANA**  
Jaipur, Rajasthan

## CHAUDHARY CHARAN SINGH AWARD FOR EXCELLENCE IN JOURNALISM IN AGRICULTURAL RESEARCH AND DEVELOPMENT 2019



*Award 2019*

Chaudhary Charan Singh Award for Excellence in Journalism in Agricultural Research and Development has been instituted by the ICAR in order to recognize the outstanding contribution in Journalism in Agriculture and allied sciences through Hindi/ English/ Regional Newspapers/ Magazines/ Journals/ electronic media published in India. Six annual awards carrying cash award of ₹1,00,000/- (One lakh only) and a certificate and citation are to be given to Journalists for Print Media [Hindi Journalism/ English Journalism/ Journalism in Regional languages (four awards)] and Electronic media (two awards). The contribution made by the journalists would be judged on the basis of the articles/success stories published in Hindi/English/ Regional languages in Newspapers / Magazines /Journals / electronic media in India during the preceding three years. This year 23 applications were received through open advertisement.

## HINDI JOURNALISM

**SHRI B.K. PANDEY** has been awarded Chaudhary Charan Singh Award for Excellence in Journalism in Agricultural Research and Development 2019 in Hindi Journalism. Shri Pandey, with more than 9 years of experience of reporting in a fortnightly magazine 'Farm & Food', has made significant contributions through reporting in print media in terms of features and stories in Hindi, covering a wide range of areas. During the last 5 years, Shri Pandey has published more than 100 articles in a wide range of topics covering almost all areas of agriculture. The areas covered include farm mechanization, issues of farm women, plant protection, cultivation of aromatic plants, women empowerment, high tech agriculture, fodder cultivation, village development and dairy farming and a wide range of other issues.



**SH. B.K. PANDEY**

## ENGLISH JOURNALISM

**GURPREET SINGH NIBBAR**, a Senior Journalist and the Asst. Editor in Hindustan Times has been conferred Chaudhary Charan Singh award for Excellence in Journalism in Agricultural Research and Development 2019 in the category of English Journalism. He has contributed over 39 articles and reviews, covering wide ranging issues including international issues of contemporary importance for Indian agriculture. Special stories and features on important areas in agriculture dealt by him include food security, need for agricultural reforms to make the farming viable, residue management, efficient water utilization and a range of other issues. The features/stories and articles on agriculture published by Shri Nibber are widely referred not only by the farming fraternity but the academicians and policy planners as well.



**SH. GURPREET SINGH  
NIBBAR**

## REGIONAL LANGUAGES



**SH. HARI KRISHNA**

**SH. HARI KRISHNA**, a veteran Journalist and the Executive Editor-ANNADATA Magazine has been conferred Chaudhary Charan Singh award for excellence in Journalism in Agricultural Research and Development 2019 for reporting in Regional Language, Kannada. The wide range of issues taken up which will have long term effect on the farmers include: fertility levels of the soil through Soil; deficiencies, measures to restore the fertility; managements practices to be followed and awareness for the farmers, benefit of making the seed multiplication by themselves, crop rotation; seed cleaning etc, importance of quality seeds; pestmanagement, optimum utilization of water resources and subsequent improvisation in yield, importance of dairy, scope for mechanization in rain fed areas and the need of agro forestry measures, success stories for good profits with better management practices, inspirational stories of success of farmers in neighboring districts and states, the prices of commodities getting notified at different parts of the country, schemes available for the farming community and the ways and means to access them, need to adopt dairy farming along with cultivation, sheep rearing, mushroom cultivation etc. He has also contributed stories regarding productivity and market information and intelligence in regard to their nearby markets and international agriculture knowledge including World Trade Organizations, GATT and WTO. His articles and features are widely read and referred by the Telegu speaking community of the country and outside.



**SH. VINOD INGOLES**

**SH. VINOD INGOLES**, the veteran Marathi Journalist has been conferred the Chaudhary Charan Singh Award for Excellence in Journalism in Agricultural Research and Development 2019 in Regional Languages. Shri Ingoles has contributed over 40 articles covering analysis of agribusiness, number of success story including animal husbandry during the last 5 years. His articles are popular, widely read and referenced by the Marathi Agriculture community of the Country. He works as a senior Journalist for the Marathi daily magazine "Agrovan" dedicated to publish features/ stories and articles on various important areas of agriculture.

## ELECTRONIC MEDIA

**SHRI UMASHANKAR MISHRA**, a senior Hindi Web Journalist has been awarded Chaudhary Charan Singh award for excellence in Journalism in Agricultural Research and Development 2019 for reporting in Electronic Media. He is working as Sr. Copy Editor (Hindi) - India Science Wire (Vigyan Prasar) since 2017. He holds experience of about 14 years in Hindi Media and have covered various subjects especially Agriculture, Rural Development, Science & Technology, Research & Development, Health, Sanitation, Education and Environment. He has published more than 800 articles in various Media Platforms such as India Science Wire (Vigyan Prasar), Amar Ujala, Marathi daily Agrowon, Dainik Jagran, Jansatta, Yojna, Kurukshetra, Vigyan Pragati, Science Reporter, Aavishkaar, Prabhat Khabar, Rashtriya Sahara, Punjab Kesri, Hindustan, Weekly ChauthiDuniya, Sharad Krishi, Sopan Step, Legacy India, Paryavaran Sandesh, Bhartiya Paksha, Down To Earth, Prabhasakshi, India water portal, The Hindu Business line, First Post, Catch News, Meghalaya Guardian, The Wire and Outlook. He is a recipient of Road Safety Media Fellowship (2019 from World Health Organization (WHO)) and Rashtriya Pratibha Jyoti Samman by Newspapers Association of India among others for outstanding journalism in rural development.



**SH. UMASHANKAR MISHRA**



**SH. SHIV NANDAN LAL**  
New Delhi

**SH. SHIV NANDAN LAL**, a veteran Journalist from AIR, New Delhi, has been awarded Chaudhary Charan Singh award for excellence in Journalism in Agricultural Research and Development 2019 in the category of Electronic Media. Shri Lal, In-charge of Farm and Home Programme at AIR, Delhi is a dedicated and able broadcaster. He has been associated with agriculture based programmes of All India Radio, Delhi since last 20 years. During this period Shri Lal disseminated information to the farmers about all the agricultural revolutions. Under the able guidance of Shri S. N. Lal a daily infotainment programme of agriculture "Gram-Sansar" is broadcasted which focuses on socio economic and cultural aspects of rural folk in AIR, Delhi's broadcast zone. Apart from this, the programme Krishi Jagat is also broadcasted which covers topics of agriculture, dairy development, veterinary science, floriculture, horticulture, vegetables and fruits, oilseeds crops, piggery, fishery, cereals etc. Shri Lal has organised Krishi Pathshalain coordination with reputed agricultural research Institutes of our country. He has also established a direct dialogue 'Akashvani Gaon Mein' program which aims to bring two main stakeholders- farmers and agriculture experts together in an interactive manner to exchange information. Shri Lal has participated in various national and international programs. Under his supervision All India Radio, Delhi has organized cultural programmes for farmers in Kisan Melas being organized by IARI, Pusa, New Delhi and Sardar Vallabhbhai Patel Agricultural University, Meerut. He has organized folk music concerts in rural areas adjoining Delhi on a regular basis in these concerts es related to agricultural practices are also given to farmers AIRTEL Delhi has actively disseminating information about the various ongoing government welfare schemes for farmers like Kisan Credit Card, Soil Health Card, Pradhan Mantri Fasal Bima Yojana, Per Drop More Crop, Neem Coated Ureato name a few. Shri Shiv Nandan Lal has been awarded with more than 42 awards and certificate of appreciation from various quarters.

## RAFI AHMED KIDWAI AWARD FOR OUSTANDING RESEARCH IN AGRICULTURAL SCIENCES 2019



*Award 2019*

The Council has instituted the Rafi Ahmed Kidwai Award for Outstanding Research in Agricultural Sciences in order to recognize outstanding research in agricultural and allied sciences and provide incentives for excellence in agricultural research. This award is to be given to agricultural scientists for outstanding contribution in specific areas defined as: (1) Crop and Horticultural Sciences; (2) Natural Resources Management and Agricultural Engineering; (3) Animal and Fisheries Sciences and (4) Social Sciences. A total of four awards are assigned one each in the above areas. Each award consists of ₹5.00 lakh in cash. All Indian Scientists engaged in agricultural research and overseas Indian scientists working in the area relevant to Indian agriculture are eligible for these awards. The award has been named after Late Sh. Rafi Ahmed Kidwai (1894-1954) who was the president of ICAR from 1952-1954. A total of 82 eligible applications were received in response to the open advertisement and the winners with their contributions are:

## CROP & HORTICULTURAL SCIENCES



**DR. RAJEEV K. VARSHNEY**  
Research Program Director-  
Genetic Gains, ICRISAT,  
Patancheru, Hyderabad

**DR. RAJEEV K. VARSHNEY**, Research Program Director-Genetic Gains, ICRISAT, Patancheru, Hyderabad has been awarded Rafi Ahmed Kidwai Award for Outstanding Research in Agricultural Sciences 2019 in the category of Crop & Horticultural Sciences. Dr. Varshney has made centrally important contributions to improving food security in India and Africa by creating genomic resources including *de novo* genome assemblies in 10 major crop species such as pigeonpea, chickpea, groundnut and pearl millet. He has developed genomic resources/technologies and utilized them for sequencing genotyping germplasm collections and identification of genetic loci and candidate genes for drought and pest tolerance in key staple crops for India and Africa. He has initiated and led major international programmes that are delivering superior crop varieties to some of the world's poorest farmers. With the contributions of Dr. Varshney and his colleagues/collaborators, India released first set of molecular breeding varieties - 2 in chickpea and 2 in groundnut and Ethiopia released one chickpea variety. Varshney's efforts in organizing training courses and offering cost-to-cost basis sequencing and genotyping services helped empower several hundred Indian scientists in the area of modern genomics and molecular breeding.



## NATURAL RESOURCE MANAGEMENT & AGRICULTURAL ENGINEERING

**DR. CHERUKUMALLI SRINIVASA RAO**, Director, ICAR-NAARM, Hyderabad has been awarded Rafi Ahmed Kidwai Award for Outstanding Research in Agricultural Sciences 2019 in the category of Natural Resource Management & Agricultural Engineering which he shares with Dr. Anandharamakrishnan Chinnaswamy, Indian Institute of Food Processing Technology (IIFPT), Thanjavur, Tamil Nadu. Dr. Ch. Srinivasa Rao, significant contributions include soil carbon dynamics, C-balance at plot and land scape level, carbon modeling in agro-ecosystems for carbon-sequestration, soil-health, farm-profitability, livelihoods and climate change adaptation towards sustainability of rainfed systems and ecosystem services. He developed carbon positive technologies include: on-farm generation of organic matter, composting, community based biogas-linked vermicomposting, biochar, crop residue recycling, cover crops, conservation agriculture models for mono-cropped regions. Critical carbon input requirements for different production systems developed by him contributed to the policy interventions for maintaining or arresting further depletion of soil organic carbon. His contributions in developing district agriculture-contingency plans, covering above technologies contributed to drought adaptation in the country. The carbon positive technologies developed by him in more than 200 villages in 160 districts of India, resulted in replicating such Carbon Positive Model Villages across India through national programmes such as National Mission for Sustainable Agriculture (NMSA), NAIP, National Innovations in Climate Resilient Agriculture (NICRA), Dryland Missions in Maharashtra, Karnataka, Andhra Pradesh, Assam besides contributing to global climate change negotiations at United Nations (UNFCCC).



**DR. CHERUKUMALLI  
SRINIVASA RAO**  
Director,  
ICAR-NAARM, Hyderabad

## NATURAL RESOURCE MANAGEMENT & AGRICULTURAL ENGINEERING



**DR. ANANDHARAMA KRISHNAN CHINNASWAMY**

Director,  
Indian Institute of Food  
Processing Technology (IIFPT),  
Ministry of Food Processing  
Industries (MoFPI),  
Govt. of India, Thanjavur,  
Tamil Nadu

**DR. ANANDHARAMA KRISHNAN CHINNASWAMY**, Director, Indian Institute of Food Processing Technology (IIFPT), Ministry of Food Processing Industries (MoFPI), Govt. of India, Thanjavur, Tamil Nadu has been awarded Rafi Ahmed Kidwai Award for Outstanding Research in Agricultural Sciences- 2019 in the category of Natural Resource Management & Agricultural Engineering which he shares with Dr. Cherukumalli Srinivasa Rao, ICAR-NAARM, Hyderabad. Dr. C. Anandharamakrishnan has made indelible contributions in the field of agri-food processing and nano-scale technologies of food and bioactive ingredients. Among his key credentials are his research interventions in developing Asia's first 'engineered human stomach and small intestinal model system', to mimic the complex bio-mechanical and chemical function of the human digestive system. He is the national expert in 3-D food printing and spray-freeze-drying of food ingredients, and had successfully optimized conditions for microencapsulation of nutraceutical ingredients. Over the years, he had delivered solutions for multiple industry consultancies through computational fluid dynamics modeling of baking process, explaining the transport phenomena of intricate drying processes, prediction of particle trajectories and strategies for energy and process cost reduction. He had taken up challenges that are otherwise tedious to understand through conventional approaches; predicted gastric emptying rates and pressure profiles in the human stomach were successfully documented. He has also worked extensively on improving in-vitro digestibility and bioavailability of macro and micronutrients. His research group was successful in developing the first-of-its-kind fully automated shallots processing unit, under the 'Mission Onion Program'. His research outcomes are well-documented in the form of scholarly 97 SCI-indexed publications with average IF = 3.05, (h-index = 29), 9 granted national and international patents, 4 authored books, 2 edited books and 49 book chapters with reputed publishers. For his distinguished contributions, he was elected as the Fellow of NASc-2019, NAAS-2019, FAFST(I)-2017, FRSC and FRSB, and was awarded with the AIFPA Special Platinum Jubilee Award-2018 and the prestigious NASI-Reliance Industries Platinum Jubilee Award-2018.

## ANIMAL & FISHERIES SCIENCES

**DR. RAGHAVENDRA BHATTA**, Director, ICAR- National Institute of Animal Nutrition and Physiology, Bengaluru, Karnataka has been awarded Rafi Ahmed Kidwai Award for Outstanding Research in Agricultural Sciences 2019 in the category of Animal & Fisheries Sciences which he shares with Dr. Kishore Kumar Krishnani, ICAR-Central Institute of Fisheries Education, Mumbai, Maharashtra. Dr. Bhatta's significant contribution is the development of an all India district-wise inventory on enteric methane emission from livestock which is first of its kind. He has developed simple, cost effective and eco-friendly strategies and products for enteric methane amelioration. Two such products are 'Harit Dhara' and 'Tamarin Plus'. On an average reduction of 20% was achieved in enteric methane emission with the tested sources and anti-methanogenic products. The country wide achievement of 20 % methane reduction will save biological energy equivalent to 26.28x106 giga calorie; this would be adequate to increase the availability of TDN by 5.97 million metric tons and bridge the deficit of TDN to 16% from the existing 23%; with the additional TDN availability the milk production at the country level can be increased by 10%. The annual milk production would be 198 million tons from the existing 180 million tons. With an increase of 621 billion, the total worth of annual milk production in India would be 7660 billion rupees from the current 7040 billion rupees. Thus, the reduction in enteric methane emission from livestock can increase the contribution of milk value by 8.8%. The reduction in enteric methane emission will also lead to an additional increment of 33 g in per capita milk availability per day from the existing 362 g/day. It is estimated that stover equivalent to 13.3 million metric tons would be required just to maintain the same energy level without attempting methane amelioration. Similarly, grains or oil cakes equivalent to 8.53 or 7.46 million metric tons would be saved by reducing enteric methane emission with the strategies developed under the project. With current reduction of 20% in methane emission, there will be a reduction of about 46.2 Tg CO<sub>2</sub> eq GHG emitted to the atmosphere. This 46.2 Tg CO<sub>2</sub> eq gas is adequate to trap the heat equivalent to 101x106 giga cal. Dr Bhatta has filed 3 patent applications. He has published more than 100 research papers in journals (2009 citations) and presented equal number of research papers in conferences of national and international repute; has authored 3 books, one each in Cambridge University Press, London and Springer. He is recipient of several awards including the prestigious Sir CV Raman State Award from Karnataka State Council for Science and Technology, Govt. of Karnataka. He is the Principal Investigator of Indo-German, Indo-Japan and ILRI collaborative projects on methane. Dr Bhatta has contributed significantly to address policy issue of greenhouse gas (GHG -methane) inventory and twin issues of livestock production (methane amelioration) and reproduction (fertility management) for the benefit of livestock farmers.



**DR. RAGHAVENDRA BHATTA**  
Director,  
ICAR-National Institute of  
Animal Nutrition and  
Physiology, Bengaluru,  
Karnataka

## ANIMAL & FISHERIES SCIENCES



**DR. KISHORE KUMAR KRISHNANI**

Principal Scientist,  
Division of Aquaculture,  
ICAR-Central Institute  
of Fisheries Education,  
Mumbai, Maharashtra

**DR. KISHORE KUMAR KRISHNANI**, Principal Scientist, Division of Aquaculture, ICAR-Central Institute of Fisheries Education, Mumbai, Maharashtra has been awarded for Rafi Ahmed Kidwai Award for Outstanding Research in Agricultural Sciences 2019 in the category of Animal & Fisheries Sciences which he shares with Dr. Raghavendra Bhatta, ICAR- National Institute of Animal Nutrition and Physiology, Bengaluru. Dr. Krishnani has made significant achievement in the development and successful dissemination of novel bioremediation technologies (biostimulation and bio-augmentation) for environmental and disease management in zero-water exchange systems of Indian coastal shrimp culture with the result of higher shrimp production due to mitigation of edaphic stress of nitrogenous contaminant and biotic stress of bacterial pathogen. Bioremediation mechanisms have been ascertained by him for the first time using multi-omics including metagenomics for examination of environmentally important cultured / uncultured bacteria implicated in biotransformation of toxic nitrogenous fluxes, sulfurous metabolites and potent greenhouse gases in aquaculture and related aquatic environment, also salt tolerant bacteria, chlorinated water pollutants degrading bacteria and non-denitrifying bacteria implicated in nitrous oxide reduction. Based on sequencing of metagenomic clone libraries and novel functional genes, molecular tools have been developed and patented for the detection and identification of chemolitho-autotrophs, shrimp viral pathogen and environmentally important bacteria. He has balanced basic and applied strategic research and successfully and extensively transformed novel and innovative research ideas into technology development and commercialization of two Kit technologies for water quality detection", "Matrix for immobilization of bacteria and "Bacterial consortium implicated in bioremediation" process for imaging bacteria, bio-absorbent for heavy metals removal and nanostructured material for ammonia removal and bactericidal activity have potential applications for applying bioremediation in aquaculture and related aquatic environment. He has applied molecular biology (Multi-omics) in his well planned multi-disciplinary research work in the field of environmental biotechnology and also carried out Nano(bio-) technology research with the result of publications of 90 research papers in high impact journals and release of 350 gene sequences in the GenBank and six Granted Patents, which increased the visibility of the Institute at the National and International levels. Through improved technology interventions in the tribal areas of Nandurbar district, net farm income of 7339 tribal farmers increased by minimum 44% even in climate change prone selected areas due to achievement of nutritional improvement and the prediction model/marketable surplus in certain food items. This includes 2401 progressive and innovative tribal farmers whose income was doubled due to diversification and improvement of agricultural production along with household based other off-farm activities and upgradation of existing farming systems. He reached out to farmers and Industry partners and has been instrumental in intellectual property protection and entrepreneurship development and building institute-industry-entrepreneurs-farmers partnership in dissemination of technologies and livelihood improvement of farmers.

## SOCIAL SCIENCES

**DR. SURESH PAL**, Director, ICAR-National Institute of Agricultural Economics and Policy Research, New Delhi has been awarded for Rafi Ahmed Kidwai Award for Outstanding Research in Agricultural Sciences 2019 in the category of Social Sciences. Dr. Pal has made significant contributions to agricultural development and policy research. He has applied the principles of Institutional Economics for agricultural policy reforms in the country. A good amount of his efforts were directed to the analysis of agricultural technology and input delivery systems and intellectual property rights. His work on the assessment of intensity and effectiveness of agricultural R&D has been useful in initiating reforms for greater research impacts and seeking higher public funding for R&D. The work on the Indian seed system has been useful for developing guidelines to improve the delivery of quality seed and management of the intellectual property. He has worked in collaboration with a number of international organizations and published widely in the journals of international repute. His work was also useful in implementing some of the policy and governance reforms initiated recently, notably farm income and farmers' welfare policy, export promotion and market reforms. He has also made significant contributions to human resource development through post-graduate teaching and training of mid-career scientists.



**DR. SURESH PAL**  
Director,  
ICAR-National Institute  
of Agricultural Economics  
and Policy Research,  
New Delhi

## LAL BHADUR SHASTRI OUTSTANDING YOUNG SCIENTIST AWARD 2019



*Award 2019*

The council has instituted the Lal Bahadur Shastri Outstanding Young Scientist Award in order to recognize the talented young scientists who have shown extraordinary originality and dedication in their research programmes. Four individual awards are to be given annually across the disciplines, limited to only one award in any discipline. An individual award of ₹1.00 lakh in cash and a challenge project for three years with budgetary provision of ₹ 10.00 lakh per year ₹5.00 lakh for foreign training (3 months). The challenge project and foreign training will be administered/monitored by Division of Agricultural Education at ICAR Headquarters. All young scientists who possess a doctoral degree and are below 40 years of age, and hold a regular teaching, research, extension education job in the ICAR-SAU system of institutions and engaged in research in agricultural and allied sciences for at least five years continuously are eligible for consideration. The award has been named after Late Sh. Lal Bahadur Shastri (1904-1966) the former Prime Minister of India who gave the slogan 'Jai Jawan Jai Kisan'. 53 eligible applications were received in response to the open advertisement and the winners are:



**DR. JAGESH KUMAR TIWARI**  
Senior Scientist,  
Division of Crop Improvement,  
ICAR-Central Potato Research  
Institute, Shimla, Himachal Pradesh

## CROP AND HORTICULTURAL SCIENCES

**DR. JAGESH KUMAR TIWARI**, Senior Scientist, Division of Crop Improvement, ICAR-Central Potato Research Institute, Shimla, Himachal Pradesh has been awarded Lal Bahadur Shastri Outstanding Young Scientist Award 2019 in the category of Crop & Horticultural Sciences. Dr. Tiwari has actively contributed in potato improvement. He has contributed immensely in development of interspecific potato somatic hybrids by protoplast fusion using wild species, functional genomics for improving nitrogen use efficiency, late blight resistance and tuberization and sequenced whole genome of dihaploid potato (C-13), and molecular characterization of potato germplasm. He is the recipient of awards like ICAR Hari Om Ashram Trust Award (as an Associate), NAAS Associateship Award, Endeavour Post-Doctoral Research Fellowship (Australia) Award, Dr. S. Ramanujam Award, IPA Chandra Prabha Singh Young Scientist Award: ICAR-CPRI Best Worker Award (Scientific).

## NATURAL RESOURCE MANAGEMENT AND AGRICULTURAL ENGINEERING



**DR. MOHAMMAD SHAHID**  
Senior Scientist,  
Soil Science & Microbiology,  
Crop Production Division,  
ICAR-National Rice Research  
Institute, Cuttack, Odisha

**DR. MOHAMMAD SHAHID**, Senior Scientist, Soil Science & Microbiology, Crop Production Division, ICAR-National Rice Research Institute, Cuttack, Odisha has been awarded Lal Bahadur Shastri Outstanding Young Scientist Award 2019 in the category of Natural Resource Management & Agricultural Engineering. Research work of Dr. Shahid mainly focused on soil health and quality management under the rice based cropping system covering major aspects of soil fertility, soil chemistry and soil microbiology particularly under changing climatic scenario. He has comprehensively studied many aspects related to carbon dynamics, soil quality, micronutrient budgeting and microbial resources in long term fertility experiment started in 1969. He has for the first time reported the role of boron in mitigation of high temperature stress in rice. He has developed the management practices for iron toxicity management in rice. He has screened large number of rice cultivars for their tolerance to iron toxicity and elucidated the tolerance mechanisms. He has developed the customized leaf color chart for different rice ecologies for real time nitrogen management, which is already commercialized and widely popularized (84000 unit sold). As a co-developer, he has developed rice variety CR Dhan 308, riceXpert a mobile app and rice crop manager (RCM) for site specific nutrient management. He has studied microbial resources in relation to nitrification, denitrification, cellulose decomposition and nitrogen fixation in rice soil under different nutrient management practices and registered their sequences with granted accession number in NCBI.



## ANIMAL & FISHERIES SCIENCES

**DR. NEERAJ KUMAR**, Scientist (Fish Nutrition), ICAR-National Institute of Abiotic Stress Management, Baramati, Maharashtra has been awarded Lal Bahadur Shastri Outstanding Young Scientist Award 2019 in the category of Animal & Fisheries Sciences. Dr. Neeraj Kumar has evaluated the different nutritional approaches to mitigate abiotic and biotic stresses. He has developed different types of nano feed (selenium nanoparticles, zinc nanoparticles and silver nanoparticles) formulation from fisheries waste to alleviate the multiple stresses. The nano feed supplementation has a major role in improving growth performance, immuno-hematological status, reducing stress biomarkers and enhanced survival against bacterial infection. The various studies conducted in our present research work clearly established that the nutritional approaches (Zn, Se and Ag and their nano-particles) have a potential protective role against abiotic and biotic stress. The study also reveals the importance of nutritional approaches to improve the well-being of the aquatic animal (fish) to counteract heavy metal and thermal stress. Apart from this Dr. Kumar has also developed several biomarkers in open aquatic systems to assess the severity of the contamination. The total hazard quotient and cancer risk factor has also been standardised. The research shows that the novel feed formulation (Se, Zn and Ag and their nanoparticles) has a potential role in stress mitigation strategies for improving growth performance in fish.



**DR. NEERAJ KUMAR**  
Scientist (Fish Nutrition),  
ICAR-National Institute of  
Abiotic Stress Management,  
Baramati, Maharashtra

## SOCIAL SCIENCES



**DR. MIR ASIF IQEBAL**

Senior Scientist,  
Centre for Agricultural  
Bioinformatics,  
ICAR-Indian Agricultural Statistics  
Research Institute, New Delhi

**DR. MIR ASIF IQEBAL**, Senior Scientist, Centre for Agricultural Bioinformatics, ICAR-Indian Agricultural Statistics Research Institute, New Delhi has been awarded Lal Bahadur Shastri Outstanding Young Scientist Award 2019 in the category of Social Sciences. Dr. Iqebal has been associated with multidisciplinary Bioinformatics research in crop, animal, fish and microbial domains from more than a decade. He has developed statistical algorithm and methodology which are successfully implemented in more than 3 dozens databases/servers/software. He has developed world's first crop variety signature server using wheat as a model where more than 350 varieties. He has developed genomic resources of mango, wheat, banana, tomato, pigeonpea, sugarbeet, Vigna, coconut, brassica, millet, black pepper, small cardamom, buffalo, goat, cattle. He has also developed world's first model domestic animal breed identification methodology and model server using more than 50K microsatellite allelic data using Bayesian method. He has successfully used AI/ML in genomic data for various applications including genotype cost reduction by locus minimisation in breed/variety identification. Looking at the issues of antibiotic resistance and pesticide health issues, he has developed new AI based tool which can accelerate AMP (in fish and cattle) and miRNA (in wheat) discovery research.

## PANJABRAO DESHMUKH OUTSTANDING WOMAN SCIENTIST AWARD 2019



*Award 2019*

In order to recognize and encourage the women agricultural scientists for their outstanding research contribution in agriculture and allied sciences, the ICAR has constituted Panjabrao Deshmukh Outstanding Women Scientist Award. Two annual awards are meant exclusively for outstanding women agricultural scientists. The award consists of ₹1.00 lakh in cash with provision of equal amount of ₹1.00 lakh for motivating Woman Scientists and female students across the country including travel within a year of receiving the award. All women scientists engaged in research in agricultural and allied subjects/extension in a recognized institutions are eligible. The awards are exclusively meant for individual woman scientists. The award has been named after Late Sh. Panjabrao Deshmukh (1898-1965) who was Minister of Agriculture in the first cabinet of Pt. Nehru in 1952. A total of 35 applications were received in response to the open advertisement. The awardees are:



**DR. RASHMI AGRAWAL**  
Dean and Joint Director (Edu.),  
Division of Plant Pathology,  
ICAR-IARI, New Delhi

**DR. RASHMI AGRAWAL**, Dean and Joint Director (Edu.), Division of Plant Pathology, ICAR-IARI, New Delhi has been awarded Panjabrao Deshmukh Outstanding Women Scientist Award 2019. She has made immense contribution in understanding the etiology of wheat diseases and their management based on host-pathogen interaction studies. She has identified a novel toxin 'Bipolaroxin' and characterized using NMR and GCMS. Bipolarissorokiniana-wheat interactions at cellular and molecular level confirmed hemibiotrophism and led to identification of significant upregulated defense genes. She has also identified and characterized a novel biocontrol agent, *Chaetomium globosum* and identified potential bio control related genes through proteomics. A novel small heat shock protein gene (Hsp22) in *C. globosum* was identified and characterized by expression of recombinant protein. She has also developed *C. globosum* based Bioformulations effective against spot blotch of wheat and late blight of potato. She has sequenced complete genomes of *Puccinia striiformis* (Pathotype 38S102), *Tilletia indica* (RAKB\_UP\_1), *B. sorokiniana* (Bs112), *Magnaporthe oryzae* (RMg-DI), *Fusarium fujikuroi* (F250), *Ralstonia solanacearum* (race 4) and developed PCR-based diagnostics for detection and quantification of *C. globosum*, *B. sorokiniana*, *Tilletia indica*, *Puccinia striiformis* and *Puccinia triticina*. Her recent contributions in the area of genomics and diagnostics would help in better understanding of functional genomics of fungal pathogens.

**DR. PADMA VENKITACHALAM DEVARAJAN**, Member Board Of Governors, ICT, Institute of Chemical Technology (ICT), Mumbai, has been awarded Panjabrao Deshmukh Outstanding Women Scientist Award 2019. She has worked on integration of Science and Technology for the development of innovative products for veterinary healthcare, with ease of scalability. The developments are comprehensive and address interventions for prevention, therapy and diagnosis. The outcomes represent the entire trajectory of translation, right from idea - to lab - to commercialization for conditions that have high socio economic relevance likemastitis, intracellular infections like the ileriosis and the zoonotic infections brucellosis, and tuberculosis. The Point of Care diagnostics are simple yet innovative and support judicious and immediate decision making, be it feed supplementation or breeding through artificial insemination. Innovation through affordable excellence as a primary focus enables highout reach, a critical requirement in the agrarian economic sector. A major strength that has enabled this wonderful transition of products which are at different stages of commercialization is the three-way collaboration of a Drug Delivery Scientist cumTechnologist with a Veterinarian and a Vet Industry Partner.



**DR. PADMA VENKITACHALAM  
DEVARAJAN**

Member Board of Governors, ICT,  
Institute of Chemical Technology (ICT),  
Mumbai,



**DR. ARCHANA SACHDEV**  
Professor,  
Division of Biochemistry,  
ICAR-Indian Agricultural  
Research Institute,  
New Delhi

**DR. ARCHANA SACHDEV**, Professor, Division of Biochemistry, ICAR-Indian Agricultural Research Institute, New Delhi, has been awarded Panjabrao Deshmukh Outstanding Women Scientist Award 2019. Dr. Sachdev, initiated her research career almost 34 years ago contributing towards the characterization of promoters and candidate genes of targeted pathways associated with nutritionally significant principles/phytochemicals in various crops, using advanced molecular techniques, aiming for their quality improvement. For the past two decades she has been actively involved in competitive research in the area of transgenic development in soybean and her work focused on metabolic pathway engineering has been translated as first reports for generating low phytate transgenic soybean with improved mineral bioavailability, contributing significantly especially in dealing with the antinutritional principle-phytate, which has been limiting its consumption since long. The efficient, rapid and a reliable soybean transformation protocol (patent applied) with improved transformation efficiency developed by the team led by her, for the Indian varieties has shown a great potential for generating transgenic soybean for the improvement of agronomic traits and analysis of gene function. She has generated several efficient gene silencing and genome editing vectors for raising low phytate transgenic soybean for ultimately targeting the micronutrient deficiency and has also been involved in developing a novel transient assay system for validating genome editing potential of the CRISPR/Cas9 constructs prepared for silencing the undesirable traits in soybean. She along with her team generated the first report on microarray based expression profiling data for differentially expressed genes (4443) in the Indian soybean variety. Dr. Sachdev has conceived and coordinated multi-institutional projects for the development soybean transgenics and has also been actively involved in human resource development imparting ~20 trainings under CAFT. Her teaching experience of 34 years has won her the IARI -Best Teacher award and ICAR -C. Subramaniam award for Excellence in teaching. She has published close to 80 research papers, most of them in high NAAS impact factor journals.

## **BHARAT RATNA Dr. C. SUBRAMANIAM AWARD FOR OUTSTANDING TEACHERS 2019**



*Award 2019*

To provide recognition to outstanding teachers, incentive for excellence in teaching and to promote quality teaching, ICAR constituted Bharat Ratna Dr. C. Subramaniam Award for Outstanding Teachers. These awards are meant for individual teachers independently offering a full course or part of an integrated course. An individual award consists of ₹1.00 lakh in cash + travel grant of ₹1.00 lakh to promote innovation in teaching across the country including travel and a citation. A total of four such awards one each in the Crop/Horticultural Sciences, Natural Resource Management/Agril. Engineering, Animal/Fisheries Science and Social Sciences have been assigned. The award has been named after Bharat Ratna Dr. C. Subramaniam (1910-2000) who ushered in an era of self-sufficiency in food production. 39 eligible applications were received in response to an open advertisement and the selected awardees are:

## CROP & HORTICULTURAL SCIENCES



**DR. MANISH SRIVASTAV**  
Principal Scientist,  
Division of Fruits &  
Horticultural Technology,  
ICAR-IARI, New Delhi

**DR. MANISH SRIVASTAV**, Principal Scientist, Division of Fruits & Horticultural Technology, ICAR-IARI, New Delhi has been awarded Bharat Ratna Dr.C. Subramaniam Award for Outstanding Teachers 2019 in the field of Crop & Horticultural Sciences. Dr. Srivastav has taught several courses in discipline of Fruits and Horticultural Technology to PG students since last 16 years. The courses were in tune with his research expertise, such as Breeding of Fruit Crops, Advanced Fruit Breeding, Systematic Pomology, Fruit Production, Fundamentals of Fruit Production and Basic Horticulture etc. He emphasized more on interactive lectures by way of discussion and individual assignments. He preferred informal interactions with students, particularly in practical classes, which helped them immensely in expressing themselves. He also helped PG School in introducing new courses and revision of the course curricula from time to time. His teaching has always been appreciated by students through "course evaluation proforma". He has contributed significantly in the development, designing and revision of course curriculum in the Horticulture Discipline, ICAR-IARI as well as Yezin University, Myanmar. Instructional materials prepared by him are being used by the students and teachers for effective teaching. He has also been instrumental in augmenting the laboratory facilities and added several equipments to the laboratory. Several teaching Manuals were developed by him for the benefit of students and faculty in courses. He has guided 10 students for Ph.D. and 5 students for M.Sc.as their Chairman, Advisory Committee in the Discipline of Fruits and Horticultural Technology. He has also worked as Co-chair for 15 PhD and 10 MSc students and Member, Advisory Committee for 3 PhD and 3 MSc students in Discipline of Fruits and Horticultural Technology apart from many students of other divisions. His students have received several awards and recognition. The job placement of his students has been quite satisfactory. His five PhD students joined National Agricultural Research Services and presently serving different ICAR research organizations, one student joined as Assistant Professor and 2 students have joined as Horticulture Officer in state departments.



## CROP & HORTICULTURAL SCIENCES

**DR. NARAYANA KASHI HEGDE**, Professor of Horticulture & Dean (I/C), College of Horticulture, SIRSI, Karnataka, has been awarded Bharat Ratna Dr.C. Subramaniam Award for Outstanding Teachers 2019 in the field of Crop & Horticultural Sciences. Dr. Hegde is involved in teaching courses of Spices and Plantation Crops for 28 years to undergraduate, post graduate and Ph.D. students. He has developed the e-content for the B.Sc (Hort.) course entitled " Plantation Crops (2+1)" as a leader for online as well as offline delivery under the National Agricultural Innovation Project - sub project " Development of e-Courses for B.Sc. (Hort.) Degree programme. Similarly post graduate courses on Spices and Plantation Crops were also designed, developed and updated periodically. He underwent Leadership for Academicians Programme (LEAP) in the Ross School of Business, University of Michigan, USA for one week on methodologies of academic governance, leadership, student engagement, teaching and learning, need of innovation and mind set change in education etc. apart from two weeks training at IIT, Roorkee, (Uttarakhand). He acted as Major Advisor (Chairman) for Twenty five M.Sc (Horticulture) and three Ph.D. students and Member of Advisory committee for fifty seven M.Sc / Ph.D. students. His teaching methods involved integration of different techniques starting from black board teaching to the utilization of electronic means apart from periodical visits to farmers field, Research Institutes, Processing units. Fifty eight research papers have been published out of student thesis.



**DR. NARAYANA KASHI HEGDE**  
Professor of Horticulture  
& Dean (I/C),  
College of Horticulture,  
SIRSI, Karnataka

## NATURAL RESOURCE MANAGEMENT & AGRICULTURAL ENGINEERING



**DR. TAPAS KUMAR DAS**  
Professor &  
Principal Scientist,  
Division of Agronomy,  
ICAR-IARI, New Delhi

**DR. TAPAS KUMAR DAS**, Professor & Principal Scientist, Division of Agronomy, ICAR-IARI, New Delhi has been awarded Bharat Ratna Dr.C. Subramaniam Award for Outstanding Teachers 2019 in the field of Natural Resource Management & Agricultural Engineering. Towards quality education, Dr. Das has laid more emphasis on systematic teaching with course-based lessons plan prepared, pre-course test administered, and regular delivery of lectures/practical sessions with scheduled quizzes/examinations. He has taught 12 PG courses at IARI, New Delhi; 9 UG & 6 PG courses at Alemaya University, Ethiopia (2001-2005); one M.Sc. course of the Afghanistan National Agricultural Science & Technology University (ANASTU), Afghanistan for three years (2015, 2016 & 2019). He has promoted E-learning through e-publication/ e-circulation, and introduced few new practicals and yield-density model for advanced learning. He has designed three new course curricula at Alemaya University, Ethiopia; one new advanced joint course at IARI, New Delhi; one new course curriculum of ANASTU, Afghanistan; and whole M.Sc. (Agronomy) course curricula of the Yezin Agricultural University, Myanmar. He has solely written three text-cum-reference books, jointly edited one book and authored two practical manuals, which are recent treatise of weed science/ agronomy, helping scientists for quality teaching, and UG&PG students for better learning. He has guided 55 students from 11 teaching disciplines for these research: of them 21 as Chairman; 8 as Co-Chairman; and 26 as Minor Member/Member. Of these students, 37 are Indian and 18 are foreign nationals from Ethiopia (6), Rwanda (1), Iran (3), Nigeria (2), Sudan (1), Nepal (1), Afghanistan (3) and Guyana (1). There are 86 students research publications, and 47% of which have NAAS score > 6.0. His five students have received Best Ph.D. Thesis Awards: one IARI Best Student of the Year Award; four Best Poster/Oral Presentation Award: one Green Talent Fellowship of German Federal Ministry of Education; two DST-INSPIRE Fellowship, two Rajiv Gandhi Fellowship, and two Student Travel Grant Awards. All his students are well-placed as ARS Scientists and Assistant Professors of the SAUs.

## ANIMAL & FISHERIES SCIENCES

**DR. RAJAN SHARMA**, Principal Scientist, Dairy Chemistry Division, ICAR-National Dairy Research Institute, Karnal, Haryana has been awarded Bharat Ratna Dr.C. Subramaniam Award for Outstanding Teachers 2019 in the field of Animal & Fisheries Sciences. He has been actively engaged in teaching students at B.Tech, Master and PhD levels since 1997 at ICAR-NDRI. Apart from regular courses, I he has also been actively involved in a newly introduced non-credit course on "Intellectual Property Rights" and new degree course (Master & PhD) on Food Safety and Quality Assurance. He has guided as major advisor for 23 students: 15 Master and 08 PhD students. One of his PhD students has received prestigious Jawaharlal Nehru Award for Doctoral Thesis in 2016 by ICAR, while two Master students have received Best Thesis award at Institute. Another student has received Societal Innovation Award of the year 2013 from NRDC for development rapid method for detection of detergent in milk". Students under his guidance have published 26 research review articles, filed 5 patents (one granted) and commercialized 7 technologies to leading dairy industries/entrepreneurs of the country on 30 occasions. Most of his students have been placed in reputed institutions and two of NDRI students have become entrepreneurs and are successfully doing their business



**DR. RAJAN SHARMA**  
Principal Scientist,  
Dairy Chemistry Division,  
ICAR-National Dairy Research  
Institute, Karnal, Haryana

## SOCIAL SCIENCES



**DR. ATMAKUMARI  
RAMAKRISHNA RAO**

Principal Scientist & Professor  
(Bioinformatics), Centre for  
Agricultural Bioinformatics,  
ICAR-IASRI, New Delhi

**DR. ATMAKUMARI RAMAKRISHNA RAO**, Principal Scientist & Professor (Bioinformatics), Centre for Agricultural Bioinformatics, ICAR-IASRI, New Delhi has been awarded Bharat Ratna Dr. C. Subramaniam Award for Outstanding Teachers 2019 in the field of Social Sciences. Dr. Rao has been involved in teaching more than 200 credited courses during last 22 years to the post graduate students of IARI in the disciplines of Agricultural Statistics, Bioinformatics, Computer Applications and Genetics. As an innovation in teaching, cutting edge methods of Internet of Things (IoT) including live telecast on YouTube channel have also been used by him while teaching post graduate students of NARES. He has guided 11 students guided as Chairman (7 M.Sc. + 4 Ph.D. students in both Agricultural Statistics and Bioinformatics disciplines). These students have been placed in class-1 services of Govt. of India and MNCS. The students guided by him have achieved honours and awards and have published 14 papers from their research work in national international journals of repute. Recently, 3 new course curricula/syllabi have been developed for M.Sc. and Ph.D. programmes in Bioinformatics for ICAR's SAUS/DUs by him together with five new courses taught to the students of IARI. Specific training course of 10 days duration was designed by him especially for post graduate students of NARES. He has published two electronic books/reference manuals, one edited book Bioinformatics and Computational Biology. He has received various awards during last five years such as Best Teacher in Higher Agricultural Education at IARI, Fellow NAAS, Fellow ISGPB, Fellow, ISAS, Fellow SAB, Prof. P. V. Sukhatme Gold Medal.

## SOCIAL SCIENCES

**DR. RABINDRA NATH PADARIA**, Principal Scientist & Professor, Division of Agricultural Extension, ICAR-IARI, New Delhi has been awarded Bharat Ratna Dr. C. Subramaniam Award for Outstanding Teachers 2019 in the field of Social Sciences. Significant contributions have been made by him in strengthening the competencies of faculty engaged in extension research and teaching in areas of psychometrics and other quantitative techniques in behavioral research, evaluation capacity building, and innovative extension models through introduction of new courses in areas of research methodology, impact assessment, research ethics, and emerging agricultural technologies besides enrichment of old courses. Thirteen (13) training courses in areas of extension research methodology, innovative extension and management, and program evaluation of 3-week duration each were organized under Centre for Advanced Faculty Training scheme in the Division of Agricultural Extension by him, which directly benefitted over 250 extension professionals. The modules have helped the teachers as well as students in application of scale development and quantitative analysis. Evaluation capacity building manual and cases have helped faculty in teaching and research on program evaluation. The course on Agricultural research, research ethics and rural development programmes were designed and taught by him for students of all disciplines, which has helped the students to abstain from plagiarism, to strengthen faculty-students' collaborations, and to avoid conflict of interest on authorship issues besides being sensitized to farming and rural community needs and challenges. He has also developed Instructional materials for Techniques for scale construction; Monitoring and evaluation of extension programmes; Research methodology; Introduction to disaster management for the benefit of students and faculty. His active engagement in teaching of important courses (657 credits-514 theories and 143 practical) during last five years has helped students excel in competitive events securing IARI best student awards, gold medals as well as ICAR Jawaharlal Nehru Award. He is running eighteen research projects in areas of innovative extension models, socio-economic issues related to transgenic agriculture, climate change adaptation, gender empowerment and indigenous knowledge system. He has been actively engaged in evaluation of core support programmes of rural and livelihood development programmes and preparation of vision documents of Central Institute of Horticulture (Nagaland) and Division of Agricultural Extension, IARI; and planning of extension approaches during XI and XII plans of Govt. of India.



**DR. RABINDRA NATH PADARIA**  
Principal Scientist & Professor,  
Division of Agricultural Extension,  
ICAR-IARI, New Delhi

## JAWAHARLAL NEHRU AWARD FOR P.G. OUTSTANDING DOCTORAL THESIS RESEARCH IN AGRICULTURAL AND ALLIED SCIENCES 2019



*Award 2019*

The ICAR instituted in January, 1969, the Jawaharlal Nehru Awards for ‘Post-graduate Agricultural Research’ based on Ph.D. thesis of the young scientists as an incentive for high-quality fundamental or applied research among post-graduate students in India and to recognize outstanding research work done by them in different fields of agricultural research including Animal Husbandry, Fisheries, Social Science, etc. There are 18 awards with a cash prize of ₹0.50 lakh each with a Gold plated silver medal. The award has been named after Late Pt. Jawaharlal Nehru (1889-1964), the first Prime Minister of India. A total of 132 eligible applications were received for consideration in different discipline and 18 were selected for the award. The awardees and their contributions are given in following pages:

## CROP SCIENCES

**AMIT KUMAR**, Scientist (Plant Breeding), ICAR Research Complex for NEH Region, Umiam, Meghalaya has been awarded Jawaharlal Nehru Award for P.G. Outstanding Doctoral Thesis Research in Agricultural and Allied Sciences 2019 in the category of Crop Science for his thesis on "Characterization of iso-cytoplasmic restorer lines derived from elite rice hybrids and their utilization in hybrid development". The thesis research presents the first report of development of iso-cytoplasmic restorers and demonstration of its utility in hybrid rice breeding. A set of 390 iso-cytoplasmic restorers derived from 25 popular rice hybrids were developed and 100 superior iso-cytoplasmic restorer lines were selected. Superior iso-cytoplasmic restorers such as PRR300, PRR392, PRR383 and PRR396 have shown significantly higher yield. Microsatellites markers-based clustering of restorer lines grouped the restorers into three major clusters. Gene based markers were found to be more efficient than gene linked markers for fertility restorer genes namely, Rf3 and Rf4. The combining ability estimates revealed that the restorer lines were good general combiners. Four stable and promising iso-cytoplasmic restorers namely, PRR 317, PRR 354, PRR 381 and PRR 390 were identified across the locations based on the performance of testcrosses. The research culminated in five research papers and gold medal for significant Ph.D. research work.



**AMIT KUMAR**  
Scientist (Plant Breeding),  
ICAR Research Complex  
for NEH Region,  
Umiam, Meghalaya

## CROP SCIENCES



**DR. VIDYA SAGAR**  
Scientist  
(Genetics and Plant Breeding),  
ICAR-IIVR, Varansi

**DR. VIDYA SAGAR**, Scientist (Genetics and Plant Breeding), ICAR-IIVR, Varansi, has been awarded Jawaharlal Nehru Award for P.G. Outstanding Doctoral Thesis Research in Agricultural and Allied Sciences 2019 in the category of Crop Science for his thesis on "Marker assisted pyramiding of genes for resistance to bacterial blight and blast into an elite rice variety Pusa Basmati 1509". The Bacterial blight (BB) and blast are the most devastating diseases of Basmati rice which causes significant yield and quality losses. The present study reports successful introgression through MABB of four resistant genes into a popular short duration Basmati rice cultivar, PB 1509 to act against two most important diseases of rice namely BB and blast. The newly developed lines consistently exhibited broad spectrum resistance against common races of the pathogens under both artificial and field screening. They also showed excellent phenotypic similar and yielding attributes as that of the recurrent parent. The research culminated in two research papers, two best poster awards and gold medal for significant Ph. D. research work. These BB and blast resistant improved PB 1509 NILs would provide an economical and sustainable insurance to farmers against losses due to BB and blast diseases in the event of any untoward outbreak in future.



## ANIMAL SCIENCES

**DR. JESS VERGIS**, Assistant Professor, Dept of Veterinary Public Health, College of Veterinary and Animal Sciences, KVASU, Kerala has been awarded Jawaharlal Nehru Award for P.G. Outstanding Doctoral Thesis Research in Agricultural and Allied Sciences 2019 in the category of Animal Sciences for his thesis on "Efficacy of Antimicrobial Peptides (AMPs) against multi-drug resistant Enteroaggregative Escherichia coli (MDR-EAEC)". In the thesis research the efficacy of three Antimicrobial Peptides (AMPs) with different mechanisms of action viz., indolicidin, CAMA and lactoferricin (17-30) were evaluated against the multi-drug resistant strains of an emerging food-borne bacterial pathogen, Enteroaggregative Escherichia coli (MDR-EAEC). The findings of this study suggested that the AMPs tested had the antimicrobial and antibiofilm efficacy either equal to or even better than the antibiotics tested as well as exhibit prominent immune modulatory effect. To the best of our knowledge, this was the first study which determined the antimicrobial as well as antibiofilm potential of AMPs against biofilm-producing MDR-EAEC strains. Further, for the first time globally, the antimicrobial efficacy of AMPs against MDR-EAEC in a *Galleria mellonella* larval model has been investigated. The findings of the research has opened new avenues for research to find solutions against the growing menace of antimicrobial resistance and has been published in highly rated journals.



**DR. JESS VERGIS**  
Assistant Professor,  
Dept of Veterinary  
Public Health,  
College of Veterinary  
and Animal Sciences,  
KVASU, Kerala

## ANIMAL SCIENCES



**DR. MOHD IQBAL BHAT,**  
Animal Biochemistry Division,  
National Dairy  
Research Institute,  
Karnal, Haryana

**DR. MOHD IQBAL BHAT,** Animal Biochemistry Division, National Dairy Research Institute, Karnal, Haryana has been awarded Jawaharlal Nehru Award for P.G. Outstanding Doctoral Thesis Research in Agricultural and Allied Sciences 2019 in the category of Animal Sciences for his thesis on "Evaluation of probiotic lactobacilli on Escherichia coli induced changes in epithelial barrier function". The research presented was aimed to explore the role of two indigenous probiotic strains *Lactobacillus rhamnosus* (MTCC 5897) and *Lactobacillus fermentum* (MTCC5898) on intestinal epithelial barrier function under the inflammatory stimulus of *E. coli* and LPS using in vitro Caco-2 cellular model. The study established that both probiotic strains were safe and non-toxic to intestinal cells and were having good adhesion capability with the intestinal epithelium. Both lactobacilli strain showed immense capability to combat the *E. coli* or LPS induced aberrations in intestinal barrier functions during different experimental setups. The study further demonstrated the close association of probiotic lactobacilli bacteria with the host epigenome, thereby modulating the global DNA methylation and H3 and H4 acetylation patterns of intestinal cells. Therefore, the investigated features could prove very encouraging in developing probiotic based food products or drinks supplemented with these indigenous lactobacilli strains to combat the various intestinal problems and also could prove valuable in developing probiotic based epigenetic therapeutic tools.

## NATURAL RESOURCE MANAGEMENT

**DR. THOMBARE NANDKISHORE SUDHAKARRAO**, Scientist (Agricultural Chemistry), ICAR - Indian Institute of Natural Resins and Gums, Namkum, Ranchi, Jharkhand, has been awarded Jawaharlal Nehru Award for P.G. Outstanding Doctoral Thesis Research in Agricultural and Allied Sciences 2019 in the category of Natural Resource Management for his thesis on "Synthesis and evaluation of cross-linked guar gum hydrogels for environmental and agricultural applications". The study illustrates innovative and all-in-one approach to address the concern of water deficit, deteriorating soils quality and low nutrient use efficiency through the use of guar (Cyamopsistetragonolobus) gum based bio-hydrogels. The superabsorbent hydrogel with capacity to absorb and store water when it is in excess and release it during shortage has potential to reduce water stress, especially for rainfed crops. Findings highlighted the role of these hydrogels as soil conditioners as it improved porosity, bulk density and water holding capacity of soil. These hydrogels, when loaded with phosphorus and boron, managed to release them in controlled manner maintaining optimum concentration in soil throughout the experimental period of 60 days. Besides this, another guar gum based hydrogel showed admirable turbidity and dye removal efficiency from water. The procedures and products developed in present investigation exhibited wide potential for applications in agriculture and water treatment sector.



**DR. THOMBARE NANDKISHORE SUDHAKAR RAO**,  
Scientist (Agricultural Chemistry),  
ICAR - Indian Institute of  
Natural Resins and Gums,  
Namkum, Ranchi, Jharkhand

## NATURAL RESOURCE MANAGEMENT



**DR. SUMIT PAL**

Water Technology Centre,  
ICAR-Indian Agricultural  
Research Institute,  
PUSA Campus, New Delhi

**DR. SUMIT PAL**, Water Technology Centre, ICAR-Indian Agricultural Research Institute, PUSA Campus, New Delhi has been awarded Jawaharlal Nehru Award for P.G. Outstanding Doctoral Thesis Research in Agricultural and Allied Sciences 2019 in the category of Natural Resource Management for his thesis on "Impact assessment of contaminated and treated wastewater on soil and crop quality using different systems of irrigation in the NCR region". The present study has shown that due to excessive use of fresh water, the production of waste water was increased. This imbalance lead to the scarcity of fresh water day by day. Ultimately, the farmers are depending on the waste water for the irrigation. As a result, the use of untreated waste water is causing serious health ill effects not for the consumers, but for the farmers itself. With this background, a bioreactor has been designed and implemented for the on-site treatment of waste water with the conventional and micro-irrigation system. The experimental plots was designed for checking the impact of waste water and treated water irrigation in flood and drip irrigation on soil and crop quality. The output of the research has proved that the waste water irrigation with drip and flood is deteriorating the quality of soil and crops. While, the treated water irrigation was better and did not affect the soil and crop quality. The drip irrigation with treated water is cost effective and eco-friendly technology for the sustainable agriculture.

## CROP PROTECTION

**DR. VINOD KUMAR SELVARAJ**, Kalapakulam, Tamil Nadu has been awarded Jawaharlal Nehru Award for P.G. Outstanding Doctoral Thesis Research in Agricultural and Allied Sciences 2019 in the category of Crop Protection for his thesis on "Emergence of tobacco streak virus infecting cotton: Investigations on symptom expression, transmission, spread and management". In this study Cotton necrosis was surveyed in the major cotton growing belts in India. The full genome of the virus from four states were individually characterized and compared. Epidemiology of the disease has been documented. Bioassays and physico-chemical studies have been performed. Transmission studies with parthenium and cotton seeds were performed. Agro-infectious clones of coat protein and movement protein genes were constructed and their symptom expression was studied. The present study also demonstrated the antiviral potential of the strain against tobacco streak virus (TSV) infection in cotton. Soil drenching and foliar application of *B. amyloliquefaciens* (VB7) in buttermilk base reduced TSV infection and also promoted plant growth and yield. The bacterium was identified with genes for the biosynthesis of diverse antimicrobial peptides and also secreted wide range of metabolites with antimicrobial activity. This substantiates VB7 as multifaceted, wide range biocontrol agent for the management of various plant diseases.



**DR. VINOD KUMAR SELVARAJ**  
Kalapakulam, Tamil Nadu

## CROP PROTECTION



**DR. T.R. RESMI**  
Pulari, Kerala

**DR. T.R. RESMI**, Pulari, Kerala has been awarded Jawaharlal Nehru Award for P.G. Outstanding Doctoral Thesis Research in Agricultural and Allied Sciences 2019 in the category of Crop Protection for her thesis on "RNA silencing strategies for engineering resistance against cassava mosaic disease". The main objective of this thesis was to study the genetic diversity of cassava-infecting begomoviruses in South India and to develop genetic engineering strategies to control the disease. The study showed that SLCMV is the major virus causing cassava mosaic disease in South India. A chimeric 'bulged' hairpin RNA gene, comprising the sense and antisense arms of Rep genes of two SLCMV isolates was used to generate SLCMV resistance in *N. benthamiana* plants. Transgenic *N. benthamiana* plants expressing the chimeric Rep hairpin RNA gene exhibited high levels of resistance to virus isolates. Thus, the deployment of the bulged Rep hairpin RNA gene, with mismatches between the sense and antisense arms, emerged as a more efficient silencing strategy to control SLCMV infection. *Agrobacterium VirE2*, a single-stranded DNA binding protein, has been used in my study to engineer resistance against SLCMV. Transgenic *N. benthamiana* plants generated in this study expressed functional VirE2 which complemented the virE2 mutation in *Agrobacterium*. The virE2 transgenic plants, upon agroinoculation with SLCMV partial dimers exhibited a pronounced reduction in SLCMV DNA accumulation. The virE2-based strategy can be used to generate broad spectrum geminivirus resistance in transgenic plants.

## FISHERIES

**DR. NITHIN CHAKKAREZHATH THILAKAPPAN**, Ernakulam, Kerala, has been awarded Jawaharlal Nehru Award for P.G. Outstanding Doctoral Thesis Research in Agricultural and Allied Sciences 2019 in the category of Fisheries for his thesis on "Studies on development of Masmin and Masmin based products using liquid smoke technology". Cancers globally recognized as the second leading cause of death. Masmin or mas is a traditional smoked, dried and ready-to-eat fishery product of Lakshadweep Islands, India. The product enjoys good local and international demand and the trade serves as major source of livelihood. Intense smoking practiced during its production leads to heavy deposition of carcinogenic Polycyclic Aromatic Hydrocarbon (PAH) in Masmin. This has adversely affected the trade and is suspected for increased cancer cases among the islanders. "Liquid smoking" is effective in mimicking flavours of smoked product with lesser deposit of PAH. Present study was successful in developing Masmin and Masmin based products by replacing traditional smoking practices with liquid smoking. Obtained results show that application of liquid smoke can significantly reduce the PAH content in Masmin without detriment to the flavor and nutritional value of the product. The attempt will ensure well being of a large population and will also safeguard livelihood opportunities of islanders.



**DR. NITHIN CHAKKAREZHATH**  
Thilakappan, Ernakulam,  
Kerala,

## FISHERIES



**DR. SELSA J CHAKKALAKAL**  
Ernakulam, Kerala

**DR. SELSA J CHAKKALAKAL**, Ernakulam, Kerala has been awarded Jawaharlal Nehru Award for P.G. Outstanding Doctoral Thesis Research in Agricultural and Allied Sciences 2019 in the category of Fisheries for her thesis on "Bioprospecting marine bivalve mollusks and cephalopods from south west coast of India for potential bio-active molecules". Dr. Selsa J. Chakkalakkal has pioneering research contributions in the frontier area of bioactive molecule discovery from mollusks of marine and estuarine origin as promising anti-inflammatory and anti-oxidant agents with research records in the form of patents, papers in peer-reviewed journals and commercialized technology. Dr. Chakkalakkal has the credit to develop library of anti-inflammatory bioactive compounds from predominantly available mollusk resources from the southwest coast of India, This forms a first comprehensive report on the anti-oxidative and anti-inflammatory properties of these seafood species as a novel source of anti-oxidants and anti-inflammatory leads. She has the credit to develop an anti-inflammatory nutraceutical product "Cadamin", Green Mussel extract from Indian green mussel *Perna viridis* and an effective green alternative to the synthetic drugs to combat rheumatic arthritis. Her research work will have an impact on the exploitation of anti-inflammatory leads from predominantly available bivalve mollusks and cephalopod resources for pharmaceutical applications.



## HORTICULTURE

**DR. CHAVLESH KUMAR**, Scientist, Division of Fruits and Horticultural Technology, ICAR-IARI, New Delhi has been awarded Jawaharlal Nehru Award for P.G. Outstanding Doctoral Thesis Research in Agricultural and Allied Sciences 2019 in the category of Horticulture for his thesis on "Morphological and molecular diversity analyses of wild apple germplasm (*Malus* sp.)". Dr. Chavlesh Kumar has characterized the indigenous Himalayan crabapple genotypes including the exotic wild apples maintained at field gene banks of three different ICAR institutes located in Himachal Pradesh and Uttarakhand. Thirty-two diverse wild apple genotypes were characterized using the morphological & biochemical parameters, and molecular markers. Indigenous Himalayan *Malus baccata* ecotypes were found genetically unique compared to other exotic wild apples. The Himalayan crabapple genotypes were grouped into two groups based on SSR and ISSR markers. The indigenous genotypes, namely, Himalayan *Malus baccata* (Shillong) and exotic *Malus spectabilis* were identified as potential source against various biotic and abiotic stresses, particularly scab and woolly aphid tolerance based on the linked biochemical parameters. Indigenous *Malus baccata* (Rohru) has been identified as most dwarfing genotype comparable to M9 a popular exotic dwarfing apple rootstock. Several potential genotypes were also identified by him are having high degree of morphological biochemical and genetic diversity, which may serve as valuable genetic resources for utilization in hybridization for apple Rootstock improvement.



**DR. CHAVLESH KUMAR**,  
Scientist, Division of Fruits  
and Horticultural Technology,  
ICAR-IARI, New Delhi

## HORTICULTURE



**DR. NANGSOL DOLMA BHUTIA**

Assistant Professor,  
Dept of Vegetable Science,  
College of Horticulture and  
Forestry, Central Agricultural  
University, Pasighat,  
Arunachal Pradesh

**DR. NANGSOL DOLMA BHUTIA**, Assistant Professor, Dept of Vegetable Science, College of Horticulture and Forestry, Central Agricultural University, Pasighat, Arunachal Pradesh, has been awarded Jawaharlal Nehru Award for P.G. Outstanding Doctoral Thesis Research in Agricultural and Allied Sciences 2019 in the category of Horticulture for her thesis on "Assessment of heterosis for yield and quality traits and molecular mapping of cluster bearing habit in Luffa". Dr. Nangsol Dolma Bhutia has studied the inheritance and molecular mapping of cluster bearing habit and sex form in Luffa. The magnitude of heterosis, combining ability and gene action for yield, its related traits and biochemical contents was also evaluated in Luffa by utilizing the cross combination between monoecious and hermaphrodite inbred lines. For assessing the genetic diversity at molecular level ISSR Markers and sponge gourd based EST-SSR markers were used. Out of 151 ISSR and EST-SSR primers, 29 primers producing polymorphic bands helped in assessing both inter- and intra-location genetic diversity among the 47 Luffa genotypes. The F1 hybrids developed between monoecious and hermaphrodite inbred lines showed better performance in terms of earliness, number of fruits per plant, fruit length, biochemical contents and overall fruit yield per plant. The findings reveal the breeding value and potentiality of satputia lines in the improvement of genetic architecture and development of ideal plant type in ridge gourd for high yield with enriched biochemical contents. The study on inheritance pattern of fruit bearing habit in Luffa revealed that solitary was dominant over cluster fruiting and this trait was governed by single gene while the inheritance pattern sex forms revealed the presence of two recessive genes. Through molecular mapping the ME 10 EM4-280 (SRAP marker) linked at the distance of 4.6cM from the fruiting locus was identified. This marker could be used for marker assisted selection in backcross populations to identify the genotypes possessing cluster fruiting gene thereby speeding the time duration involved in transfer of recessive trait (cluster fruiting) in Luffa. Thus, cluster fruiting trait may be incorporated in ridge gourd as it will benefit the farming community by yielding nutritionally rich fruits with desired fruit length without compromising on yield.

## AGRICULTURAL ENGINEERING

**DR. ASHOK KUMAR BHARIMALLA**, Matunga East, Mumbai has been awarded Jawaharlal Nehru Award for P.G. Outstanding Doctoral Thesis Research in Agricultural and Allied Sciences 2019 in the category of Agricultural Engineering for his thesis on "Preparation of Nanocellulose by Chemo-Mechanical Process and its Application to Improve Mechanical Properties of Kraft Paper". Nanocellulose is a new frontier area of research owing to the unique properties of this material. Mechanical means of synthesis is energy intensive. Current study aimed at producing Nanocellulose by energy efficient means. A novel chemo-mechanical process was successfully designed involving cellulase enzyme pretreatment followed by controlled temperature refining. Applications of Nanocellulose was explored by reinforcing it with Kraft pulp to enhance mechanical properties of Kraft paper. The interfiber bonding also increased significantly upon increasing the Nanocellulose concentration. It is attributed to the fact that Nanocellulose increases strong hydrogen bonding between the fibers present in Kraft pulp due to which the stronger network of fibers is generated in the Kraft paper. The project economics estimates 13% reduction in cost as compared to virgin pulp. Utilizing Nanocellulose as reinforcing material not only saves the pulp requirement but also enhances the durability in an economic way.



**DR. ASHOK KUMAR BHARIMALLA**  
Matunga East, Mumbai

## AGRICULTURAL ENGINEERING



**DR. SANDIP MANDAL**  
ICAR-Central Institute of  
Agricultural Engineering,  
Bhopal, Madhya Pradesh

**DR. SANDIP MANDAL**, ICAR-Central Institute of Agricultural Engineering, Bhopal, Madhya Pradesh has been awarded Jawaharlal Nehru Award for P.G. Outstanding Doctoral Thesis Research in Agricultural and Allied Sciences 2019 in the category of Agricultural Engineering for his thesis on "Optimization of Process Parameters for Conversion of Pine Needles to Bio-Oil, Biochar and Product Gas through Batch and Continuous Pyrolysis". Biomass has been sought as one of the important renewable sources as it is abundantly available and product of photosynthesis. Pine needles are by-product of pine forest and produced at a rate of 6.3-6.5 tonne/ha, annually. Dry pine foliage stops water from being absorbed by the soil, causes depletion of groundwater table and death of grazing animal and devastating forest fire. Considering this a bio-hazard it was aimed to utilize pine needles as source of energy through pyrolysis route. Rigorous activities were planned scientifically and executed to find out the best possible process conditions to achieve maximum energy efficiency. This experiment found optimum processes to convert pine needles to biooil, biochar and producer gas through three different reactor configurations. The experiment also found all the characteristics of pine needle biomass and its products. The results enable industries to establish pine needles based energy centre.

## SOCIAL SCIENCES

**DR. ANIRBAN MUKHERJEE**, Scientist (Agricultural Extension), Div of Socio economics and Extension, ICAR-RC for Eastern Region, Bihar has been awarded Jawaharlal Nehru Award for P.G. Outstanding Doctoral Thesis Research in Agricultural and Allied Sciences 2019 in the category of Social Sciences for his thesis on "An Analytical Study on Status, Prospects and Challenges of Farmers Producer Companies". The Analytical Study on Status, Prospects and Challenges of Farmers Producer Companies was conducted with objectives to evaluate the status prospects and performance of the farmers producer company model at ground level. The study reveals the effectiveness of Farmers' Producer Companies working in India, their problems and prospects. Two scales viz. farmers progressiveness and farmers attitude towards the FPCs were constructed and validated. A five dimensional managerial competency battery (5D-MCB) was also developed to assess the managerial competencies (with wide applicability). This is an unique attempt made in the discipline. The findings of this study will provide the basis of planning for the future strategies to make FPCs more effective, accountable and responsive. As there are no such empirical studies in this area this study attempt will facilitate policy makers, academicians, and technocrats to make effective decision about FPCs. This has great relevance in the context of enhancing farmer's income.



**DR. ANIRBAN MUKHERJEE**  
Scientist (Agricultural Extension),  
Div. of Socio economics and Extension,  
ICAR-RC for Eastern Region, Bihar

## SOCIAL SCIENCES



**DR. SHRUTI**  
Scientist  
(Agricultural Extension)  
ICAR-Directorate of Mushroom  
Research, Himachal Pradesh

**DR. SHRUTI**, Scientist (Agricultural Extension), ICAR-Directorate of Mushroom Research, Himachal Pradesh has been awarded Jawaharlal Nehru Award for P.G. Outstanding Doctoral Thesis Research in Agricultural and Allied Sciences 2019 in the category of Social Sciences for her thesis on "Critical Analysis of Entrepreneurial Environment for Value Chain Development". This study is the first systematic attempt to investigate the value chain development through value chain map in Indian context. Developed value chain maps clearly represented major activities, major actors and existing supporting entrepreneurial environment. The finding of major actors involves which marketing channel was more efficient and share of producer/processors in consumer price was high. The study presented as a source of reliable information that many researchers will find important. The findings of the study would provide directions of research for prioritizing the research projects. The Semantic differential chart depicted the significant difference between processor and producer for possessing entrepreneurial behaviour which shows there is need to promote and develop entrepreneurial behaviour among farmers through motivational and personality development training programmes. Through Hierarchical Agglomerative Clustering and Dendrogram that processors need similar kind of training in different dimensions of training need has been represented which form the basis for framing training program. Kurt Lewins' Force Field Analysis compared the driving and restraining forces to promote and upgrade the value chain development for different selected agricultural commodities in the study. Alfares method (2009) suggested the important strategies to be undertaken for value chain development which will help policy makers to devise policy interventions for value chain development.

## BIOTECHNOLOGY

**DR. ALICE KUJUR**, Centre of Excellence in Genomics & Systems Biology (CEGSB), International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Hyderabad, Telangana has been awarded Jawaharlal Nehru Award for P.G. Outstanding Doctoral Thesis Research in Agricultural and Allied Sciences 2019 in the category of Biotechnology for her thesis on "Identification of Functionally Relevant Novel Genes and Alleles for Seed Size/Weight in Chickpea." She developed various genetic and genomic resources, and successfully implemented different efficient integrated genomic strategies to dissect complex quantitative yield-component pod number (PN), seed number (SN) and 100-seed weight (SW) traits for market-assisted genetic enhancement of chickpea. Genetic resources include an association panel (365 accessions) and three advanced generation bi-parental mapping populations, while, genomic resources include large set of experimentally validated transcription factor (TF) genes-derived microsatellites and genotyping-by-sequencing (GBS) assay-based SNPs (single nucleotide polymorphisms) developed at genome-wide scale in chickpea. Various efficient novel cost-effective integrated genomic strategies implemented in study on other hand include combination of different association and genetic mapping approaches coupled with transcript profiling and high-resolution molecular haplotyping, which deployed the generated genetic genomic resources and altogether delineated several functionally relevant novel allele variants and multiple genomic regions harbouring major PN, SN and SW candidate QTLs/ genes, including superior haplotypes-containing ITs and other trait-regulatory genes for future market-assisted genetic improvement of chickpea. Marker (haplotype)-assisted foreground and background selection was also initiated for developing improved high-PN/SN yielding chickpea cultivars.



**DR. ALICE KUJUR**  
Centre of Excellence in  
Genomics & Systems Biology (CEGSB),  
International Crops Research Institute  
for the Semi-Arid Tropics (ICRISAT),  
Hyderabad, Telangana

## BIOTECHNOLOGY



**DR. HIRPARA DARSHNA  
GORDHANBHAI**

Department of Biotechnology,  
College of Agriculture,  
Junagadh Agricultural  
University,  
Junagadh, Gujarat

**DR. HIRPARA DARSHNA GORDHANBHAI**, Department of Biotechnology, College of Agriculture, Junagadh Agricultural University, Junagadh, Gujarat has been awarded Jawaharlal Nehru Award for P.G. Outstanding Doctoral Thesis Research in Agricultural and Allied Sciences 2019 in the category of Biotechnology for her thesis on "Micro RNA profiling, anti-fungal and nano-formulation characterizations of multi stress tolerant *Trichoderma* fusants for biocontrol activity against *Sclerotium rolfsii* Sacc, causing stem rot in groundnut." She developed first time diverse inter-fusant (heterozygous-Fu-21) from *Trichoderma virens* Tvs12\* *Trichodemakoningii* MTCC796 having characteristics of multi stress tolerant (drought, salt and fungicides) with enhancing antagonistic activity against *Sclerotium rolfsii* under changing climate. The novel down/up expressed miRNA recognized in Fu21 during interaction with pathogen and elevated the pathways for oxidation-reduction process, activating T cell receptor signaling pathway and aminobenzoate degradation pathway. Green synthesis of nanoparticles based bioformulation (Fu21) derived having immense potential in agricultural uprising, high reactivity, better bioavailability, bioactivity and the surface effect of nano-product for smart protection of pathogen. A novel bio-formulation would be efficient, eco-friendly and cost-effective remedies to control fungal diseases under adverse condition.



## VASANTRAO NAIK AWARD FOR OUTSTANDING RESEARCH APPLICATION IN DRYLAND FARMING SYSTEMS 2019



*Award 2019*

In order to provide recognition for outstanding research application leading to improvement of dryland farming systems, ICAR instituted an annual Vasantryao Naik Award for Research Application in Dryland Agriculture of ₹1.00 lakh which is given to a scientist or an extension worker who has made outstanding contribution in the areas of Water Conservation and Dryland Farming. The award has been named after Late Sh. Vasantryao Naik (1913-1979) who is regarded as Father of Green Revolution in Maharashtra. 8 eligible applications were received in response to the open advertisement and the winner is:



**DR. SURESH PAL SINGH TANWAR**

**DR. SURESH PAL SINGH TANWAR** (Team Leader) and his team which includes Dr. Akath Singh (Principal Scientist), Dr. M. Patidar (Principal Scientist), Dr. B.K. Mathur (Principal Scientist ) and Dr. Praveen Kumar (Head, IFS & Principal Scientist) from ICAR- Central Arid Zone Research Institute have been awarded Vasant Rao Naik Award for Outstanding Research Application in Dry Land Farming Systems 2019. They have worked to develop location specific rainfed integrated farming system models to achieve higher levels of sustenance and livelihood security in water scarce arid Western Rajasthan. Crop and varietal diversification, intercropping, rejuvenation of senile agri-horti systems, silvi-pasture systems and low cost nutrient supplementary feeding technologies have been standardized, demonstrated and upscaled. The integration of these technologies transform the farms of poor farmers to integrated farming systems. It has ensured year round employment to farm family, availability of fodder to livestock and two to three times higher and sustainable income. The systems also help in mitigation of climate change through sequestration of carbon in soil and perennial component on the farm. Two package of practices in IFS has also been accepted by the state government for upscaling.

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**DR. AKATH SINGH**



**DR. M. PATIDAR**

**DR. SURESH PAL SINGH TANWAR** (Team Leader) and his team which includes Dr. Akath Singh (Principal Scientist), **Dr. M. Patidar** (Principal Scientist), Dr. B.K. Mathur (Principal Scientist) and Praveen Kumar (Head, IFS & Principal Scientist) from ICAR- Central Arid Zone Research Institute has been awarded Vasant Rao Naik Award for Outstanding Research Application in Dry Land Farming Systems 2019. They have worked to develop location specific rainfed integrated farming system models to achieve higher levels of sustenance and livelihood security in water scarce arid Western Rajasthan. Crop and varietal diversification, intercropping, rejuvenation of senile agri-horti systems, silvi-pasture systems and low cost nutrient supplementary feeding technologies have been standardized, demonstrated and upscaled. The integration of these technologies transform the farms of poor farmers to integrated farming systems. It has ensured year round employment to farm family, availability of fodder to livestock and two to three times higher and sustainable income. The systems also help in mitigation of climate change through sequestration of carbon in soil and perennial component on the farm. Two package of practices in IFS has also been accepted by the state government for upscaling.

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**DR. B.K. MATHUR**

**PRAVEEN KUMAR**

**DR. SURESH PAL SINGH TANWAR** (Team Leader) and his team which includes Dr. Akath Singh (Principal Scientist), Dr. M. Patidar (Principal Scientist), Dr. B.K. Mathur (Principal Scientist) and **Praveen Kumar** (Head, IFS & Principal Scientist) from ICAR- Central Arid Zone Research Institute has been awarded Vasant Rao Naik Award for Outstanding Research Application in Dry Land Farming Systems 2019. They have worked to develop location specific rainfed integrated farming system models to achieve higher levels of sustenance and livelihood security in water scarce arid Western Rajasthan. Crop and varietal diversification, intercropping, rejuvenation of senile agri-horti systems, silvi-pasture systems and low cost nutrient supplementary feeding technologies have been standardized, demonstrated and upscaled. The integration of these technologies transform the farms of poor farmers to integrated farming systems. It has ensured year round employment to farm family, availability of fodder to livestock and two to three times higher and sustainable income. The systems also help in mitigation of climate change through sequestration of carbon in soil and perennial component on the farm. Two package of practices in IFS has also been accepted by the state government for upscaling.

## FAKHRUDDIN ALI AHMED AWARD FOR OUTSTANDING RESEARCH IN TRIBAL FARMING SYSTEMS 2019



*Award 2019*

ICAR instituted Fakhruddin Ali Ahmed Award for Outstanding Research in Tribal Farming Systems primarily for any person or team (with two or three associates, if any) engaged in applied research and its applications in tribal areas of the country aimed at improving the biological resources and livelihoods or in original work directly applicable to tribal farming system. Two awards of the value of ₹1.00 lakh in cash, a citation and provision of equal amount for study on related subject in the geographical area for a year. The award has been named after Late Sh. Fakhruddin Ali Ahmed (1905-1977) who was president of ICAR Society from 1971 to 1974. In all 30 eligible applications were received in response to the open advertisement and the winners with their contribution are:



**DR. P. RAJEEV**  
Principal Scientist,  
ICAR-Indian Institute of Spices  
Research, Kozhikode, Kerala

**DR. P. RAJEEV** (Team Leader), Principal Scientist, ICAR-Indian Institute of Spices Research, Kozhikode, Kerala together with his team which includes Dr. V. Sivakumar, Scientist (Horticulture) & Head, Horticultural Research Station, ICAR-AICRP on Spices Centre, Dr. YSR Horticultural University, Visakhapatnam, Dr. D.Prasath, Principal Scientist (Horticulture), Kerala and Dr. E. Jayashree, Principal Scientist, ICAR-Indian Institute of Spices Research, Kozhikode, Kerala has been awarded Fakhruddin Ali Ahmed Award for Outstanding Research in Tribal Farming Systems 2019. ICAR Indian Institute of Spices Research implemented a multi institutional project leveraging several technologies which were already available with the organization for immediate benefit to the tribal community at Vishakapatnam. Eight technologies defined as GAP were tested through AICRPS on Spices at Horticulture Research station, Chintappalle and disseminated adopting a multi institutional value chain approach. Two technologies namely improved varieties of turmeric and black pepper and mechanization of primary processing in turmeric had significant impact on increasing productivity, income and quality. The project supported Maathota Tribal Farming FPO involving 500 tribal farmers in 800 ha of turmeric and obtained organic certification by TQ Cert Services Private Limited. Another FPO, Andhra Kashmir with 500 farmers has completed organic cultivation of turmeric in two seasons in 683 ha. Women farmer producer organizations supported by Giri Chaitanya Farmer's Society marketed four value added products of spices, branded and labeled under the project.



Dr. P. Rajeev (Team Leader), Principal Scientist, ICAR-Indian Institute of Spices Research, Kozhikode, Kerala together with his team which includes **DR. V. SIVAKUMAR**, Scientist (Horticulture) & Head, Horticultural Research Station, ICAR-AICRP on Spices Centre, Dr. YSR Horticultural University, Visakhapatnam, Dr. D.Prasath, Principal Scientist (Horticulture), Kerala and Dr. E. Jayashree, Principal Scientist, ICAR-Indian Institute of Spices Research, Kozhikode, Kerala has been awarded Fakhruddin Ali Ahmed Award for Outstanding Research in Tribal Farming Systems 2019. ICAR Indian Institute of Spices Research implemented a multi institutional project leveraging several technologies which were already available with the organization for immediate benefit to the tribal community at Vishakapatnam. Eight technologies defined as GAP were tested through AICRPS on Spices at Horticulture Research station, Chintappalle and disseminated adopting a multi institutional value chain approach. Two technologies namely improved varieties of turmeric and black pepper and mechanization of primary processing in turmeric had significant impact on increasing productivity, income and quality. The project supported Maathota Tribal Farming FPO involving 500 tribal farmers in 800 ha of turmeric and obtained organic certification by TQ Cert Services Private Limited. Another FPO, Andhra Kashmir with 500 farmers has completed organic cultivation of turmeric in two seasons in 683 ha. Women farmer producer organizations supported by Giri Chaitanya Farmer's Society marketed four value added products of spices, branded and labeled under the project.

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**DR. V. SIVAKUMAR**  
ICAR-AICRP on Spices Centre,  
Dr. YSR Horticultural University,  
Visakhapatnam



**DR. D. PRASATH**  
Principal Scientist,  
ICAR-Indian Institute of Spices  
Research, Kozhikode, Kerala

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**DR. E. JAYASHREE**  
Principal Scientist,  
ICAR-Indian Institute of Spices  
Research, Kozhikode, Kerala



**DR. LOPAMUDRA SAHOO**  
Senior Scientist,  
ICAR Research Complex for  
NEH Region, Tripura Centre,  
Lembucherra, Tripura

**DR. LOPAMUDRA SAHOO** (Team Leader), Senior Scientist (Aquaculture), together with Dr. Gulab Singh Yadav, Scientist (Agronomy), Dr. Chandan Debnath, Scientist (Fisheries Resource Management, Dr. Basant Kumar Kandpal-Joint Director as associates from ICAR Research Complex for NEH Region, Tripura Centre, Lembucherra, Tripura has been awarded Fakhruddin Ali Ahmed Award for Outstanding Research in Tribal Farming Systems 2019. The team sensitized about improved farming, comprising of high-yielding varieties, SRI, ICM, integrated farming system, conservation agriculture, intensified rice fallow, composite culture, backyard poultry, piggery etc. that enhanced the farm productivity, and income of 11,462 households across 96 villages of the Tripura Tribal Area Autonomous District Council. Their efforts changed farmers' perceptions towards improved farming for livelihood enhancement. The cropping intensity was increased from 160 to 250%, fish productivity from 0.5-1.0 MT/ha to >2.0 MT/ha, employment from 60 to >300 man-days, and thereby net income from Rs.20000 to >Rs. 80000/farmer. Integrated farming made notable contribution in women and youth empowerment. The adoption of the technologies was 60-95% and it made remarkable socio-economic transformation. The perception of farmers has changed now and it brought new hopes for food and livelihood security for almost two lakh tribal farmers of the State.

Dr. Lopamudra Sahoo (Team Leader), Senior Scientist (Aquaculture), together with **DR. GULAB SINGH YADAV**, Scientist (Agronomy), Dr. Chandan Debnath, Scientist (Fisheries Resource Management, Dr. Basant Kumar Kandpal-Joint Director as associates from ICAR Research Complex for NEH Region, Tripura Centre, Lembucherra, Tripura has been awarded Fakhruddin Ali Ahmed Award for Outstanding Research in Tribal Farming Systems 2019. The team sensitized about improved farming, comprising of high-yielding varieties, SRI, ICM, integrated farming system, conservation agriculture, intensified rice fallow, composite culture, backyard poultry, piggery etc. that enhanced the farm productivity, and income of 11,462 households across 96 villages of the Tripura Tribal Area Autonomous District Council. Their efforts changed farmers' perceptions towards improved farming for livelihood enhancement. The cropping intensity was increased from 160 to 250%, fish productivity from 0.5-1.0 MT/ha to >2.0 MT/ha, employment from 60 to >300 man-days, and thereby net income from Rs.20000 to >Rs.80000/farmer. Integrated farming made notable contribution in women and youth empowerment. The adoption of the technologies was 60-95% and it made remarkable socio-economic transformation. The perception of farmers has changed now and it brought new hopes for food and livelihood security for almost two lakh tribal farmers of the State.



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ICAR Research Complex for  
NEH Region, Tripura Centre,  
Lembucherra, Tripura



**DR. CHANDAN DEBNATH**  
Scientist,  
ICAR Research Complex for  
NEH Region, Tripura Centre,  
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**DR. BASANT KUMAR KANDPAL**  
Joint Director  
ICAR Research Complex for  
NEH Region, Tripura Centre,  
Lembucherra, Tripura



**DR. ADIKANT PRADHAN**  
Chief Scientist, AICRPDA

**DR. ADIKANT PRADHAN** (Team Leader), Chief Scientist, AICRPDA, S. G. CARS, IGKV, Bastar (C.G.) together with Dr. S. K. Nag, Sr. Scientist and Head, KVK, IGKV, Bastar (C.G.), Dr. Abhinav Sao, Scientist, IGKV, Raipur (C.G.) and Dr. Anil Dixit, Principal Scientist ICAR-NIBSM, Raipur (C.G.) has been awarded Fakhruddin Ali Ahmed Award for Outstanding Research in Tribal Farming Systems 2019. The team has worked in the region having more than 60% tribal population on which 70% completely depends on agriculture which is characterized low productive, low water retention capacity, lower fertility, rainfed condition etc. The majority of the constraints were identified through farmers' interactions, field visits, FLDs, organizing krishi mela, field day and feed backs from farmers as well as line departments. On station experiments were conducted that focused on the themes viz., rain water management, crops and cropping system, evaluation of improved varieties, energy management, integrated nutrient management and alternate land use system. Research findings on contingent crop planning, improved varieties/hybrids, integrated nutrient management, and in framing potential technological strategy for alleviating drought were quite useful for formulating policies on soil and water conservation of state government. Rain water management to improve its use efficiency, crop diversification and intensification through intercropping and double cropping to enhance system productivity under vagaries of rainfall scenario, mechanization through custom hiring centre for timely operation and livestock based livelihood activity have improved productivity of crops ranging from 129.58 to 213.54 % and the profitability increased by 2-3 time over targeted crops. The outcomes of research and technological applied under the project have been taken for upscaling through MGNERA, Watershed, ATMA, Ram Krishna Mission-Narayanpur; AgroCrat Society-Kanker; NABARD, Pragati Prayas- Dantewada, Amar Jyoti: The Rural Development Society- Gunpur, PARDS Jagdalpur and Bastar Sewak Mandal-Adawal' flagship programs in across 9 rainfed farming districts of Chhattisgarh. Migration was stopped first with landless and marginal farmers which were taken under poultry and goat rearing, has been included in district plan. Within one year, they were fully engaged with rearing of goats at own villages earning Rs.30000-40000/- per annum, that is why goat and poultry rearing is now called by people as ATM business in the region. Now more than 500 farmers of domain districts have engaged in this business and spreading very fast in the region. Double cropping on lowlands of marginal and small farmers were targeted with community fencing which was financially supported by district administration on finding of AICRPDA at various villages through KVKs. Technological backup makes the system viable and re-establishing socio-economic status of farmers.



Dr. Adikant Pradhan (Team Leader), Chief Scientist, AICRPDA, S. G. CARS, IGKV, Bastar (C.G.) together with **DR. S. K. NAG**, Sr. Scientist and Head, KVK, IGKV, Bastar (C.G), Dr. Abhinav Sao, Scientist, IGKV, Raipur (C.G.) and Dr. Anil Dixit, Principal Scientist ICAR-NIBSM, Raipur (C.G.) has been awarded Fakhruddin Ali Ahmed Award for Outstanding Research in Tribal Farming Systems 2019. The team has worked in the region having more than 60% tribal population on which 70% completely depends on agriculture which is characterized low productive, low water retention capacity, lower fertility, rainfed condition etc. The majority of the constraints were identified through farmers' interactions, field visits, FLDs, organizing krishi mela, field day and feed backs from farmers as well as line departments. On station experiments were conducted that focused on the themes viz., rain water management, crops and cropping system, evaluation of improved varieties, energy management, integrated nutrient management and alternate land use system. Research findings on contingent crop planning, improved varieties/hybrids, integrated nutrient management, and in framing potential technological strategy for alleviating drought were quite useful for formulating policies on soil and water conservation of state government. Rain water management to improve its use efficiency, crop diversification and intensification through intercropping and double cropping to enhance system productivity under vagaries of rainfall scenario, mechanization through custom hiring centre for timely operation and livestock based livelihood activity have improved productivity of crops ranging from 129.58 to 213.54 % and the profitability increased by 2-3 time over targeted crops. The outcomes of research and technological applied under the project have been taken for upscaling through MGNERA, Watershed, ATMA, Ram Krishna Mission-Narayanpur; AgroCrat Society-Kanker; NABARD, Pragati Prayas- Dantewada, Amar Jyoti: The Rural Development Society- Gunpur, PARDS Jagdalpur and Bastar Sewak Mandal-Adawal' flagship programs in across 9 rainfed farming districts of Chhattisgarh. Migration was stopped first with landless and marginal farmers which were taken under poultry and goat rearing, has been included in district plan. Within one year, they were fully engaged with rearing of goats at own villages earning Rs.30000-40000/- per annum, that is why goat and poultry rearing is now called by people as ATM business in the region. Now more than 500 farmers of domain districts have engaged in this business and spreading very fast in the region. Double cropping on lowlands of marginal and small farmers were targeted with community fencing which was financially supported by district administration on finding of AICRPDA at various villages through KVKs. Technological backup makes the system viable and re-establishing socio-economic status of farmers.



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Chhattisgarh



**DR. ABHINAV SAO**  
Scientist, IGKV, Raipur  
Chhattisgarh

Dr. Adikant Pradhan (Team Leader), Chief Scientist, AICRPDA, S. G. CARS, IGKV, Bastar (C.G.) together with Dr. S. K. Nag, Sr. Scientist and Head, KVK, IGKV, Bastar (C.G.), **DR. ABHINAV SAO**, Scientist, IGKV, Raipur (C.G.) and Dr. Anil Dixit, Principal Scientist ICAR-NIBSM, Raipur (C.G.) has been awarded Fakhruddin Ali Ahmed Award for Outstanding Research in Tribal Farming Systems 2019. The team has worked in the region having more than 60% tribal population on which 70% completely depends on agriculture which is characterized low productive, low water retention capacity, lower fertility, rainfed condition etc. The majority of the constraints were identified through farmers' interactions, field visits, FLDs, organizing krishi mela, field day and feed backs from farmers as well as line departments. On station experiments were conducted that focused on the themes viz., rain water management, crops and cropping system, evaluation of improved varieties, energy management, integrated nutrient management and alternate land use system. Research findings on contingent crop planning, improved varieties/hybrids, integrated nutrient management, and in framing potential technological strategy for alleviating drought were quite useful for formulating policies on soil and water conservation of state government. Rain water management to improve its use efficiency, crop diversification and intensification through intercropping and double cropping to enhance system productivity under vagaries of rainfall scenario, mechanization through custom hiring centre for timely operation and livestock based livelihood activity have improved productivity of crops ranging from 129.58 to 213.54 % and the profitability increased by 2-3 time over targeted crops. The outcomes of research and technological applied under the project have been taken for upscaling through MGNERA, Watershed, ATMA, Ram Krishna Mission-Narayanpur; AgroCrat Society-Kanker; NABARD, Pragati Prayas- Dantewada, Amar Jyoti: The Rural Development Society- Gunpur, PARDS Jagdalpur and Bastar Sewak Mandal-Adawal' flagship programs in across 9 rainfed farming districts of Chhattisgarh. Migration was stopped first with landless and marginal farmers which were taken under poultry and goat rearing, has been included in district plan. Within one year, they were fully engaged with rearing of goats at own villages earning Rs.30000-40000/- per annum, that is why goat and poultry rearing is now called by people as ATM business in the region. Now more than 500 farmers of domain districts have engaged in this business and spreading very fast in the region. Double cropping on lowlands of marginal and small farmers were targeted with community fencing which was financially supported by district administration on finding of AICRPDA at various villages through KVKs. Technological backup makes the system viable and re-establishing socio-economic status of farmers.

Dr. Adikant Pradhan (Team Leader), Chief Scientist, AICRPDA, S. G. CARS, IGKV, Bastar (C.G.) together with Dr. S. K. Nag, Sr. Scientist and Head, KVK, IGKV, Bastar (C.G), Dr. Abhinav Sao, Scientist, IGKV, Raipur (C.G.) and **DR. ANIL DIXIT**, Principal Scientist ICAR-NIBSM, Raipur (C.G.) has been awarded Fakhruddin Ali Ahmed Award for Outstanding Research in Tribal Farming Systems 2019. The team has worked in the region having more than 60% tribal population on which 70% completely depends on agriculture which is characterized low productive, low water retention capacity, lower fertility, rainfed condition etc. The majority of the constraints were identified through farmers' interactions, field visits, FLDs, organizing krishi mela, field day and feed backs from farmers as well as line departments. On station experiments were conducted that focused on the themes viz., rain water management, crops and cropping system, evaluation of improved varieties, energy management, integrated nutrient management and alternate land use system. Research findings on contingent crop planning, improved varieties/hybrids, integrated nutrient management, and in framing potential technological strategy for alleviating drought were quite useful for formulating policies on soil and water conservation of state government. Rain water management to improve its use efficiency, crop diversification and intensification through intercropping and double cropping to enhance system productivity under vagaries of rainfall scenario, mechanization through custom hiring centre for timely operation and livestock based livelihood activity have improved productivity of crops ranging from 129.58 to 213.54 % and the profitability increased by 2-3 time over targeted crops. The outcomes of research and technological applied under the project have been taken for upscaling through MGNERA, Watershed, ATMA, Ram Krishna Mission-Narayanpur; AgroCrat Society-Kanker; NABARD, Pragati Prayas- Dantewada, Amar Jyoti: The Rural Development Society- Gunpur, PARDS Jagdalpur and Bastar Sewak Mandal-Adawal' flagship programs in across 9 rainfed farming districts of Chhattisgarh. Migration was stopped first with landless and marginal farmers which were taken under poultry and goat rearing, has been included in district plan. Within one year, they were fully engaged with rearing of goats at own villages earning Rs.30000-40000/- per annum, that is why goat and poultry rearing is now called by people as ATM business in the region. Now more than 500 farmers of domain districts have engaged in this business and spreading very fast in the region. Double cropping on lowlands of marginal and small farmers were targeted with community fencing which was financially supported by district administration on finding of AICRPDA at various villages through KVKs. Technological backup makes the system viable and re-establishing socio-economic status of farmers.



**DR. ANIL DIXIT**  
Principal Scientist  
ICAR-NIBSM, Raipur  
Chhattisgarh



**DR. ANURAG SAXENA**  
Principal Scientist and Head, I/C,  
ICAR-CAZRI, RRS, Leh, Ladakh

**DR. ANURAG SAXENA** (Team Leader), Principal Scientist and Head, I/C, ICAR-CAZRI, RRS, Leh, Ladakh together with his associates Dr. Mahendra Singh Raghuvanshi, Principal Scientist (Agronomy), ICAR-NBSS LUP, Nagpur, Maharashtra and Dr. Sanjeev Kumar Chauhan, Professor and Head, Dept. of Forestry and Natural Resources, PAU, Ludhiana has been awarded Fakhruddin Ali Ahmed Award for Outstanding Research in Tribal Farming Systems 2019.

In Ladakh more than 2 lakh tribal people spread over 59,146 km<sup>2</sup> area constitute >80 of the population of Leh-Ladakh. It is one of the highest (2,900 m to 5,900 m msl) and coldest (-30 °C) places with mean annual rainfall is less than 50 mm. These people face a host of structural inequalities due to difficult terrain and unique social systems and culture. These tribes practice agriculture and nomadism. In spite of >99 area being irrigated farmers achieve very low production levels. The team of Dr. Saxena has focussed on improving livelihood of these people through scientific interventions, transfer of modern but socially acceptable technologies for enhanced productivity and widen the basket of food crops. Farmers were trained on package of practices of cereal and fodder crops, weed management, crop diversification, quality fruit production and plant protection measures. Awareness camps for orchard management, sanitation, animal health, community seed bank was conducted. Swachhta Abhiyan was popularized in villages of Leh, Ladakh, and Kargil districts where 1180 family individuals were benefitted. To further improve the vegetables production poly-houses were developed and to reduce drudgery in farming different tools were distributed to 196 families.

Dr. Anurag Saxena (Team Leader), Principal Scientist and Head, I/C, ICAR-CAZRI, RRS, Leh, Ladakh together with his associates **DR. MAHENDRA SINGH RAGHUVANSHI**, Principal Scientist (Agronomy), ICAR-NBSSLUP, Nagpur, Maharashtra and Dr. Sanjeev Kumar Chauhan, Professor and Head, Dept. of Forestry and Natural Resources, PAU, Ludhiana has been awarded Fakhruddin Ali Ahmed Award for Outstanding Research in Tribal Farming Systems 2019.

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**DR. MAHENDRA SINGH  
RAGHUVANSHI**

Principal Scientist (Agronomy),  
ICAR-NBSSLUP,  
Nagpur, Maharashtra



**DR. SANJEEV KUMAR CHAUHAN,**  
Professor and Head,  
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## SWAMI SAHAJANAND SARASWATI OUTSTANDING EXTENSION SCIENTIST AWARD 2019



*Award 2019*

The Council has instituted the Swami Sahajanand Saraswati Outstanding Extension Scientist Award in order to provide recognition to outstanding agricultural extension work done by agricultural scientists and teachers in the ICAR-SAU system and to provide incentive for excellence in agricultural extension scientist/teacher. Two individual award have been provided. An individual award would consist of ₹1.00 lakh in cash and a citation. The award has been assigned across the disciplines in agriculture and allied sciences. The award has been named after Late Swami Sahajanand Saraswati (1889-1950) a social reformer and the first president of All India Kisan Sabha. A total of 38 eligible applications were received in response to the open advertisement and the winners with their significant contributions are:



**DR. MERAJ ALAM ANSARI**  
Scientist (Agronomy),  
ICAR Research Complex  
for NEH Region Manipur

**DR. MERAJ ALAM ANSARI**, Scientist (Agronomy), ICAR Research Complex for NEH Region Manipur has been awarded Swami Sahajanand Saraswati Outstanding Extension Scientist Award 2019 for his outstanding contributions in the field of research and extension activities in NEH Region. Dr. Ansari has an excellent academic career and alumni of IARI, New Delhi. He is serving for more than eight years in conceptualizing, developing and disseminating technologies for enhancing productivity and profitability of agricultural crops, high value crops and organic production technology under various agro-ecosystems. His efforts through introduction of maize (QPMs), pulses and oilseeds in rice and maize fallow system involving zero tillage and residue management enhanced the crop productivity in the region. He is developed and disseminated sustainable low cost farmer friendly and economically viable technologies for nutrient recycling of on- and off - farm biomass and residues. Dr. Ansari is actively engaged in development of integrated farming system in hilly region and three of his beneficiary farmers have received national and state level award. Evaluated and identified suitable and better performing high yielding varieties for maximization of production and resource use efficiency of rice, maize, groundnut, mustard and potential crops in acidic soils of Eastern Himalayan Region. He is actively engaged in climate change research for adaptation and mitigation in farmers participatory mode. Dr. Ansari has standardized and disseminated resource conserving technologies for Jhum lands for enhancing productivity and sustainability. Dr. Ansari is actively engaged in various outreach activities; he has conducted more than 76 trainer/ progressive farmers' trainings, 10 field days, 6 National seminar/workshops as organizing/co organizing secretary, 6 farmers-scientists interaction programme and more than 1768 FLDs and FPRs (Farmers participatory Research Trials) under various collaborative projects. He has established more than 174 small water harvesting unit (Jalkund) in hill districts of Manipur. Dr. Ansari has published more than 45 research papers in the journals of national and international repute, 3 books, 14 book chapters, 56 popular articles, 10 bulletins/manuals, 6 souvenir/seminar abstract book and 11 extension folders. He is also recipient of many awards and recognitions like ICAR Fakhruddin Ali Ahmad Award, Dr. D N Borththakur Award, IAHF Best Extension Scientist Award, Best Scientist Award of Regional centre and Recognition certificate from ICARDA, Directorate of Agriculture and Horticulture, Govt. of Manipur. His findings has been widely adopted by the stakeholders and brought substantial development in productivity and livelihood of the resource poor farmers of North Eastern Region.



**DR. BHARAT SHANKAR SONTAKKI**, Head, Extension Systems Management Division, ICAR-National Academy of Agricultural Research Management, Rajendranagar, Hyderabad has been awarded Swami Sahajanand Saraswati Outstanding Extension Scientist Award 2019 jointly with Dr. Gulab Singh Yadav, ICAR Research Complex for NEH Region, Tripura Centre, Limbucherra, Tripura. Dr. Bharat Shankar Sontakki, through his innovative and pioneering research work on FPOs using real-time data was instrumental in understanding the operational dynamics, challenges and strategies for promoting them towards achieving the goal of sustainably increasing farmers' income. His research works are well cited and research-based inputs in workshops and trainings have inspired many to initiate formation and promotion of FPOs. He has rendered substantial policy support to promote FPOs by being a member of high level policy bodies like the ICAR General Body, Dr.Dalwai Committee on DFI, Working Group of Planning Commission for XII Plan and the like.



**DR. BHARAT SHANKAR SONTAKKI**  
Head, Extension Systems  
Management Division,  
ICAR-National Academy of  
Agricultural Research Management,  
Rajendranagar, Hyderabad



**DR. GULAB SINGH YADAV**

ICAR Research  
Complex for NEH Region,  
Tripura Centre,  
Limbucherra

**DR. GULAB SINGH YADAV**, ICAR Research Complex for NEH Region, Tripura Centre, Limbucherra has been recommended for Swami Sahajanand Saraswati Outstanding Extension Scientist Award 2019 jointly with Dr. Bharat Shankar Sontakki, Head, Extension Systems Management Division, ICAR-National Academy of Agricultural Research Management, Rajendranagar, Hyderabad. Dr. Gulab Singh Yadav, promoted innovative approaches of "Conservation effective technologies and resilient integrated farming systems (IFS)" for sustainable productivity and income enhancement to improve the livelihood security of small and marginal farmers of Tripura. Dr Yadav promoted IFS models like rice-duckery-fishery system; rice-fish-Pig-tuber crop system; rice-fish-poultry-kitchen garden-vermi-compost system, backyard goat-poultry-kitchen gardening and backyard family farming models on 478 households to provide year round income and employment. The supply of quality seed of high yielding varieties and their cultivation by adopting conservation effective technologies (mostly reduced tillage/no-till and residue retention) through IFS approach resulted a yield increase in 37.9% for rice, 43.5% for maize, 20.5% for pulses, 25.6% for groundnut, 30.25 for mustard and 28.4%. Through his efforts about 7066 farmers/trainers were trained on improved conservation and IFS technologies through various training programmes, awareness programmes, field days and Kisan Melas. Dr. Yadav also coordinated the visits of more than 1000s farmers to ICAR NEH- Tripura Centre under exposure programme organized by KVKs, NGOs, line department, etc. His efforts through adoption of Conservation effective technologies and resilient IFS enhanced the overall income of farmers to by 126-212%. With the efforts of Dr. Yadav, approximately 12,135 small and marginal farmers benefited through adoption various resource conservation technologies and IFS models.

## NASI-ICAR AWARD FOR INNOVATION AND RESEARCH ON FARM IMPLEMENTS 2019



*Award 2019*

The Indian Council of Agricultural Research (ICAR) and National Academy of Sciences India (NASI) has instituted NASI-ICAR Award for Innovation and Research on Farm Implements from the year 2013 in order to reduce drudgery of farm women by development of farm implements and to encourage researchers and innovators to develop farm implements for farm women. The award carries a cash price of ₹1.00 lakh and is given annually. A total of 9 applications were received in response to the open advertisement, the recipient of award is:



**DR. DEV VRAT SINGH**  
Principal Scientist  
(Farm Machinery and Power),  
ICAR-Indian Institute of Soybean  
Research, Indore

**DR. DEV VRAT SINGH**, Principal Scientist (Farm Machinery and Power), ICAR-Indian Institute of Soybean Research, Indore has been awarded NASI-ICAR Award-2019 for his outstanding contributions. Dr. Dev Vrat Singh has significantly contributed to the productivity of soybean by conceptualizing and orienting research and development program towards land configuration machines. Design, development and commercialization of land configuration machines suitable for soybean crop in vertisols of central India led to the management of soil moisture variations generally found in such soils. The broad bed and furrow seed drill effectively operates in vertisols and facilitates formation of broad bed along with furrows and subsequent sowing also. Plant population mortality in soybean with tractor-drawn BBF seed drill for vertisols was found to be reduced in the range of 14-19% as compared to flatbed which subsequently resulted in yield enhancement to the extent of 18.65%. A tractor operated Furrow irrigated raised bed seed drill (FIRBS) resulted in about 20% increased plant population and resultant seed yield by 22% besides facilitating irrigation. In addition suitable soybean varieties have been identified for mechanical harvesting based on the insertion height of lowest pod.

## कृषि एवं संबंधित विज्ञान की तकनीकी पुस्तकों हेतु डॉ. राजेन्द्र प्रसाद पुरस्कार 2019



*Award 2019*

परिषद ने कृषि एवं संबंधित विज्ञान पर हिन्दी में तकनीकी पुस्तक लेखन के क्षेत्र में मौलिक स्तरीय लेखन तथा भारतीय लेखकों को प्रोत्साहित करने के उद्देश्य से डॉ. राजेन्द्र प्रसाद पुरस्कार की स्थापना की है। यह पुरस्कार व्यक्तिगत रूप से अथवा लेखकों की टीम के रूप में प्रदान किया जाता है। प्रत्येक पुरस्कार एक लाख रुपये (1,00,000 रु.) नकद के रूप दिया जाता है। कृषि एवं संबंधित विज्ञान के विभिन्न विषयों पर चार पुरस्कार प्रदान किए जाते हैं लेकिन एक विषय पर एक ही पुरस्कार दिया जाता है। कृषि एवं संबंधित विषयों के सभी मौलिक हिन्दी तकनीकी पुस्तकों के भारतीय लेखक तथा एक से अधिक लेखकों की पुस्तकों के संपादक, जिनका स्वयं पुस्तक में उल्लेखनीय योगदान हो, इस पुरस्कार के पात्र हैं। यह पुरस्कार भारत के प्रथम राष्ट्रपति डॉ. राजेन्द्र प्रसाद (1884–1963) के सम्मान में दिया जाता है। खुले विज्ञापन से प्राप्त 24 प्रविष्टियों में से पुरस्कृत लेखक और उनका योगदान इस प्रकार है।

## फसल और बागवानी विज्ञान



**डॉ. डी. आर. भारद्वाज**  
प्रधान वैज्ञानिक,  
भाकृअनुप-भारतीय सब्जी  
अनुसन्धान संसथान, वाराणसी

**डॉ. डी. आर. भारद्वाज**, प्रधान वैज्ञानिक, भाकृअनुप-भारतीय सब्जी अनुसंधान संस्थान, वाराणसी को उनकी पुस्तक "सब्जियाँ: अनुवांशिक सम्पदा, उपयोग एवं प्रबन्धन" के लिए हिंदी में कृषि और संबद्ध विज्ञान में तकनीकी पुस्तकों के लिए फसल और बागवानी विज्ञान श्रेणी में डॉ राजेंद्र प्रसाद पुरस्कार 2019 प्रदत्त किया जाता है। इस पाठ्य पुस्तक में नवीनतम वैज्ञानिक प्रयोगों पर आधारित उपयोगी परिणामों, तकनीकों एवं सूचनाओं को विस्तृत एवं सरल भाषा में दिया गया है, जो अन्य हिन्दी साहित्य में कम है। इस पुस्तक में छात्रों, शोधकर्ताओं, विषय वस्तु एवं पर्यावरणीय विशेषज्ञों के हित को ध्यान में रखकर प्रकाशित किया गया है। स्कूलों, महाविद्यालयों एवं कृषि विश्वविद्यालयों में अध्ययन करने वाले छात्रों को उनके विषय के अनुसार "सब्जियाँ: अनुवांशिक सम्पदा, उपयोग एवं प्रबन्धन" को इस पुस्तक में अत्यन्त साधारण एवं बोल-चाल की भाषा में स्पष्ट किया गया है जिससे आस-पास उपलब्ध जैव-संसाधनों के मूल्य को समझें और विवेकपूर्ण संरक्षण में सहभागी बनें। सब्जी विज्ञान के अनुवांशिक सम्पदा, उपयोग एवं प्रबन्धन से सम्बन्धित विभिन्न वैज्ञानिक पहलुओं को इतना सरल एवं बोधगम्य किया गया है कि छात्र एवं शोधकर्ता विषय को सुगमता से ग्राह्य कर सकते हैं। इसके अतिरिक्त हिन्दी भाषा में किसानों से जुड़े कृषि विज्ञान केन्द्रों, राज्य की सरकारी एवं गैरसरकारी संगठनों, एवं व्यक्तिगत बीज कम्पनियों के लिए इस पाठ्यपुस्तक की उपलब्धता उनके जैव सम्पदा, उपयोग प्रबन्धन, संरक्षण एवं प्रचार-प्रसार के प्रयासों में मील का पत्थर साबित होगी और नवीनतम तकनीकों के माध्यम से विशेषतः सब्जी जैव सम्पदा के सही उपयोग, संरक्षण व संवर्धन के प्रति जागरूकता बढ़ाने में सहायता करेगी। सब्जी शोधकर्ताओं/विद्वानों में जागरूकता लाने के लिये अनुवांशिक संसाधनों का परिचय, उद्भव एवं विविधता क्षेत्र, एकत्रीकरण, मूल्यांकन उपयोग एवं संरक्षण के साथ-साथ सब्जी जनन-द्रव्यों का पंजीयन, पौधा किस्म संरक्षण एवं कृषक अधिकार व बौद्धिक सम्पदा अधिकार को दृष्टिगतकर पाठ्यपुस्तक की रूपरेखा तैयार की गयी है। सब्जियों की प्रजातीय सम्पदा, उपलब्धता, अनुप्रयोग आदि जैसे विशिष्ट उद्देश्यों को ध्यान में रखकर इस पाठ्यपुस्तक का प्रकाशन किया गया है जिससे पाठकगण विशेषरूप से लाभान्वित होंगे।

## प्राकृतिक संसाधन प्रबंधन और कृषि अभियांत्रिकी

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### श्री रणबीर सिंह

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वेटरनरी एंड एनिमल साइंसेज,  
परभनी, महाराष्ट्र,

**डॉ. नितीन मनमोहन राव मार्कंडेय** (टीम लीडर), एसोसिएट डीन, कॉलेज ऑफ वेटरनरी एंड एनिमल साइंसेज, परभनी, महाराष्ट्र, श्री अमित विनायक गद्रे (सहयोगी), मुख्य उप-संपादक, 'एग्रोवन' (सहयोगी) को उनकी पुस्तक "देशी गोवंश" के लिए हिंदी में कृषि और संबद्ध विज्ञान में तकनीकी पुस्तकों के लिए पशु और मत्स्य विज्ञान श्रेणी में डॉ राजेंद्र प्रसाद पुरस्कार 2019 प्रदत्त किया जाता है। यह पुस्तक देशी गाय की नस्लों पर तकनीकी ज्ञान प्रदान करती है। इसके अतिरिक्त पशुपालन क्षेत्र के अन्य लोगों द्वारा इस विषय पर लिखी गई पुस्तकों के अनुभव और गाय संरक्षण, प्रबंधन, खिलाने और उत्पादन से संबंधित पहलुओं पर गहन विचार प्रस्तुत करती हैं। पुस्तक में देशी गायों के पालन में वैज्ञानिक तकनीकों को शामिल किया गया है और गायों के पारंपरिक, धार्मिक, भ्रामक प्रचार को इंगित किया गया है। पुस्तक में AI के राष्ट्रीय कार्यक्रम, INAPH और गाय उत्पादों के माध्यम से पशु टैगिंग पर चर्चा की गई है। प्रकाशन विश्वविद्यालय के कुलपति, वरिष्ठ सरकारी अधिकारियों और अनुभवी प्रजनकों के विचारों भी प्रस्तुत किये गए हैं। देसी गाय की सफलता की कहानियां और जैविक खेती, गाय उत्पादों के विपणन आदि के बारे में भी चर्चा की गई है। गोशाला इकाइयों और गोशालाओं में गायों के आदर्श प्रबंधन को पुस्तक के अध्यायों में बल दिया गया है। डेयरी विकास के समय में भारतीय गाय का अध्ययन उपेक्षित रह जाता है, परन्तु इस प्रकाशन में क्रॉस ब्रीडिंग के प्रमुख पहलुओं को शामिल किया गया है। यह पुस्तक वैज्ञानिक गाय प्रबंधन रणनीतियों को उजागर करने, तथा परिवार, कृषि, स्वास्थ्य और खाद्य सुरक्षा के लिए भारतीय गाय का उपयोग करने के लिए कौशल विकसित करने के लिए उपयोगी है।

## पशु और मत्स्य विज्ञान

डॉ. नितीन मनमोहन राव मार्कंडेय (टीम लीडर), एसोसिएट डीन, कॉलेज ऑफ़ वेटेरनरी एंड एनिमल साइंसेज, परभनी, महाराष्ट्र, **श्री अमित विनायक गद्रे** (सहयोगी), मुख्य उप-संपादक, 'एग्रोवन' (सहयोगी) को उनकी पुस्तक "देशी गोवंश" के लिए हिंदी में कृषि और संबद्ध विज्ञान में तकनीकी पुस्तकों के लिए पशु और मत्स्य विज्ञान श्रेणी में डॉ राजेंद्र प्रसाद पुरस्कार 2019 प्रदत्त किया जाता है। यह पुस्तक देशी गाय की नस्लों पर तकनीकी ज्ञान प्रदान करती है। इसके अतिरिक्त पशुपालन क्षेत्र के अन्य लोगों द्वारा इस विषय पर लिखी गई पुस्तकों के अनुभव और गाय संरक्षण, प्रबंधन, खिलाने और उत्पादन से संबंधित पहलुओं पर गहन विचार प्रस्तुत करती हैं। पुस्तक में देशी गायों के पालन में वैज्ञानिक तकनीकों को शामिल किया गया है और गायों के पारंपरिक, धार्मिक, भ्रामक प्रचार को इंगित किया गया है। पुस्तक में AI के राष्ट्रीय कार्यक्रम, INAPH और गाय उत्पादों के माध्यम से पशु टैगिंग पर चर्चा की गई है। प्रकाशन विश्वविद्यालय के कुलपति, वरिष्ठ सरकारी अधिकारियों और अनुभवी प्रजनकों के विचारों भी प्रस्तुत किये गए हैं। देसी गाय की सफलता की कहानियां और जैविक खेती, गाय उत्पादों के विपणन आदि के बारे में भी चर्चा की गई है। गोशाला इकाइयों और गोशालाओं में गायों के आदर्श प्रबंधन, को पुस्तक के अध्यायों में बल दिया गया है। डेयरी विकास के समय में भारतीय गाय का अध्ययन उपेक्षित रह जाता है, परन्तु इस प्रकाशन में क्रॉस ब्रीडिंग के प्रमुख पहलुओं को शामिल किया गया है। यह पुस्तक वैज्ञानिक गाय प्रबंधन रणनीतियों को उजागर करने, तथा परिवार, कृषि, स्वास्थ्य और खाद्य सुरक्षा के लिए भारतीय गाय का उपयोग करने के लिए कौशल विकसित करने के लिए उपयोगी है।



**श्री अमित विनायक**  
कॉलेज ऑफ़ वेटेरनरी एंड एनिमल  
साइंसेज, परभनी, महाराष्ट्र

## सामाजिक विज्ञान



### डॉ. रेखा सिंह

विषय वस्तु विशेषज्ञ (गृह विज्ञान),  
कृषि विज्ञान केंद्र, भदोही,  
भाकृअनुप-भारतीय सब्जी अनुसंधान  
संस्थान, वाराणसी, यू.पी.

**डॉ. रेखा सिंह**, विषय वस्तु विशेषज्ञ (गृह विज्ञान), कृषि विज्ञान केंद्र, भदोही, भाकृअनुप-भारतीय सब्जी अनुसंधान संस्थान, वाराणसी, यू.पी. को उनकी पुस्तक "औद्योगिकी फसल प्रसंस्करण एवं ग्रामीण महिला सशक्तिकरण" के लिए हिंदी में कृषि और संबद्ध विज्ञान में तकनीकी पुस्तकों के लिए सामाजिक विज्ञान श्रेणी में डॉ. राजेंद्र प्रसाद पुरस्कार 2019 प्रदत्त किया जाता है। इस पाठ्यपुस्तक "औद्योगिकी फसल प्रसंस्करण एवं ग्रामीण महिला सशक्तिकरण" में फल, फूल एवं सब्जियों में मूल्य संवर्धन के द्वारा इनके विवेकपूर्ण प्रबन्धन की नवीन विधियों के माध्यम से सरल भाषा में प्रस्तुत किया गया है। ग्रामीण क्षेत्रों में औद्योगिक फसलों में परिरक्षण के माध्यम से खाद्य उत्पाद तैयार कर महिलाओं की आय में वृद्धि के द्वारा उनके आर्थिक एवं सामाजिक हित साकार हों, इस उद्देश्य को ध्यान में रखकर इस पुस्तक की रूपरेखा तैयार की गयी है। फल, फूल एवं सब्जियों में उपलब्ध पोषक तत्वों द्वारा स्वास्थ्य के लिए लाभदायक औषधिय गुण प्रदान किये जाते हैं इसका विशेष उल्लेख किया गया है। ग्रामीण क्षेत्रों में महिलाओं को कुछ ही सब्जियों एवं फलों के स्वास्थ्यवर्धक गुणों के बारे में जानकारी रहती है। ज्यादातर फलों एवं सब्जियों की पौष्टिकता से अनभिज्ञ रहती हैं। अतः इस पुस्तक के माध्यम से उनके ज्ञान में अवश्य वृद्धि होगी। कोई भी खाद्य उत्पाद अपने स्वाद, सुगंध, रंग आदि गुणों के कारण ही लोगों को आकर्षित करता है। अतः परिरक्षण द्वारा बनाये गये उत्पाद में खाद्य उत्पाद में रंग, स्वाद परिवर्धकों का प्रयोग कैसे करें, के बारे में विस्तृत वर्णन किया गया है। खाद्य उत्पादों को बाजार में लाने से पूर्व निर्धारित मानक एवं सम्बन्धित कानून पर ज्ञानवर्धक जानकारी प्रस्तुत की गयी है। खाद्य उत्पादों को खराब होने से बचाने के लिए बरती जानेवाली सावधानियों के बारे में भी बताया गया है।

## NANAJI DESHMUKH ICAR AWARD FOR OUTSTANDING INTERDISCIPLINARY TEAM RESEARCH IN AGRICULTURAL AND ALLIED SCIENCES 2019



*Award 2019*

ICAR-Nanaji Deshmukh ICAR Award for Outstanding Interdisciplinary Team Research in Agricultural and Allied Sciences is instituted by ICAR to recognize and incentivize outstanding inter-disciplinary team research. The award is not limited to NARS i.e. Agricultural Scientists outside NARS are also eligible if they meet the eligibility criteria as mentioned above. Two awards (i) Animal & Fisheries Sciences & (ii) Social Sciences would be given during the year. The awards in the remaining two categories will be given next year. Each award is of ₹ 5,00,000/- (Rupees Five Lakh only). Not more than one award is given in any discipline. A total of 12 eligible applications were received in response to the open advertisement and the winners with their significant contributions are:

## ANIMAL SCIENCES & FISHERIES



**DR. P. S. YADAV**  
CAR-Central Institute for  
Research on Buffaloes,  
Hisar, Haryana,

**DR. P. S. YADAV** (Team Leader) and Dr. Dharmendra Kumar, Dr. Naresh Selokar, Dr. R. K. Sharma, Dr. Pradeep Kumar (Associates), ICAR-Central Institute for Research on Buffaloes, Hisar, Haryana, have been awarded Nanaji Deshmukh ICAR Award for Outstanding Interdisciplinary Team Research 2019 for Animal Sciences & Fisheries. The dedicated efforts of the team has produced total of 5 clones (4 Murrah including 3 from single elite bull and one of Assamese buffalo in field) 7 more clone calving's due till march 2020. The research has led to production of superior male buffalo calf "Hisar-Gaurav" through tail derived somatic cells, and it makes ICAR-CIRB, Hisar the second institution in the country to produce cloned buffalo. The team has also produced Assamese buffalo bull 'Sach-Gaurav' using simplified cloning method at field which is first in the world in case of buffalo. They, for the first time in the world, have transferred cloned embryos for any species to the field level to establish pregnancy and delivered live calf at farmer's doorsteps.

The team has established Singlet method which is more simple and efficient approach to produced cloned calf (First in world in the buffalo) which increased conception rates significantly. The team has reported the reproduction performance of a cloned buffalo bull, the first report in the world.

## SOCIAL SCIENCES

**DR. RAJBIR SINGH** (Team Leader) and Director, ICAR-ATARI Zone-I, PAU Campus, Ludhiana; Dr. Jaskaran Singh Mahal, Dir-Extension, PAU, Ludhiana; Dr. Arvind Kumar, ICAR-ATARI, Ludhiana; Dr. Subhash Chander Sharma, KVK, Samrala & Ropar; Dr. Jagdish Grover, KVK Faridkot; Dr. Jitender Singh Brar, KVK, Bathinda; Dr. Vipin Rampal, KVK, Fatehgarh; Dr. Jugraj Singh Marok, KVK Kapurthala, Dr. Gurjinder Pal Singh Sodhi, KVK Mansa; Dr. Mandeep Singh, KVK, Sangrur; Dr. Amandip S. Brar, KVK Moga; Dr. Bhupinder Singh Dhillon, KVK Amritsar; Dr. Gurjant Singh Aulakh, KVK Ferozepur; Dr. Balwinder Kumar, KVK Tarantaran; Dr. Maninder Singh Bons, KVK Hoshiarpur; Dr. Jasvinder Singh, KVK, Patiala; Dr. Nirmaljit Singh Dhaliwal, KVK Muktsar; Dr. Kuldeep Singh, KVK, Jalandhar; Dr. Manoj Sharma, KVK, Nawashar; Dr. Sarbjit Singh, KVK Gurdaspur; Dr. Ashish Santosh Murai, ICAR-ATARI Ludhiana; Dr. Rajesh Kumar Rana, ICAR-ATARI Ludhiana (Associates). The inter-disciplinary team executed a well designed programme to create awareness against paddy residue burning and promoted in-situ management of residue in Punjab through KVKs. They mobilized stakeholders through awareness camps; demonstrating the innovative technology packages at strategic locations; capacity development of farmers & machine/ tractor operators and out-scaling the happy seeder technology. KVKs of Punjab were provided with farm machines to establish Machine Banks for organizing trainings, demonstrations and exhibitions to promote in-situ residue management. A total of 660 awareness camps organized to sensitize stakeholders against crop residue burning and more than 72,000 farmers participated. KVK also organised 51 Kisan Melas on the theme of crop residue management in which more than 5.86 lakh farmers participated. More than 141 special programmes and debates on in-situ residue management were aired on radio and TV besides coverage of events in mass media and extensive use of ICTs. KVKs organised 237 training programmes of 5-days each in which 6500 farmers, machine operators, Custom Hiring Centre owners were trained. More than 12,500 Frontline demonstrations (FLDs) on happy seeder sown wheat were conducted at farmers' fields at strategic locations in about 350 villages during last two years. Overall, there was 50.4% reduction in active fire events in 2019 as compared to 2016 in Punjab. Concerted efforts of team resulted in to 272 Zero Stubble Burning Villages in last four years. Further, the area under direct seeded wheat sown through happy seeder/zero tilled technology increased from 50000 ha in 2017 to 6.0 lakhs in 2018 and 8.6 lakhs hectares in 2019 in Punjab.



**DR. RAJBIR SINGH**  
Director,  
ICAR-ATARI Zone-I,  
PAU Campus,  
Ludhiana

## ICAR CASH AWARD SCHEME 2019



*Award 2019*

ICAR Cash Award Scheme for Administrative/Technical/Supporting category employees of ICAR Research Institutes/NRCs/Bureaus/ZCUs has been instituted by the ICAR in order to recognize the excellence in performance. Three annual awards of ₹ 51,000/- (Rupees fifty thousand only) are to be given to the regular employees of ICAR. This year 44 applications were received through open advertisement.



## ADMINISTRATIVE CATEGORY

**SH. RAJEEV LAL**, Chief Administrative Officer, ICAR-CIFRI, Barrackpore has been awarded Cash Award-2019 under administrative category for his effective leadership and managerial quality. Sh. Lal, has work experience as Head, Personal & Administration in nationally reputed ICAR Institutes of more than 23 years, facilitating academic & research activities through efficient and timely support to scientists academicians & researchers. By realizing the mission & vision of the Institute, he has accomplished organizational objectives and promoted organizational growth & innovation through optimum utilization of Manpower, Strategic Planning & Quality Management, Process Improvement and Decision Making. He has kept the Vertical shielded from Statutory, Legal and Govt requirements through effective, efficient and timely intervention on behalf of the Organization. He has sound knowledge and successful experience of handling all sections of the Institute administration, HR matters, Stores & Purchase, Legal, Operations, Estate & Works and Security etc. He has used and worked on IT for quick, transparent and best results. He is an excellent manager with fine communication & negotiation skills and sound academic record.



**SH. RAJEEV LAL**  
Chief Administrative Officer,  
ICAR-CIFRI, Barrackpore

## ADMINISTRATIVE CATEGORY



**SMT. N. VIJAYA LAKSHMI,**  
Junior Account Officer,  
ICAR - NAARM,  
Hyderabad

**SMT. N. VIJAYA LAKSHMI,** Junior Account Officer, ICAR - NAARM, Hyderabad has been awarded Cash Award-2019 under administrative category for her outstanding qualities, achievements and contribution to the growth of the Academy. She has steadily evolving from a position of stenographer to the JAO. She is a rare mix of high orderly qualities like sincerity, commitment, dedication, responsibility, vision, pro-activeness, promptness, punctuality, vision, accountability, hardworking besides having a pragmatic and humane approach to arrive at plausible solutions. She is a constant learner and brings in value at every instant. Apart from being a hard worker without any boundaries for timings, she encourages and motivates the other team members to emulate the same. She always sees the best side of people and encourages other staff members to do the same. Mrs. Lakshmi immensely contributed making the Organization to catch up with the changing finance related scenarios like implementing online transactions, New Pension Scheme, FMS/MIS, PFMS, GeM, Digital transactions online portal, Service Tax / GST. During her almost three decade long stint in various capacities, she had played pivotal role in organizing highly diversified Institute mandated activities ranging from "ICAR Review Meeting" QRT, RAC, SRC, IMC, Parliamentary Standing Committees, Maintenance of CR Dossiers in an orderly manner in CAO's Office to PME Cell functioning. As Junior Accounts Officer she has been effectively supervising the Finance. She served as Member-Secretary of Budget Utilization Committee and Development of Pensioners Health Identity Card and member of various committees constituted for day today functioning of the Academy. She has demonstrated all her skills such as communication, coordination, cooperation, team work, cordial relations with various stakeholders, etc. in all spheres of work assigned to her over the last 26 years rendered. Mrs. Vijaya Lakshmi's has versatile strengths by being active extracurricular activities like winning awards at Zonal and Inter Zonal level Sports, Hindi Pakhwada, Swachh Bharat Abhiyan, Vigilance Awareness Week, Women Cell, Recreation Club, Independence Day, Foundation Day etc., She has earned her Best Worker Award of the Academy in Administrative Category in 2011-12 and Best Employee of the Decade (2008-2018) of NAARM.

## ADMINISTRATIVE CATEGORY

**SH. PRABHAT KUMAR NAYAK**, Assistant Finance & Accounts Officer, of ICAR-National Research Centre on Pig, Rani has been awarded Cash Award-2019 under administrative category for the his dedication towards the goals of the Institute. Sh. Nayak is not only able to adjust quickly with co-workers, but he is also capable of working under extreme circumstances attaining excellent results. He is a sincere, dedicated, punctual and laborious employee and maintains discipline in work place. He has maintained integrity and commitment towards work and dedicated for the improvement of the Institute. He has sound and thorough knowledge of rules and regulations, especially in Finance and administrative matters. He assisted and guided the head of the Institution and other staffs for timely and effective utilization of Institute as well as externally sponsored projects funds. A total nos. of 15 externally funded project of Rs.6.11 crore was managed by him during this period. He has imparted training to administrative staff of the Institute and guided as well. He has put his labour for revision of SFC of 20172020 which is a combined SFC of NRC on Pig, NRC on Mithun& NRC on Yak.Mr. Nayak is also instrumental for 100% cash less transaction & implementation of PFMS at the Institute. In addition to his regular duties Mr. Nayak is also attached to ATARI, Zone VI, Guwahati as AF&AO.



**SH. PRABHAT KUMAR NAYAK**  
Assistant Finance &  
Accounts Officer,  
ICAR-National Research  
Centre on Pig, Rani

## TECHNICAL CATEGORY



**DR. SIVAKUMAR. T**  
Subject Matter Specialist  
(Entomology),  
Krishi Vigyan Kendra Alappuzha,  
ICAR-CPCRI(RS), Kayamkulam,  
Kerala

**DR. SIVAKUMAR. T**, Subject Matter Specialist (Entomology), Krishi Vigyan Kendra, Alappuzha, ICAR-CPCRI(RS), Kayamkulam, Kerala has been awarded Cash Award-2019 under technical category for his excellent work in the frontline extension system through KVK of the institute for more than a decade. He has been instrumental in assessing, refining and transferring location specific technologies in Agricultural Entomology which is accepted and adopted by farmers of Alappuzha district of Kerala. The FFS (Farmer Field School) methodology on juvenile coconut palm IPM evolved by him with ICAR-CPCRI technologies attained appreciation and awarded best poster in Kerala Science Congress 2013. He is an experienced FFS expert and his services are being utilized by other State Government agencies also in this regard. Use of ICT tools in Agricultural Extension has been effectively used by Dr. Sivakumar. T and by his efforts KVK Alappuzha became first of its kind in using QR codes in its products to facilitate and upgrade learning experience of farmers. His communication skills in writing and broadcasting are well evident by the number of publications and radio programs. He maintains a good healthy linkage with other extension agencies and stakeholders. Regular updates on the technology as well as developments in the field are done by him by attending HRD activities. He is enthusiastic team worker and motivates the members, irrespective of categories and social institutions. He is a real farmers' friend and field oriented Subject Matter Specialist in the KVK system.

## TECHNICAL CATEGORY

**DR. UTTAM KUMAR**, Chief Technical Officer (Agronomy), ICAR-NDRI, Karnal has been awarded Cash Award-2019 under technical category for his pioneering contribution and valuable association as team member in the area of forage research in the Institute. Dr. Kumar has made significant contribution in development of agro-techniques of cultivated forage crops. He has assisted in development of technologies by his active involvement in management of research projects, research and teaching activities of Agronomy section of ICAR-NDRI, Karnal. He has contributed in development of Rajbhasa and received many awards including Rajbhasa Gaurav Purushkar. He has co-authored in 22 full research papers, 4 training manual, 42 popular articles in various magazines, 44 book/manual chapter and 7 abstracts in proceedings of symposia and conferences. He has been honoured APSI distinguished Scientist award. He has been devotedly organizing class room practical and provides guidance to research scholars of the division. He is also life member of two professional societies and has actively contributed in various committees for organization of symposia, training and workshops. He has conducted 76 training programmes while working at KVKs.



**DR. UTTAM KUMAR**  
Chief Technical Officer  
(Agronomy),  
ICAR-NDRI, Karnal

## TECHNICAL CATEGORY



**DR. MONIKA JOLLY**  
Chief Technical Officer  
(Biochemistry), ICAR-IARI

**DR. MONIKA JOLLY**, Chief Technical Officer (Biochemistry), ICAR-IARI, New Delhi has been awarded Cash Award-2019 under technical category for her contribution in research in various projects. She has been associated with 5 In-House and 3 externally funded projects on the nutritional quality improvement in Lathyrus, wheat & Soybean. Throughout her career she has tried to make pioneering contribution and has provided invaluable assistance in the research projects. As a team member she has also contributed by generating several genes silencing constructs and standardizing the protocol for developing low phytate transgenic soybean with improved mineral bioavailability. She has also participated in developing a modified HPLC protocol for seed phytate content and efficient, rapid, reliable protocol for Soybean Transformation and a novel leaf disc infiltration method AGRODATE to validate guide RNAs for CRISPR CAS9 silencing construct. She has co-authored 31 full research papers in high impact factor journals, 2 technical bulletins, technologies, patent submitted, 4 book chapter, 8 chapter in teaching/training manuals and 48 abstract in proceedings of symposia/conferences also co-authored for 5 best poster awards. She has devotedly organized practical and provided assistance to research scholars of the division and the institutes as well, apart from actively contributing to various committees for the organization of symposia, training and workshops of the division as well as the Institute. She has published 16 popular articles English/ Hindi to popularize and bring awareness of food security in environmental hazards, health and also published online articles to popularize the latest developed targeted genome editing to combat the nutritional hunger challenge. She is Nodal officer of the network management and life member of two professional societies.

## TECHNICAL CATEGORY

**DR. ASHWIN TRIVEDI**, Senior Technical Officer, DMAPR, Anand, has been awarded Cash Award-2019 under technical category for his adequate qualification, research background and several years of experience in the field of medicine and aromatic plants. He has been contributing in several research projects as co-principle investigator. He has participated in the development of several herbal mosquito repellent products like spray, sticks, candles etc. He has filed three patents. He is a recognized PG teacher and guide of Anand Agriculture University in the area of Plant Physiology. Apart from this, he is associated with PME cell and thereby contributes in compilation of Monthly Cabinet Report and Half year progress Report; preparation of agenda items and action taken report of Director Conference; RTI query; Reply to Parliament question; management of publication records (Research paper, popular articles, research bulletins etc.); organization of Yoga Day, Foundation Day, Agricultural Education Day etc.; compilation of Consolidated report for QRT 2011-2017. He has been associated with Tribal Sub Plan and has organized several trainings, exposure visits, Field Days for farmers. He has authored several research papers and is a member of three professional societies.



**DR. ASHWIN TRIVEDI**  
Senior Technical  
Officer, DMAPR, Anand

## SUPPORTING CATEGORY



**SH. GURU DUTTA SHARMA**  
SSS, ICAR-NRC on Equines,  
Hisar

**SH. GURU DUTTA SHARMA**, SSS, ICAR-NRC on Equines, Hisar, has been awarded Cash Award- 2019 under Skilled Supporting staff category. Sh. Sharma has been working in Bacteriology and Equine Infectious Anemia laboratories since his joining in NRCE in 1987. He has more than 32 years of experience service. He has made remarkable contributions in the institution building through his diligent and quality assistance to scientists in their research, and disease investigation and diagnostic work. He has provided an excellent technical support in disease investigation of various equine diseases such as Equine Infectious Anemia (EIA), Glanders, African Horse Sickness (AHS), Brucellosis, Salmonellosis (S. Abortusequi), Strangles. R. equi and Contagious Equine Metritis (CEM). Since 1995, Guru Duna Sharma has assisted in testing about 25 lakh equine serum samples for Equine infectious Anemia and Glanders and contribute in revenue generation of INR 5.81 crore till November 2019. He has attended about 50 glanders outbreak since 2006-07 and contributed in establishment of glanders positive serum repository of about 1,000 positive and negative serum samples for future research and development. Sh. Sharma supports all research projects relating in the glanders laboratory by providing excellent technical support to Scientists of several external funding project. Being in SSS grade, he has developed capability to carry out (ELISA, CFT and Coggin's) test independently under the supervision of the lab in-charge. He has sharpened his academic and technical skills through hard learning and improved his academic capabilities through acquiring Bachelor's degree in Medical Lab Technician. He has fully supported all training courses held for veterinary officer in National and International training on glanders.



## SUPPORTING CATEGORY

**SH. S.N. RASOOL**, SSS, NAARM, Hyderabad has been awarded Cash Award- 2019 under Skilled Supporting staff category. Sh. Rasool joined at ICAR-NAARM in 1993 as CLTS and promoted as skilled supporting staff in 2014. For the last 26 years, he has been working in NAARM Library. He is endowed with educational background of Bachelor of Arts (B.A.), and specialized degreed in Bachelor degree in Library & Information Science (BLISc) and a Certificate Course in Library & Information Science. Though Mr. Rasool is working as skilled supporting staff (SSS), with his excellent academic background particularly in Library Sciences, he contributed to library management in the Academy. He is very hard working, continuous learner, very positive and proactive in library management and support system. Large number of Trainee Scientists of ARS and ICAR, Assistant Professors of several Agriculture, Horticulture and Veterinary universities from different states of India got benefitted with his proactive functioning. He is also associated with digitization of NAARM Library through KOHA software and e-prints



**SH. S.N. RASOOL**  
SSS, NAARM, Hyderabad

## SUPPORTING CATEGORY



**SH. VIJENDER KUMAR**  
SSS, ICAR-NDRI, Karnal

**SH. VIJENDER KUMAR**, SSS, ICAR-NDRI, Karnal has been awarded Cash Award- 2019 under Skilled Supporting staff category. Sh. Kumar has been working in Computer Centre in the institute since 1995. The Computer Centre deals with the operation and maintenance of ICT Infrastructure and computer related activities in ICAR-NDRI, Karnal. Though Vijender Kumar is metric passed, but with his continuous efforts and keen interest to gain the technical knowledge, he had developed his technical skills under the guidance of technical officers working in the computer centre. He is proficient in computer operation and is digital literate. He is managing the PC lab Inventory for entry and transfer of goods. He provide support for the maintenance of ASR Online Examination Centre Dealt with the maintenance/cleaning of PC lab, I/C Computer Centre, ARIS Cell and office chamber of other officers of Computer centres together with Dak receive, dispatch and distribution. Besides above Sh. Vijender Kumar is also a good sports person participates in Cycling race many times and has won the medals for ICAR-NDRI, Karnal.



## INDIAN COUNCIL OF AGRICULTURAL RESEARCH Agricultural Universities



● 63 State Agricultural Universities (SAUs) ● 3 Central Agricultural Universities ● 5 Deemed Universities  
● 4 Central Universities having Faculty of Agriculture



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