



अजैविक स्ट्रेस प्रबंधन समाचार Abiotic Stress Management News

भाकृअनुप-राष्ट्रीय अजैविक स्ट्रेस प्रबंधन संस्थान
(समतुल्य विश्वविद्यालय)

मालेगाँव खुर्द, बारामती - 413 115, पुणे, महाराष्ट्र, भारत

ICAR- National Institute of Abiotic Stress Management
(Deemed to be University)

Malegaon Kh., Baramati - 413 115, Pune, Maharashtra, India



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Workshop/Seminar/Symposia/Conference/ Training attended

Personalia

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Dr Yogeshwar Singh, Dr Kamlesh Kumar Meena,

Dr Mahesh Kumar, Dr Neeraj Kumar

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From the Director's Desk.....

Greetings from ICAR-NIASM.

Abiotic stresses such as salinity, drought, flooding, heat, cold and freezing have negative impact on agriculture and threaten food security. Industrialization, urbanization and climate change further exacerbate the detrimental effects of these stresses on realizing crop yield. Agriculture needs significant increase in crop productivity to satisfy the expected growth in demand for food for growing population. Anticipated more frequent extreme weather due to changing climate scenario requires adaptation of crop plants to multi-occurrence abiotic stresses, hence sustaining the food security. The constraints of food security and agricultural productivity encourage researchers to develop climate resilient crop varieties. ICAR-NIASM has taken lead to carry out research to deliver technologies for managing various kinds of abiotic stresses employing basic and strategic research. Agronomic, genetic, biochemical and omics approaches are being used for mitigation and enhancing adaptation of crop plants to these stresses.

As Director of this new and unique institute, there are many challenges and responsibilities to create best research facilities in order to utilize potential of young scientific staff in making strategies for management of abiotic stresses. ICAR-NIASM has started basic and strategic research at morphological, physiological, biochemical and molecular levels to complement applied research. Many important events and training programmes have been organised during last six months such as Agricultural Education Day; World Soil Day; Model training course for Officers of State development departments/participants of ICAR, SAUs and KVKs, Republic Day; Signing MoU for collaborative research on abiotic stress management in grapes between ICAR-NIASM and MRDBS, Pune; Inauguration of Fish Research Farm; Advanced training on 'Application of plant phenomics tool for assessing responses of crop plants to drought and high temperature' and 'Characterization of abiotic stress responses in field and horticultural crops through hyperspectral remote sensing'; Celebration of 10th Foundation Day of ICAR-NIASM; NICRA review meeting; Krishi Mela at village Waghoshi under Mera Gaon Mera Gaurav; Swachh Bharat Abhiyan and activities under Tribal Sub Plan.

I thank the Editorial team lead by Dr M P Brahmane who made tremendous efforts to include key highlights of the institute in this issue of the Newsletter. I also place on record my thanks to all the staff members who have contributed for this issue of Newsletter. I extend my sincere thanks to Dr Trilochan Mohapatra, Secretary, DARE and Director General, ICAR; Shri S N Tripathy, Additional Secretary and Financial Advisor, DARE/ICAR; Shri Chhabilendra Roul, Additional Secretary, DARE and Secretary, ICAR; DDG, NRM, ICAR; ADG, Soil and Water Management and ADG, AAF & CC for their continued support to ICAR-NIASM. I am very much confident that this issue of the Newsletter would provide useful information for advancement of research on abiotic stress management to readers across different domains.



Date : March 31, 2018

(Narendra Pratap Singh)

Virus induced gene silencing in soybean

(Dr Ajay Kumar Singh, Senior Scientist, Agricultural Biotechnology)

Promising genes have been identified for drought tolerance in model plants like Arabidopsis in different laboratories across the world. One of the research activities of the institute is to assess the relevance of these genes for stress tolerance in soybean. Virus-based gene silencing construct was developed to knockdown *Glycine max 1-aminocyclopropane 1-carboxylate synthase (GmACS)* gene associated with ethylene biosynthetic pathway. *In vitro* transcripts were prepared for VIGS vector carrying *GmACS* silencing fragment and also for native RNA1 and inoculated on VC-stage soybean plants. Farnesyltransferase (Fns1) silenced soybean plants were developed using BPMV-based VIGS vector



Mock Vector control Fns1-silenced



Mock Vector control Fns1-silenced

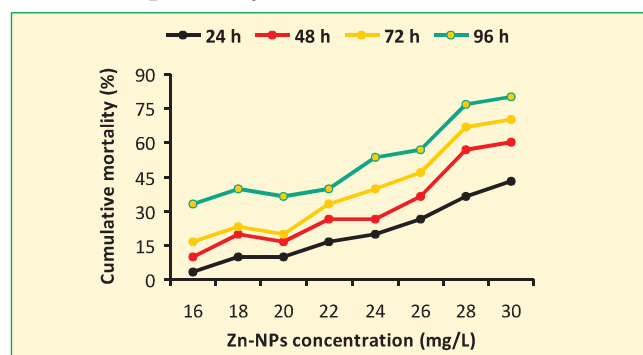
Phenotype of Mock, Vector control and Farnesyltransferase-silenced soybean plants under non-stressed and water stressed conditions

and evaluated for water stress tolerance and yield related attributes.

Toxicity determination of zinc nanoparticles in *Pangasinodon hypophthalmus*

(Dr Neeraj Kumar, Scientist, Fish Nutrition and Biochemistry)

Nanotechnology is a novel arena with promising applications in the field of medicine, industry and agriculture including fisheries. Cross-disciplinary interactions and application of this technology in biological systems have led to the innovation of novel nanoparticle antioxidants, which are the subject of our study. Similarly zinc is one of the essential micronutrients that can be obtained via water and diet in aquatic animals to meet their physiological needs. Zinc nanoparticles (Zn-NPs) have significant role in fisheries to mitigate abiotic and biotic stresses. Hence, based on essentiality and toxicity of Zn-NPs, we have conducted an experiment to determine lethal concentration (96-hrs LC₅₀) of Zn-NPs in *Pangasinodon hypophthalmus*. The lethal concentration of Zn-NPs at 96 hrs was 21.89 mg/L. The cumulative mortality was also determined with respect to 24, 48, 72 and 96 hrs with respective concentration such as 16, 18, 20, 22, 24, 26, 28 and 30 and varies from 3.33-43.33, 10-60, 16-70 and 33-80% respectively.



Cumulative mortality of *P. hypophthalmus* exposed to different concentration of Zn-NPs

Techniques to obviate edaphic stresses in orchards grown on shallow basaltic soils

(Dr Yogeshwar Singh, Senior Scientist, Agronomy)

Large areas of barren and uncultivable terrain developed from superficially subdued basalt igneous rock exist in peninsular India. These lands are porous, shallow depth, gravelly, low in organic matter, high bulk density and poor water retention capacity. The negative impacts of shallowness in terms of low water retention, hard rocks and murrum etc. are the major constraints for establishment of orchards in shallow basaltic soils of Maharashtra. Therefore an experiment entitled “Innovative Techniques to obviate edaphic and drought stresses on pomegranate grown in shallow basaltic soils” was initiated in the year 2013 at ICAR-NIASM.

Table 1 : Effects of different treatments on yield of Guava orchard

Planting method	Yield (t/ha)							
	Without blasting				With blasting			
	Native soil	Native + spent wash	Native + black soil	Black soil	Native soil	Native + spent wash	Native + black soil	Black soil
Auger	12.3	12.1	14.5	11.0	15.0	12.1	16.2	11.9
Pit	15.1	14.8	16.7	-	17.1	16.9	20.2	-
Pit (2x1)	15.9	-	18.6	-	18.5	-	22.3	-
Trench	15.4	-	16.1	-	17.7	-	18.7	-
Farmers' Practice	12.0	11.3	-	-	-	-	-	-
CD (P=0.05)	2.4							

Observations revealed that there was significant influence of various treatments on guava orchard in terms of growth, physiological, hyperspectral responses and yield. The tallest plant height, diameter and canopy spread in guava were monitored with pit and trench

planting filled up with mixture of native murrum and black soil. Yield was also higher in these treatments as compared to other treatments as well as farmer's practice and was recorded maximum (22.3 t/ha) under micro blasted Pit (2 x 1) planted filled up with mixtures of black soil and native soil treatment (Table 1). Micro-blasting proved its superiority over without micro-blast treatments in establishment of these orchards. These cracked rocks could further facilitate the root penetration and water conservation.

Another experiment has been initiated to introduce dragon fruit (*Hylocerus undatus*) as a new crop to adopt in low rainfall zone for rocky barren land and to develop standard technologies. The results of experiments are very encouraging which has resulted in gaining rapid popularity amongst farmers. In this experiment dragon fruit crop is planted under three different soil mixtures viz. 100% native murrum soil; 50% native murrum soil+50% black soil and 100% black soil. There were total seven harvesting from each plant in one year. Dragon fruit yield varies from 13.5 to 18.1 t/ha in three different soil mixtures (Table 2). The maximum yield was obtained in mixture of native murrum and black soil.

Table 2 : Performance of dragon fruit under different filling mixture

Parameters	Native soil	Black soil	Soil mixture
FRAP (μ gram ascorbic acid/gFW)	3.64	2.97	3.36
Reducing Sugar (%)	3.25	2.41	3.02
Total phenol (mg gallic acid equivalent)	249	147	211
Flavanoid (mg Catachein)	65.12	29.19	45.33
TSS (%)	12.96	11.36	11.76
DPPH (%)	77.29	65.04	70.56
Average fruit weight (g)	230.1	186.7	207.6
Yield (t/ha)	16.7	13.58	18.1
Net Return (Rs/ha)	9,10,000	9,99,287	13,62,478

Research Highlights

Diurnal fluctuation of winter water temperature impact on growth, myogenic regulatory factor genes and thermal tolerance in tilapia, *Oreochromis mossambicus*

(Dr Manoj P Brahmane, Principal Scientist, Biotechnology-Animal Science)

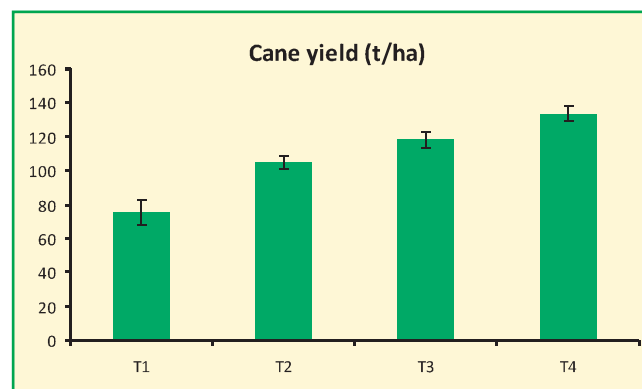
The study was conducted to understand the effect of diurnal winter temperatures on *Oreochromis mossambicus* growth, muscle gene expression, white muscle cellularity and thermal tolerance. Five day post hatch tilapia larvae were randomly grouped into Group A and B. Group A of larvae were exposed to environmentally fluctuating maximum diurnal average temperature of 22.25°C to minimum diurnal average temperature 18.56°C and Group B, maximum diurnal average temperature 27.24°C and minimum diurnal average temperature 20.31°C for a period of 60 days. It was observed that Group B fish grew 42.21% more than Group A. Lower winter diurnal temperatures inhibited fish growth in terms of body weight. Limited differential in the critical thermal tolerance was observed in both groups of fishes during winter, Group B CTMax of 41.92°C and CTMin of 10.5°C in comparison to Group A, CTMax of 41.31°C and CTMin of 9.85°C. Myogenic regulatory factor genes myogenin and Myf5 differential expression was observed.

Enhanced crop growth and cane productivity of sugarcane through improved ratoon management practices

(Dr Ram Lal Chaudhary, Scientist, Agronomy)

Results of a series of experiments conducted revealed that surface retention of chopped trash and adoption of SORF (stubble shaving, off-barring, root pruning and placement of basal doses of fertilizers) techniques improved the growth and yield parameters of sugarcane

significantly ($P \leq 0.05$) over conventional farmers' practices of trash burning and broadcast application of fertilizers. Plant height was recorded 1.5, 1.3 and 1.1 times higher under SORF technique (T_4) treatment compared to Nitrogen un-fertilized (T_1), N broadcast (T_2) and N placement treatments (T_3) respectively. Similarly, the maximum numbers of tillers (16.75) at maturity was recorded with SORF technique followed by T_3 treatment and former was significantly higher (33-27%) than the control and conventional farmer practices. Crops under T_4 treatment maintained higher quantum efficiency (~0.81) during most of the period of grand growth stage of sugarcane over other treatments. It indicates that pruning of old roots of sugarcane and band placement of nitrogen fertilizer along with surface retention of chopped trash helps in maintaining better plant health. It also promoted photosynthetic light accumulation and finally contributed in the cane yield production. Surface retention of chopped trash and placement of fert-N (T_3) in soil improved cane yields by 13-57% over the control and conventional farmer's practices. However, when stubble shaving, off-barring and root pruning practices were employed together, cane yield further improved significantly by 13% than that of individual practices of placement of nitrogen fertilizer.

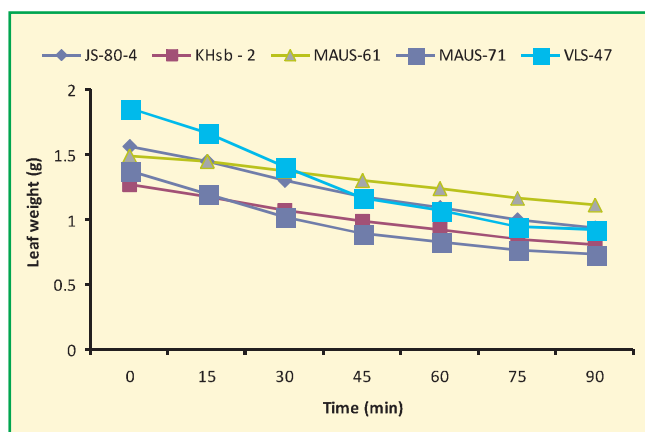


Effect of ratoon management practices on cane yield of sugarcane

Excised leaf water loss as a trait for screening soybean genotypes for drought tolerance

(Dr Mahesh Kumar, Scientist, Plant Physiology)

Soybean cultivars differ in drought tolerance, but the mechanisms controlling these differences is very complicated. Tolerance to leaf water stress is determined by a wide range of traits associated with leaf and stomata. Excised-leaf water loss (ELWL), one of the traits associated with water stress tolerance was considered for assessing genetic variation in responses of soybean cultivars. Significant differences among the genotypes were observed for this trait. ELWL was identified as a trait which can differentiate genotype based on their ability to loose moisture in environment. These differences among soybean genotypes for rate of water loss, is presumably an estimate of cuticular transpiration rate of plant. ELWL can be used as one of the drought screening traits in soybean.



ELWL of soybean cultivar under different time interval

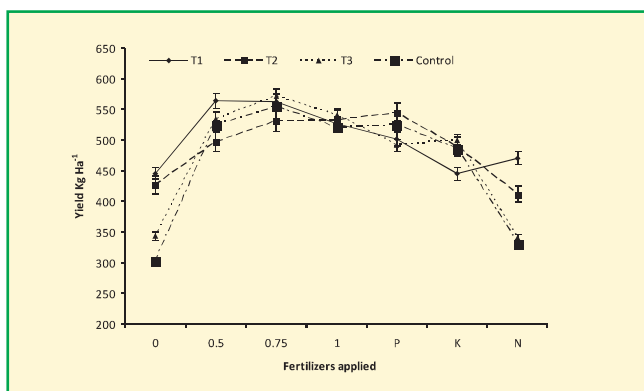
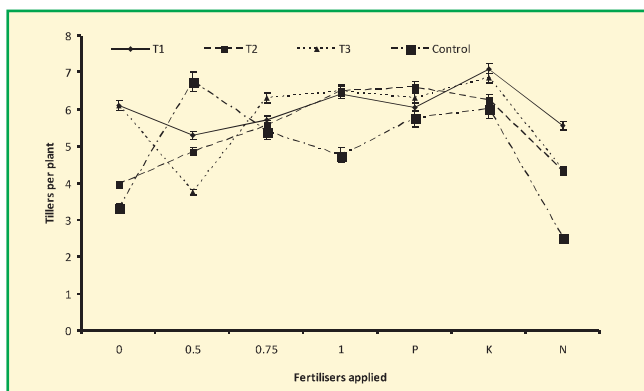
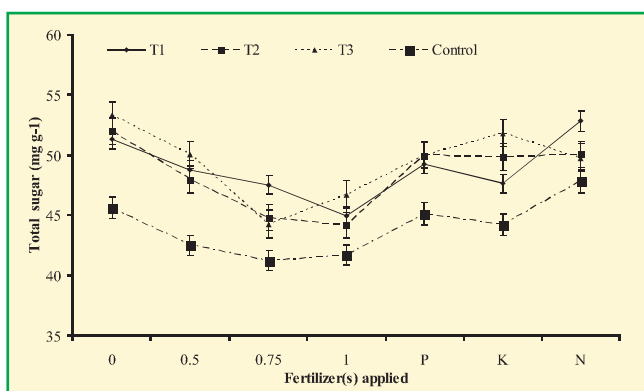
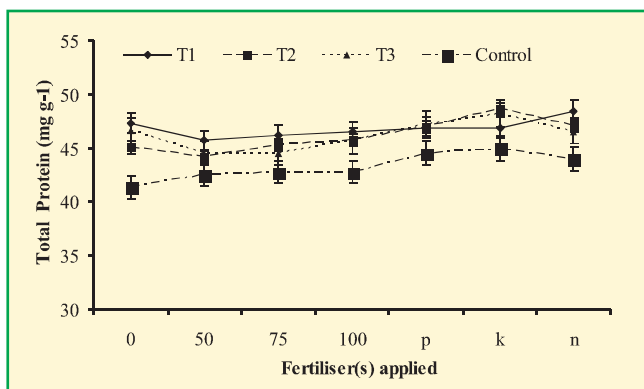
Microbe-mediated enhancement of nutrition and abiotic stress tolerance in crop plants

(Dr Kamlesh Kumar Meena, Senior Scientist, Agricultural Microbiology)

Microbial formulation containing consortium of candidate plant growth promoting strains has

been developed to alleviate nutritional stress in wheat crop. The bacterial strains were screened for their salt tolerance, plant growth promotional traits and antagonistic/inhibitory activity prior formulating consortium. The elite strains able to tolerate salinity up to 10% NaCl w/v and solubilise phosphate, produces siderophores, exopolysaccharides and growth hormones like IAA, etc. The strains were also screened for their metabolic versatility with the help of Biolog GEN III assay that permitted detailed insights to the metabolic plasticity of the isolates. The GEN III assay highlighted the capability of the isolates to utilize multiple carbon sources, as well as growth pattern under inhibitory conditions (in presence of inhibitory substances). Further, molecular characterization of the isolates included PCR-detection of functional genes including those involved in nitrogen fixation, ACC deamination, etc. were selected to be member of consortium. The consortium of well characterized strains was evaluated for two successive years under in situ nutrient deficit conditions (simulated by reducing the RDF of N, P and K) in wheat. The formulation yielded promising, reproducible results, where it successfully managed to save 25% of NPK in wheat. The performances of product under in situ conditions strongly endorse its wide applicability in nutrient-poor environments, where crop plants frequently encounter nutrient deficiency. This microbial formulation was applied in field condition through seed-coated @10⁹ CFU in wheat and sown in the experimental plots having varying levels of fertility in terms of exogenously supplemented N, P, and K. The results were monitored in terms of various physico-chemical parameters including content of chlorophylls, phenolic compounds, protein, sugar, plant height, canopy temperature, number of tillers, seed yield and activity of antioxidant enzymes viz., catalase (CAT), superoxide dismutase (SOD), guaiacol

Research Highlights



Monitoring of physico-chemical parameters : protein, sugar and yield in the experimental wheat plot having various levels of fertilizers

peroxidase (GPX), ascorbate peroxidase (APX) and grain yield; content of protein, sugar, and phenolic compounds. Overall results endorsed the efficacy of the treatment with the formulation under deficit nutrient conditions in wheat.



Zeolite based nanocomposite for mitigation of abiotic and biotic stresses in aquaculture

(Dr K K Krishnani, I/c Head, SESM)

Zeolite based nanocomposite formulated with nanosilver has been developed for alleviation of multiple abiotic and biotic stresses in IMC aquaculture. Product has been scaled up and applied in a farm pond @ 12 kg/ha. Application dose needs to be optimized based on the intensity of abiotic and biotic stresses in aquaculture system. Presence of micronutrients in zeolites have been ascertained. Zeolite based nanocomposite may also have future potential application for nutrient use efficiency in major crops.

New Initiatives

Hydroponics fodder production unit

(Dr Nitin P Kurade, Principal Scientist, Veterinary Pathology)

Hydroponics fodder production unit installed at Livestock Research Farm of the institute. This will serve the buffalo unit with green fodder and will be further used for research on water saving options, improvement of yield and nutritional requirement of dairy animals and goats. The total cost of installation of this 60 trays unit was Rs. 21000/-. The daily yield of green fodder is about 48-50 kg. This may partially fulfill fodder requirement of four lactating buffaloes in the buffalo unit.



Hydroponics fodder production unit at ICAR-NIASM



Major events

Visit of farmers from Khandala Tehsil to ICAR-NIASM

(Dr Nitin P Kurade, Dr M P Brahmane, Dr D D Nangare, Dr Yogeshwar Singh, Dr Goraksha Wakchure and Dr Pravin Taware, Coordinators)

Seventy farmers from Khandala Tehsil visited to ICAR-NIASM, Baramati on November 19, 2017. The farmers visited the experimental orchards crops livestock and fishery farm. The information regarding the technologies and research conducted at NIASM was disseminated to the farmers.



Demonstration of various technologies to address abiotic stress issues

Major events



Farmers visiting fisheries unit

Agricultural Education Day

(Dr K K Krishnani, Mr C B Harisha, Mr Rajkumar and Mr Mukesh Bhendarkar, Coordinators)

Agricultural Education Day was celebrated at ICAR-National Institute of Abiotic Stress Management, Baramati on December 03, 2017, commemorating the birth anniversary of the President of India, Bharat Ratna Dr Rajendra Prasad. The programme was inaugurated by Dr K E Lawande, Former Vice Chancellor-DBSKKV, Dapoli and Prof. Narendra Pratap Singh, Director, ICAR-NIASM followed by their address to the students and staff. School and college students were sensitized to develop interest in agriculture and allied sciences for choosing agriculture as their profession in different sectors viz. research, teaching, extension, career in farming and agri-entrepreneurship. The speech competition based



Inauguration of Agricultural Education Day

on theme “Importance of agricultural education under climate change scenario and abiotic stresses” was also organised for students and prizes and certificated were distributed to the winners and participants.



World Soil Day

(Dr K K Krishnani, Mr C B Harisha, Mr Rajkumar and Mr Mukesh Bhendarkar, Coordinators)

World Soil Day was celebrated on December 05, 2017 jointly with KVK-Baramati, ICAR-ATARI, Pune and Maharashtra State Agricultural Department at Kanheri village, Baramati. More than 300 farmers attended the programme. Prof. Narendra Pratap Singh, Director, ICAR-NIASM; Mr Rajendra Pawar, Chairman-Agricultural Development Trust; Mr Rohit Pawar Member-Zila Parishad; Dr K K Krishnani, I/c-Head-SESM; Dr Lakhani Singh ICAR-ATARI and Mr R C Shelar, Sarpanch addressed the farmers. Prof. Narendra



Director, ICAR-NIASM, addressing farmers

Pratap Singh addressed the gathering of the farmers and emphasized the need of soil health card based fertilizers applications.



Farmers from Kanheri village attending World Soil Day

One Day Training Programme on Protection of Plant Varieties and Farmers' Rights at ICAR NIASM

(Dr Ajay Kumar Singh, Coordinator)

It is necessary to recognize and protect the rights of farmers in respect of their contribution made in conserving, improving and making available plant genetic resources for the development of the new plant varieties. Therefore, a one day training programme was organized on "Protection of Plant Varieties and Farmers' Rights (PPV & FR)" on December 6, 2017 at ICAR-NIASM. The chief guest Shri Jayadeep Taware, Sarpanch, Malegaon Panchayat, in his inaugural



Release of PPV & FR Training Manual

address, appealed to the farmers to adopt technologies developed by ICAR-NIASM to increase agricultural income. On this occasion, Prof. Narendra Pratap Singh highlighted that the farmers are trying to cultivate traditional crop varieties for long years back. Farmers can protect such plant varieties by registering under the Protection of Plant Varieties and Farmers Rights Act, 2001. On this occasion, Dr Ravi Prakash, Registrar, Plant Varieties and Agriculture Rights Authority, New Delhi briefed the gathering about the process of registration of plant varieties. About 150 farmers and scientists participated in this training cum awareness program.



Address of Director, ICAR-NIASM during PPV & FR training

Model Training Course for Officers of State Development Departments, ICAR, SAUs and KVKs

(Dr G C Wakchaure, Course Director)

ICAR-NIASM organised eight days model training course on "Climate smart agriculture for enhancing crop and water productivity under abiotic stress conditions" during December 16-23, 2017, sponsored by Directorate of Extension, Department of Agriculture, Co-operation and Farmers Welfare, Ministry of Agriculture and Farmers Welfare, Govt. of India. The main objective of this programme was to sensitize extension functionaries/officers of state

Major events

development departments and other participants of ICAR, SAU and KVKs with basic knowledge in the sphere of climate smart agriculture (CSA) based technologies and their potential applicability for enhancing crop and water productivity by alleviation of abiotic stresses in agriculture. 22 participants participated from eight states viz., Delhi, Goa, Chhattisgarh, Madhya Pradesh, Maharashtra, Uttar Pradesh, Kerala and Telangana. The lectures and practicals in the field of climate change, food security and climate smart agriculture, abiotic stresses and their mitigation strategies, horticulture production system, water and soil management technologies, novel microbial, biotechnological and phenomics approaches for enhancing crop and water productivity were delivered by the various experts/resources person.



Visit of Dr Trilochan Mohapatra, Secretary, DARE and Director General, ICAR

(Dr Jagadish Rane, Coordinator)

Dr Trilochan Mohapatra, Secretary, DARE and Director General, ICAR visited ICAR-NIASM,

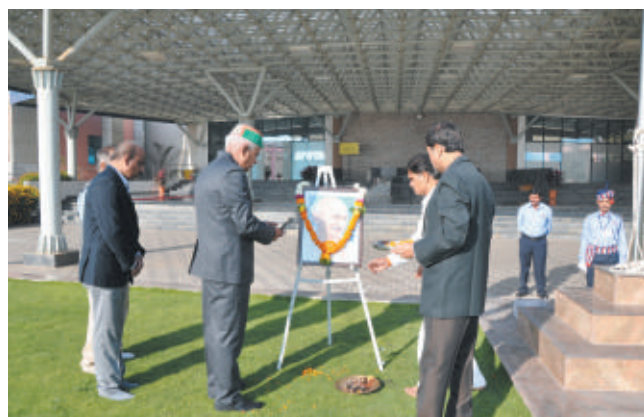


Baramati on January 19, 2018. He reviewed the development activities at NIASM viz. new school buildings, power station and other activities of the institute.

Republic Day Celebration

(PME Cell, Coordinator)

ICAR-NIASM celebrated 69th Republic Day on January 26, 2018. All the staff including scientific, technical, administrative, SRF, JRF, YPs and contractual were present for the event. On this occasion Prof. Narendra Pratap Singh, Director, ICAR-NIASM hoisted the national flag and addressed the staff of ICAR-NIASM.



MoU for collaborative research on abiotic stress management in grapes between ICAR-NIASM and MRDBS, Pune

(PME Cell, Coordinator)

Memorandum of Understanding signed for

collaborative research on abiotic stress management in grapes between ICAR-National Institute of Abiotic Stress Management, Malegaon, Baramati and Maharashtra Rajya Draksha Bagaitdar Sangh (MRDBS), Pune on January 29, 2018.



Signing of MoU between ICAR-NIASM, Baramati and MRDBS, Pune

Inauguration of Fish Research Farm

(Dr M P Brahmane, Coordinator)

The Fish Research Farm of ICAR-NIASM, Baramati was inaugurated by Hon'ble Dr K Alagusundaram, Deputy Director General, Agricultural Engineering and Natural Resource Management Divisions; Dr B. Venkateswarlu, Hon'ble Vice Chancellor, Vasant Rao Naik Marathwada Krishi Vidyapeeth, Parbhani and Dr K. Sammi Reddy, Director, ICAR-Central Research Institute for Dryland Agriculture, Hyderabad on February 8, 2018. Director, ICAR-NIASM, Prof. Narendra Pratap Singh briefed fisheries research activities undertaken by the institute. Fisheries Scientist interacted with Dr Alagusundaram about fisheries research at NIASM during fish research farm visit. Dr M P Brahmane briefed about activities of breeding and larval rearing of air breathing fish *Heteropneustes fossilis* (Shingi) and impact of increasing diurnal temperatures on tilapia, *Labeo rohita* and *Puntius spp.*



Inauguration of Fish Research Farm by Dr K Alagusundaram



Dr K Alagusundaram visiting Fish Research Farm

NICRA (NRM) Review Meeting

(Dr Jagadish Rane, Coordinator)

A two-day review meeting of National Innovations in Climate Resilient Agriculture (NRM) was held at ICAR-NIASM, Baramati during February 8-9, 2018. The meeting was aimed at reviewing consolidated work progress of all the NICRA partner institutes and to discuss future work plan. The meeting was attended by principal investigators of 15 different Institutes of Natural Resource Management (NICRA), NRM division located across the country. The meeting started with welcome address by Prof. Narendra Pratap Singh, Director, NIASM who gave a brief introduction about the institute. Dr K Alagusundaram, Deputy Director General (Agril. Engg. and NRM), ICAR, New Delhi in his introductory remark

Major events

focused on extending the knowledge and technologies generated under NICRA programme for the benefit of farmers. He also suggested to avoid duplication and ensure complimentary research. The progress made by NICRA projects at 15 ICAR research institutes were presented by principal investigators of respective institutes. Dr B Venkateshwaralu, Vice-Chancellor, VNMKV, Parbhani was the external expert for this review meeting of NICRA. He was critical about the contribution of each of the institute in achieving the objectives of the NICRA that focuses largely on climate change related issues and concerns. He expected that who substantially contributed to the knowledge generation and establishing facilities under the NICRA to be encouraged. He felt that a huge set of data have been generated in the project and that has to be documented for the benefit of policy makers and adaption to climate change while mitigation options need to be implemented. Dr S. Bhaskar, ADG (AAF & CC) joined the meeting on February 8, 2018 and opined that significant achievements should be published in the best possible format to provide decision making support for policy makers and also climate change adoption and mitigation for farmers. He suggested to add new dimension to the research on climate change in participating institutes without duplicating their mandated research activities.



NICRA (NRM) Review Meeting at ICAR-NIASM

Advanced training on application of plant phenomics tools for assessing responses of crop plants to drought and high temperature

(Dr Jagadish Rane and Dr Mahesh Kumar, Nodal Officer)

Advance training on Application of plant Phenomics tools for assessing responses of crop plants to drought and high temperature was organised at ICAR-NIASM during February 15-28, 2018. This training was supported by Ministry of External Affairs, Govt. of India and Dept. of Agriculture Research and Education, New Delhi under Indo Africa Forum Summit III. Five participants from 3 African countries (2 each from Sudan and Egypt and 1 from Malawi) attended this training programme. The objectives of this short course was to update the participant about phenotyping and phenomics concepts and tools for abiotic stress tolerance in crop plants and to prepare them as potential contributors for “Crop Phenome Database” for long term strategy to develop stress tolerant cultivars. Training included lectures and practical classes to deliver information and skills on plant phenotyping, image analysis, stress monitoring high throughput phenomics as well as low cost phenomics tool. Participant’s availed opportunity to carry out their experiments in National Plant Phenomics facility at NIASM. Prof. Narendra Pratap Singh, Director



Participants of training on Plant Phenomics along with Director, ICAR-NIASM and Nodal Officer

distributed certificates of training to all participants and called for strengthening research collaboration between India and Africa.

Advanced training on characterization of abiotic stress responses in field and horticultural crops through hyper spectral remote sensing

(Dr Yogeshwar Singh and Dr Bhaskar Gaikwad, Nodal Officer)

Advanced training on characterization of abiotic stress responses in field and horticultural crops through hyperspectral remote sensing was organised at ICAR-NIASM during February 15-28, 2018. This training was supported by Ministry of External Affairs Govt of India and Dept. of Agriculture Research and Education, New Delhi under Indo Africa Forum Summit III. Four participants attended this training programme. The objectives of training were to make them acquainted with the basic principles of hyperspectral remote sensing and its applications in abiotic stress identification and mapping. Training included lectures and practical classes to deliver information and skills on handling of spectroradiometer for abiotic stress measurement and its data analysis besides practical on use of drone for stress mapping. Prof. Narendra Pratap



Participants of training on Characterization of Abiotic Stress Responses along with Director, ICAR-NIASM and Nodal Officer

Singh, Director distributed certificates of training to all participants and called for strengthening research collaboration between India and Africa.

Advance training on detection, identification and application of microbially derived biomolecule for alleviation of salinity stress in crop plants

(Dr K K Krishanani and Dr. K K Meena, Nodal Officer)

Advance training on detection, identification and application of microbially derived biomolecule for alleviation of salinity stress in crop plants was organised at ICAR-NIASM during February 15-28, 2018. This training was supported by Ministry of External Affairs, Govt. of India and Dept. of Agriculture Research and Education, New Delhi under Indo Africa Forum Summit III. Three participants from Nigeria attended this training programme. The objectives of this short course was to get the participants acquainted with the salt affected soils and their remediation using biomolecules in major crop plants. Training included diverse lectures and practical related to soil analysis and isolation and characterization of biomolecules using chromatographic techniques, modus operandi of sophisticated equipment such as UHPLC, LC-MS, GC-MS, ICP-MS, AAS, Nanodrop, Biolog system, PCR. In addition,



Participants of training on Detection, Identification and Application of Microbially Derived Biomolecule along with Director, ICAR-NIASM and Nodal Officer

Major events

exposure visits were also conducted at ICAR-NRCG, IISER-Pune, PMKV-Rahuri and KVK-Babhleshwar.

Celebration of 10th Foundation Day of ICAR-NIASM

ICAR-NIASM celebrated its 10th Foundation Day on February 21, 2018. Shri Ranjankumar Taware, Chairman, Malegaon Sahkari Sakhar Karkhana Ltd. Malegaon was the Chief Guest. Shri Jaydeep Taware, Sarpanch, Malegaon (Bk) Grampanchayat; Mrs. Nayana Ranjeet Kate, Sarpanch, Malegaon (Kh) Grampanchayat; Shri Ramchandra Vinayakrao Nimbalkar, Member, Institute Management Committee, NIASM, Malegaon; Shri Shyam Appa Chakor, Member, Institute Management Committee, NIASM, Malegaon were present during Foundation Day celebration. On the occasion of Foundation Day, 10 progressive farmers were felicitated for their contribution in agriculture, dairy, and horticulture. Three publications including ICAR-NIASM Newsletter (April-September 2017), ITMU Folder and Proceedings of two day training on Sugarcane held during 10-11th July, 2017 were released. Scientist, Technical officer and Administrative staff were awarded for their best performance on the occasion of Foundation Day Celebration.

Prof. Narendra Pratap Singh emphasized the importance of ICAR-NIASM for farmers to solve the issues related to abiotic stresses in various crops as well as livestock. In his address, he stated that ICAR-NIASM has taken lead to carry out research for delivering technologies for benefit of farming community to achieve the goal of doubling farmers' income. He suggested that farmers should take advantage of technologies developed by ICAR-NIASM for Post-hail management of horticultural crops. He also highlighted about water availability problem at

the institute and requested Sarpanch Malegaon (Kh) Grampanchayat to resolve this issue.

Shri Bhausahab Kate, while speaking on behalf of farmers, expressed his view on issues of farming system. He praised the institute for making tremendous efforts for management of abiotic stress. He appealed the fellow farmers to make the best use of presence of this institute and technologies from ICAR institutes so that their



10th Foundation Day Celebration at ICAR-NIASM

income can be increased. Shri Shyam Appa Chakor, Member, IMC, ICAR-NIASM hoped that this institute will contribute significantly in the mitigation and management of various abiotic stresses occurring due to adverse climatic conditions. He also emphasized that adjoining ICAR institutes should help the farmers in solving their problems associated with farming system and appealed the farmers to take maximum benefit in adopting scientific farming practices. Shri Ramchandra Vinayakrao Nimbalkar, Member of IMC, ICAR-NIASM emphasized that innovative agricultural technologies developed by Agricultural Scientists should be reached to the farmers so that their income can be increased. He stated that ICAR institutes have contributed significantly for management of various kinds of abiotic stresses.

Shri Jaydeep Taware, Sarpanch, Grampanchayat Malegaon (Bk) in his address appreciated the efforts made by ICAR-NIASM Scientist for management of abiotic stresses that will help in increasing farmers' income. He stated that farmers should take advantage of this institute by adopting technology helpful in managing abiotic stresses. Shri Ranjankumar Taware, Sarpanch, Grampanchayat Malegaon (Kh) emphasized that farmers should adapt technology developed by nearby ICAR institute for management of disease problem in pomegranate and efficient management of unfavourable environmental conditions such as drought, hail storm.

एक दिवसीय हिन्दी कार्यशाला सह राजभाषा प्रशिक्षण कार्यक्रम

(डा. आर एल चौधरी, वैज्ञानिक (सस्य विज्ञान) एवं सदस्य सचिव, राजभाषा कार्यान्वयन समिति)

भाकृअनुप-राष्ट्रीय अजैविक स्ट्रेस प्रबंधन संस्थान, बारामती

में राजभाषा हिन्दी के प्रयोग को बढ़ावा देने हेतु एक दिवसीय "हिन्दी कार्यशाला सह राजभाषा प्रशिक्षण कार्यक्रम" का आयोजन दिनांक फरवरी 28, 2018 को किया गया। इस हिन्दी कार्यशाला सह राजभाषा प्रशिक्षण कार्यक्रम का शुभारंभ करते हुये संस्थान के निदेशक एवं राजभाषा कार्यान्वयन समिति के अध्यक्ष, प्रो. नरेंद्र प्रताप सिंह ने संस्थान के दैनिक कार्यों में राजभाषा हिन्दी के प्रयोग को बढ़ाने पर ज़ोर देते हुये राजभाषा "हिन्दी का प्रौद्योगिकी हस्तांतरण में महत्व" विषय पर मार्गदर्शन भी किया तथा गृह मंत्रालय, भारत सरकार द्वारा जारी विभिन्न प्रोत्साहन योजनाओं के बारे में भी अहम जानकारी प्रदान की। इस अवसर पर मुख्य अतिथि व प्रमुख वक्ता के रूप में डा. राकेश शर्मा, हिन्दी अधिकारी, सीएसआईआर-राष्ट्रीय समुद्र विज्ञान संस्थान, गोवा उपस्थित थे। उन्होने कम्प्यूटर पर हिन्दी के टाइपिंग टूल्स; कम्प्यूटर पर हिन्दी वॉइस टाइपिंग, कम्प्यूटर पर हिन्दी के उपयोगी सॉफ्टवेयर और उनका प्रयोग; हिन्दी वर्तनी जांचक उपकरण, मोबाइल पर हिन्दी में टाइपिंग एवं वॉइस टाइपिंग एक्टिवेट करना; ऑनलाइन एवं ऑफ लाइन हिन्दी शब्दकोश इत्यादि विषयों पर संस्थान के अधिकारियों व क्रमचरियों को प्रशिक्षण दिया। इससे पहले डा. आर एल चौधरी, वैज्ञानिक (सस्य विज्ञान) एवं सदस्य सचिव, राजभाषा कार्यान्वयन समिति, राष्ट्रीय अजैविक स्ट्रेस प्रबंधन संस्थान ने अतिथियों का स्वागत करते हुये राजभाषा हिन्दी के प्रयोग को बढ़ावा देने हेतु संस्थान में किए जा रहे प्रयासों व हिन्दी के प्रगामी प्रयोग के लिए आवश्यक कदम विषय पर अपने विचार प्रस्तुत किए। इस एक दिवसीय हिन्दी कार्यशाला सह राजभाषा प्रशिक्षण कार्यक्रम में संस्थान के सभी अधिकारियों व कर्मचारियों ने बढ़-चढ़ कर भाग लिया तथा इसका समापन श्री परितोष कुमार, वैज्ञानिक (पर्यावरण विज्ञान) एवं सदस्य, राजभाषा कार्यान्वयन समिति के धन्यवाद ज्ञापन के साथ सम्पन्न हुआ।



डा. राकेश शर्मा द्वारा हिन्दी कार्यशाला समारोह का सम्बोधन

Major events

Krishi Mela at Village-Waghoshi, Tal-Khandala, Dist-Satara

(Dr Nitin P Kurade, Dr Manoj P Brahmane, Dr D D Nangare, Dr G C Wakchure, Dr Bhaskar B Gaikwad and Dr Mukesh Bhendarkar)

ICAR-NIASM Scientists along with Sri Sunil Pawar, Chairman and member of Khandala, Taluka Vikas Pratishthan, Khandala visited the farmer's field at Andhori, Karadvadi villages and other fields including farm pond on the way to Waghoshi village on March 24, 2018. The NIASM scientist visited different field of vegetable such as Chilli, bitter guard, okra, tuti plants and pomegranate orchards. Some of the problems were observed in Chilli such as leaf curling, hence scientists suggested to spray micronutrient on leaf parts. In Tuti plantations, farmers were facing the marketing problem as there is no policy of Govt. of



Interaction of NIASM Scientists with farmers on their field



Interaction of NIASM Scientists and farmers at Kisan Mela held at village Waghoshi

Maharashtra for procurement of silk. Scientists also participated in Krishi Mela at Waghoshi village. Scientist NIASM delivered talks in their respective field. The large number of farmers from nearby villages also participated in the Krishi Mela.

Krishi Unnati Mela at ICAR-NIASM

(Dr K K Krishnani, Coordinator)

Krishi Unnati Mela 2018 was held during March 16-19, 2018 at IARI, New Delhi. On this occasion Hon'ble Prime Minister addressed through live telecast to progressive farmers, Agricultural Scientist, Vice-Chancellors and Directors of ICAR Institute on March 17, 2018 at 11.30 am. On this occasion ICAR-NIASM also conducted and invited farmers of Pune district to witness live telecast of Hon'ble Prime Minister's address to farmers.



Live telecast of Hon'ble Prime Minister's address to farmers at ICAR-NIASM

Swachh Bharat Abhiyan

(Dr Paritosh Kumar, Coordinator)

Under Swachh Bharat Abhiyan different swachhata based activities were carried out viz. cleaning the premises of main office building, school building, crop research farm, horticultural farm, guest house, old office building, hostel, quarters, auditorium, laboratory, roads, animal

sheds, fish ponds, labour sheds, sport ground etc. and making the institute campus plastic free. Apart from cleaning, plantation around guest house, main office building, crop farm, animal shed, quarters and roads etc. has also carried out. Inside the institute a composting site has also being developed where bio-degradable wastes from the institute farm, quarters, animal sheds, poultry sheds, goat sheds etc. were used for compost. Time to time noxious weed eradication like Parthenium has also being carried out from campus. Swachhata based competitions like essay writing, elocution, poster making, sketching, quiz competition etc. has also being organised in institute and nearby institute. In this campaign a specific activity 'Swachhata of nearby Tourist Spots' was organised on October 01, 2017. On this occasion our institute employee and members of



Staff of ICAR-NIASM cleaning the premises of Siddheshwar Temple, Baramati



Swachh Bharat Abhiyan at ICAR-NIASM

Baramati municipal council eagerly participated in cleaning of the premises of the historical 'Shri Siddheshwar Temple' located on the east bank of Karha River, Baramati.

Krishi Unnati Mela-2018

(Dr Bhaskar Gaikwad, Dr Paritosh Kumar, Mukesh P Bhendarkar and Mr Rajkumar)

Krishi Unnati Mela-2018, organised by DAC, Govt. of India during March 16-19, 2018 at Indian Agricultural Research Institute (IARI), New Delhi. The Krishi Unnati Mela was inaugurated by Hon'ble Prime Minister Shri Narendra Modi, on March 17, 2018 and launched Jaivik Kheti. He also confers the Krishi Karman Award & Pandit Deen Dayal Upadhaya Krishi Vigyan Protsahan Puruskar to different farmers. In this fair ICAR-NIASM exhibition stall was also showcased and demonstrated the ICAR-NIASM technologies to the farmers through poster presentation and through live specimens. The farmers appreciated dragon fruit production technology and felt that its role is very important for doubling farmer's income. The dragon fruit cuttings were supplied to the interested farmers.

Tribal Sub-Plan

(Dr K K Krishnani, Coordinator)

ICAR-National Institute of Abiotic Stress Management organized Field day cum training programme related to Agri-aquaculture for livelihood improvement of tribal farmers as part of Tribal Sub-Plan (TSP) at Pawla village on October 12, 2017 for the farmers of Nandurbar taluka and subsequently, at Karanji village on October 13, 2017 for the farmers of Navapur taluka. More than 320 tribal farmers participated and benefitted during this training program. Rabi Onion seeds (200 kg) were distributed to the identified tribal farmers of Pawla, Umaj, Natavad,

Major events

Devpur, Arditara, Tokartalav, Mughbari, Bhujgaon and Toranmal villages of Nandurbar District for implementation of improved technology interventions in onion. At Chitvi village Mridaparishak kit for soil analysis was demonstrated to around 50 tribal farmers and soil health card based fertilizers recommendation were emphasized. Another interaction meeting cum training programme was organised at Nandurbar on October 22, 2017 for nearly 150 tribal farmers of Pawla, Umaj, Natavad, Devpur, Arditara, and Tokartalav villages. Prof. Narendra Pratap Singh, Director, ICAR-NIASM has appreciated farmers for adopting four point rice production technology and using power tiller given by ICAR-NIASM. Prof. Singh urged tribal farmers to take up additional farming activities, integrated farming and make use of training programmes organized by ICAR-NIASM. Dr K K Krishnani, Chairman-TSP implementation committee brief about TSP program of the Institute on the activities related to successful implementation of improved technology interventions in integrated agri-

aquaculture. Gathering was addressed by Dr Vijaykumar Gavit, Hon'ble Member of the Legislative Assembly for Nandurbar and inputs (Onion seeds and bypass fat) were distributed to identified farmers of the Nandurbar villages. Dr Vijaykumar Gavit, has applauded ICAR-NIASM for distribution of inputs for livelihood improvement of tribal farmers of various villages of Nandurbar District as part of TSP and urged the farmers for making use of these inputs for integrated farming. A team of scientists consisting of Dr K K Krishnani, Dr M P Brahmane, Dr Neeraj Kumar and Mr Mukesh Bhendarkar visited Toranmal area of Nandurbar district and selected water body for cage culture. Farm ponds were stocked with fish seeds in various villages of Nandurbar district and stock enhancement was also done in water body on Pawla village by the TSP implementation committee. Bypass fat (300 kg) and wheat seed (76 q) were distributed to tribal farmers as improved technology intervention in dairy farming and crop farming.



Hon'ble MLA Dr Vijaykumar Gavit distributing agricultural inputs to tribal farmers of Nandurbar district



Interaction of ICAR-NIASM Scientists with tribal farmers of Nandurbar district





Prof. Narendra Pratap Singh

- Delivered a keynote lecture on “Farm Technologies in National Convention-cum-Seminar on ‘Doubling Farmers’ Income and Farm Profitability by 2022”, organized by Royal Association for Science-led Socio-cultural Advancement (RASSA), New Delhi and C.B. Gupt Krishi Mahavavidyalaya, Lucknow during 28-29 October, 2017 at Balasaheb Bhimrao Ambedkar University, Lucknow, Uttar Pradesh.
- Chaired Technical Session AGR I- Weed Management in major crops and cropping system and delivered a lecture on “Crop-weed Interactions and Management under Climate Change Scenario” in National Seminar on “Crop Protection: Current Trend and Future Perspective”, organized by Department of Plant Pathology, Entomology & Agronomy, School of Agricultural Sciences and Rural Development, Nagaland University, Medziphema campus during 16-18 November, 2017 at School of Agricultural Sciences and Rural Development, Nagaland University, Nagaland.
- Chaired Technical Session- Fishery Biology, Toxicology and Environment and delivered a lecture on “Metal Contamination and Health Risk Assessment from Kolkata Wetland, India” in 11th Indian Fisheries and Aquaculture Forum (11th IFAF), organized by Asian Fisheries Society Indian Branch (AFSIB) and ICAR - Central Institute of Fisheries Technology, Kochi during 21-24 November, 2017 at ICAR-Central Institute of Fisheries Technology, Kochi.
- Chaired Technical Session IV- Integrated Crop Management and Mechanization and delivered a lecture on “Abiotic Stress Management in Vegetable Crops” in National Symposium on “Food and Nutritional Security through Vegetable Crops in relation to Climate Change”, organized by Indian Society of Vegetable Science, ICAR-Indian Institute of Vegetable Research, Varanasi and Indian Council of Agricultural Research, New Delhi during 09-11 December, 2017 at ICAR-Indian Institute of Vegetable Research, Varanasi.
- Co-Chaired Concurrent Session- V on “Conservation Agriculture, Nutrient and Energy Management” in International seminar on “Global Climate Change: Implications for Agriculture and Water Sectors” organised by MPKV, Rahuri; VNMKV, Parbhani; Dr. BSKKV, Dapoli and Dr. PDKV, Akola during 14-16 December, 2017 at WALMI, Aurangabad.
- Chaired Technical Session on “Application of Remote Sensing in Aquatic Environment and Ecology” in 2nd International Symposium on “Societal Applications in Fisheries and Aquaculture using Remote Sensing Imagery” (SAFARI-2), organized by ICAR-Central Marine Fisheries Research Institute, Kochi during 15-17 January, 2018 at ICAR-CMFRI, Kochi.
- Delivered a key note lecture on "Water Management Techniques for Climate Smart Agriculture" in Conference on “Farmers First Conserving Soil and Water Resources in Western Region”, organized by Indian Association of Soil and Water Conservationists, Dehradun, Uttarakhand during 01-03 February, 2018 at Anand, Gujrat.
- Chaired the session- Agriculture and Forestry Science on “Knowledge based Agriculture for Arresting Land Degradation, Combating Climate Change and Ensuring Food Security” in 105th Indian Science Congress, organized by Indian Science Congress Association (ISCA), Imphal during 16-20 March, 2018 at Manipur University, Imphal.
- Co-chaired the Technical Session-Crop Production and delivered a lecture on “Medicinal and Aromatic Plants: an Alternative Crops for Abiotic Stress prone Regions” in National

Workshop/Seminar/Symposia/Conference/Training

Symposium on “Noni and Herbal Wealth for Sustainable Wellness”, organized by International Society of Noni Science during 24-25 March, 2018 at College of Agriculture, Pune.

Dr. Jagadish Rane

- Attended the discussion meeting on Minor Pulses organised by Department of Biotechnology, Institute of Life Sciences (ILS) Bhubaneswar on 27 October, 2017 at ILS, Bhubaneswar.
- Attended the meeting called by the ICAR for discussion on Doubling Farmers income under the Chairmanship of Prof. M.S. Swaminathan on 03 November, 2017 at NASC Complex, New Delhi.
- Attended the one day Brain Storming session “Intellectual Convention for Doubling Farmers Income through Citrus Cultivation” on 23 November, 2017 at ICAR-CCRI, Nagpur.
- Attended the “State-wise Coordination Committee for Doubling the Farmers income by 2022” meeting on 08 December, 2017 at NRC-Grapes, Pune.
- Attended International seminar on “Global Climate Change: Implications for Agriculture and Water Sectors” organised by MPKV, Rahuri; VNMKV, Parbhani; Dr. BSKKV, Dapoli and Dr. PDKV, Akola during 14-16 December, 2017 at WALMI, Aurangabad.
- Attended the 47th meeting of the Institute Management Committee held at ICAR-CRIDA, Hyderabad on 22 January, 2018.
- Attended the Review of Technical Programme of NICRA Partner Institutes under Crop Sciences and Modelling during 12-13 February, 2018 at ICAR-IARI, New Delhi.
- Attended the Institute Management Committee (IMC) meeting of ICAR-CCARI held at ICAR-CCARI, Ela, Old Goa on 27 February, 2018

- Attended two days National Conference on “Drought Management Strategies” held at KSNDMC, Yelahanka, Bengaluru during 8-9 March, 2018, organised by Karnataka State Nature Disaster Management Committee, Govt. of Karnataka.
- Attended the Research Planning Meeting of Department of Agril Botany of MPKV, Rahuri for the year 2018-19 held at Directorate of Research, MPKV, Rahuri on 14-15 March, 2018.
- Attended the Director of Research Coordination Committee (DRCC) Meeting at Directorate of Research, MPKV, Rahuri on 17 March, 2018.
- Attended IMC meeting of ICAR-CAZRI’s XXXIV Institute Management Committee Meeting on 30 March, 2018 at ICAR-CAZRI (HQ).

Dr Manoj P Brahmane

- Attended and presented research paper entitled “Diurnal fluctuating water temperature affects growth, myogenic regulatory factor genes, white muscle cellularity and thermal tolerance in tilapia, *Oreochromis mossambicus*” at Indian Fisheries and Aquaculture Forum, Kochi, organised by ICAR-Central Institute of Fishing Technology from 21-24 November, 2017.
- Exhibited of ICAR-NIASM technologies to farmers and stakeholders at Kisan Agri Show, Moshi, Pune on 13-17 December, 2017 and at Krushik, 2018 at Krishi Vigyan Kendra, Baramati from 17-22 January, 2017.

Dr Ajay Kumar Singh

- Attended International Seminar on “Global Climate Change: Implications for Agriculture and Water Sectors” organised by MPKV, Rahuri; VNMKV, Parbhani; Dr. BSKKV, Dapoli and Dr. PDKV, Akola during 14-16 December, 2017 at WALMI, Aurangabad.

Workshop/Seminar/Symposia/Conference/Training

Dr Yogeshwar Singh

- Delivered oral presentation on “Transformation of barren rocky basaltic terrain into productive land through integration of spent wash and cropping sequence” during National Conference on “Bhumi Suposhan-approach and practises to enrich soil for sustainable agriculture”, organised by Ekalavya Foundation, Akshay Krishi Pariwar and CSIR-IICT at CSIR-IICT, Hyderabad, India during 24-25 March, 2018.

Dr D D Nangare

- Participated and presented Poster entitle “Dragon fruit: crop for degraded and water-scarce areas under changing climate” in International Seminar on Global Climate Change: Implications for agriculture and water sectors”, organized by VNMKV, Parbhani during 14-16 December, 2017 at WALMI, Aurangabad.
- Participated in exhibition organized during International Seminar on “Global Climate Change: Implications for agriculture and water sectors”, organized by VNMKV, Parbhani during 14-16 December, 2017 at WALMI, Aurangabad.
- Participated and presented paper “Effect of regulated deficit irrigation and partial root zone drying on enzymatic activities and water use efficiency of Papaya under semi-arid region” in 52nd Annual convention of ISAE and National symposium on “Doubling farmers income through technological Intervention”, organized by Indian Society of Agriculture Engineering on 8-10 January, 2018 at Anand Agriculture University, Anand, Gujrat.

Dr K K Meena

- Attended 21 days advanced level training in soil testing, plant analysis and water quality assessment, organised by Division of Soil Science and Agriculture Chemistry, IARI, New Delhi during 8-28 December, 2017 at IARI, New Delhi.

Dr R L Choudhary

- Participated in the National Conference on “Bhumi Suposhan- approach and practises to enrich soil for sustainable agriculture”, organised by Ekalavya Foundation, Akshay Krishi Pariwar and CSIR-IICT during 24-25 March 2018 at CSIR-IICT, Hyderabad.
- Participated in the mid-term progress cum review meeting of Consortia Research Platform on Conservation Agriculture, organized by NRM Division, ICAR on 12 March, 2018 at KAB II (NRM Division), ICAR, New Delhi.
- Participated in the National Symposium on “Pulses for Nutritional Security and Agricultural Sustainability”, organized jointly by Indian Society of Pulses Research and Development (ISPRD) and ICAR-Indian Institute of Pulses Research, Kanpur during 2–4 December, 2017 at ICAR-IIPR, Kanpur.
- Attended a Short Course on “Enhancing Nutrient Use Efficiency through Next Generation Fertilizers in Field Crops” organized ICAR-Indian Institute of Pulses Research, Kanpur during 21–30 November, 2017 at ICAR-IIPR, Kanpur.

Mr C B Harisha

- Presented oral paper entitled “Medicinal and Aromatic Plants-An alternative crops for abiotic stress prone regions” In 12th National symposium on “Noni and Herbal Wealth for Sustainable wellness” held during 24-25 March, 2018 at College of Agriculture, Pune.

Dr Neeraj Kumar

- Attended and presented two research paper entitled “Metal contamination and health risk assessment from Kolkata Wetland, India” and “Dietary selenium improve biochemical plasticity and non-specific immunity in Pangasius hypophthalmus exposed to abiotic stress”, organised by ICAR-Central Institute of Fishing

Workshop/Seminar/Symposia/Conference/Training

Technology during 21-24 November, 2017 at Indian Fisheries and Aquaculture Forum, Kochi.

- Participated in National Workshop on Revisiting FOCARS: Reflections and Feedback of trained Scientist from 15-16 March, 2018 organised by ICAR-NAARM at Hyderabad.

Participation in Farmer fairs

- Dr Manoj P Brahmane, Dr. Yogeshwar Singh, Dr D D Nangare, Dr Bhaskar Gaikwad, Dr Mahesh Kumar and Mr Mukesh Bhenderkar participated in “Krisik 2018” held at Krishi Vigyan Kendra, Baramati, during 17-22 January, 2017.
- Dr Bhaskar Gaikwad, Dr Paritosh Kumar, Mr. Rajkumar and Mr Mukesh Bhendarkar participated in “Krishi Unnati Mela 2018” held at IARI, New Delhi, during 16-19 March, 2018.
- Dr Manoj Brahmane, Dr N P Kurade, Dr D D Nangare, Dr G C Wakchaure, Dr Bhaskar Gaikwad and Mr Mukesh Bhendarkar participated in “Krishi Mela” held at Waghoshi organized by Khandala Taluka Vikas Pratishthan, Khandala in 24 March, 2018.

Lectures

- Dr Ajay Kumar Singh delivered a key note lecture in International Conference on “Conservation and Management of Agricultural and Natural Resources: Strategies for Food Security in Developing Countries”, organised by Career Point University (CPU) during 8-9 November, 2017.
- Dr Mahesh Kumar delivered a Invited lecture on “Field phenotyping for responses of crops under depleting soil moisture condition” in International Seminar on “Climate Resilient Crops for Feeding the Future”, organised by Washington State University, USA and Swami Ramanand Teerth Marathwada University, Nanded, Maharashtra during 11-12 December, 2017.

- Dr K K Krishnani delivered resource lecture for the students of aquatic environment management at CIFE-Mumbai on “Abiotic and biotic stress management in aquaculture using nucleic acid based techniques” on 22 March, 2018.
- Dr R L Choudhary delivered an invited talk on “*In-situ* trash and nutrient management for improving resource-use efficiency, productivity and soil health in sugarcane cropping system” in the “National Conference on Organic Waste Management for Food and Environmental Security” held ICAR-Indian Institute of Soil Science, Bhopal, India during February 8-10, 2018.

Publications

- Bal SK, Minhas PS, Singh Y, Kumar M, Patel DP, Rane J, Kumar PS, Ratnakumar, P, Choudhury BU, Singh NP (2017) Coping with hailstorm in vulnerable Deccan Plateau region of India: technological interventions for crop recovery. **Current science**. 113: 2021-2027.
- Fand, BB, Gaikwad, MB, Sul NT, Kumar M, Bhagat KP, Bal SK, Minhas PS (2018) Population dynamics of soybean stem fly *Melanagromyza sojae* (Diptera: Agromyzidae) and its parasitoids in Maharashtra State of India. **International Journal of Tropical Insect Science**. Doi: 10.1017/S1742758417000261.
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- Kumar N, Krishnani KK, Gupta SK, Singh NP (2018). Effects of silver nanoparticles on stress biomarkers of *Channa striatus*: immuno-protective or toxic. **Environmental Science and Pollution Research**. DOI: 10.1007/s11356-018-1628-8.

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- Kumar N, Krishnani KK, Kumar P, Singh NP (2017) Zinc nanoparticles potentiates thermal tolerance and cellular stress protection of *Pangasius hypophthalmus* reared under multiple stressors. **Journal of Thermal Biology** 70: 61–68.

Personalalia

Awards

- Dr R L Choudhary, Scientist (Agronomy), Mr Lalit Aher (Senior Technical Assistant), Mr Parvin More (Senior Technical Assistant), Mr Girish Kulkarni (Assistant) and Mr Aniket More (Senior Technician) have been honoured for their contribution in the institute on the occasion of 10th Foundation Day of ICAR-National Institute of Abiotic Stress Management held at ICAR-NIASM on 21st February, 2018.



Dr R L Chaudhary awarded for best contribution in the Institute during Foundation Day Celebration

- Dr Neeraj Kumar, Scientist (Fish Nutrition and Biochemistry), School of Edaphic Stress Management, NIASM, Baramati, Pune has been received “Young Scientist Award” for Outstanding contribution in the field of Fisheries and Life Science on the occasion of 11th Indian Fisheries and Aquaculture forum at Kochi on November 24, 2017.



Dr Neeraj Kumar awarded “Young Scientist Award” on the occasion of 11th Indian Fisheries and Aquaculture forum at Kochi

Distinguished Visitors

- Dr A K Singh, DDG, Agricultural Extension, ICAR, New Delhi, October 8, 2017
- Dr K V Prabhu, Joint Director, Research, ICAR-IARI, New Delhi, November 16, 2017
- Dr S K Soam, Joint Director (I/C), ICAR-NAARM, December 07, 2017
- Prof J Adinarayana, Head, CSRE, IIT, Mumbai, December 18, 2017
- Dr P Ushamani, Deputy General Manager, NABARD, Pune, December 22, 2017
- Dr T Mohapatra, Secretary, DARE and DG, ICAR, New Delhi, January 19, 2018
- Prof. Amar Nath Rai, Former Vice Chancellor, Mizoram University and North Eastern Hill University, January 20, 2018
- Dr. K Alagusundaram, DDG, Agricultural Engineering and Natural Resource Management Divisions, February 08, 2018
- Dr B Venkateswarlu, Vice Chancellor, VNMKV, Parbhani, February 08, 2018
- Dr S Bhaskar, ADG, AAF & CC, ICAR, New Delhi, February 08, 2018



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