



# 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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## In this issue

### Research Highlights

- Virus induced gene silencing in soybean
- *Bradyrhizobium* with *Rtx* gene for induction of nodulation and drought tolerance
- Investigation of traits and genes associated with resilience to moisture stress in soybean
- Characterizing sugarcane responses to abiotic stresses through hyperspectral remote sensing
- Diurnal fluctuating water temperature affects growth, myogenic regulatory factor genes, white muscle cellularity and thermal tolerance in tilapia, *Oreochromis mossambicus*
- Mitigation of drought stress in summer mungbean through climate smart practices in sugarcane-mungbean cropping system
- Metal assessment of East Kolkata Wetland for safe consumption
- Zeolite based nanocomposite for alleviation of abiotic and biotic stresses in fish or aquaculture

### New Initiatives

- Convergence of thoughts for Doubling Farmers Income of Maharashtra
- Introduction of indigenous goat, buffalo and improved poultry breeds

### Major Events

- Celebration of Foundation Day
- Programme on integrated farming for improving livelihood of Tribal farmers at Navapur
- Celebration of International Yoga Day
- Farmers meet at Khandala
- Workshop for sugarcane growers
- Training on "Phenomics: Perspectives for application in improvement of abiotic stress tolerance in crop plants"
- Independence Day Celebration
- Summer School training on "Recent Advances in Abiotic Stress Management for Climate Smart Agriculture"
- Inauguration of Animal Research Farm
- Swachh Bharat Abhiyan
- Research Advisory Committee Meeting
- हिन्दी पखवाड़ा/हिन्दी दिवस
- Workshops/Seminar/Symposia/Conference/Training attended
- Lectures

### Personalia

- Awards/ Recognition
- Patent

### Editorial committee

Dr. M. P. Brahmane  
Dr. Ajay Kumar Singh  
Dr. Yogeshwar Singh  
Dr. KK Meena  
Dr. Mahesh Kumar  
Dr. Neeraj Kumar

### Compilation & Technical Assistance

Mr. Praveen More  
Mr. Madhukar Gubbala

## From the Director's Desk.....

Greetings from ICAR-NIASM.

Abiotic stress is major challenge to the agriculture and threatens food security. The adverse effects of abiotic stresses are exacerbated by climate change. The constraints of global food security and agricultural productivity encourage research and development of climate smart crops. ICAR-NIASM has taken lead to carry out research for delivering technologies for benefit of farming community through basic and strategic research to address issues of various kinds of abiotic stresses. Agronomic, genetic, biochemical, and omics approaches are being used for mitigation and enhancing adaptation 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 research work focused on basic and fundamental studies at cellular and molecular levels to complement applied research. Institute conducted many important events and training programmes during last six months such as Swachh Bharat Abhiyan, Summer School training on Recent Advances in Abiotic Stress Management for Climate Smart Agriculture; Training on Phenomics: Perspectives for application in improvement of abiotic stress tolerance in crop plants, the 6<sup>th</sup> Meeting of Research Advisory Committee (RAC) of the institute, two days workshop for sugarcane growers and Hindi Pakhwada/Hindi Diwas.

I thank the Editorial team lead by Dr. M.P. Brahmane who has 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 thank to Dr. Trilochan Mohapatra, Secretary (DARE) & Director General (ICAR); Shri. S. N. Tripathi, Additional Secretary & Financial Advisor (DARE/ICAR); Shri Chhabilendra Roul, Additional Secretary (DARE) & Secretary (ICAR); DDG (NRM, ICAR); ADG (Soil & 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.



(Narendra Pratap Singh)

## Virus induced gene silencing in soybean

*EraI* gene encoding  $\beta$ -subunit of Farnesyl-transferase (FnsI) was silenced employing Virus Induced Gene Silencing (VIGS) Technology. Silencing efficacy was verified in soybean cultivars such as JS-335 and NRC-37. FnsI-silenced soybean plants performed better under irrigated and water stress conditions.



Mock



Vector Control

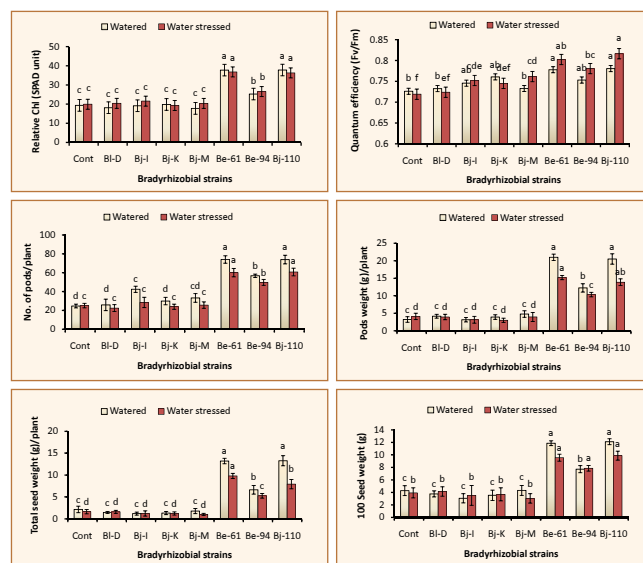


Farnesyltransferase-silenced soybean plants  
Phenotype of Mock, Vector control and Farnesyl transferase- silenced soybean plants

## *Bradyrhizobium* with *Rtx* gene for induction of nodulation and drought tolerance

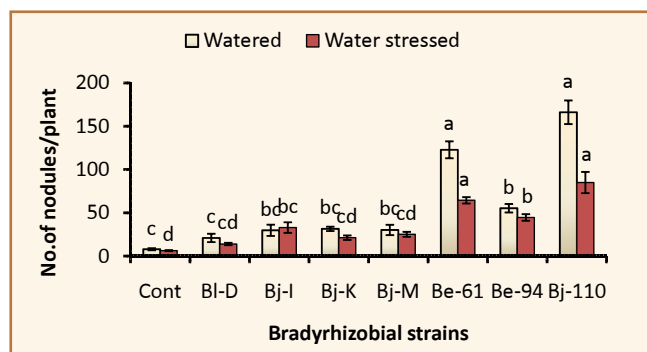
Being a leguminous crop soybean establishes symbiotic relationship with rhizobia group of bacteria called *Bradyrhizobium* spp. and *Ensifer* spp. that can fix atmospheric nitrogen and make it available for plants. Under stress conditions, ethylene, regarded as a stress hormone, is produced and inhibits overall plant growth, which includes legume-*Rhizobium* symbiosis. Rhizobia employ at least two strategies viz., production of rhizobitoxine (Rtx) by slow-growing *Bradyrhizobium* spp. and ACC deaminase by fast-growing *Rhizobium* spp. to counteract the negative effect of ethylene on nodulation.

Visible and infrared thermal imaging-based phenomics approach along with non-destructive photosynthetic measurements were applied to assess the symbiotic effectiveness of non-Rtx- and Rtx-producing strains of *Bradyrhizobium* spp. in soybean under optimum and low soil moisture conditions. The rhizobitoxine producing



Inoculation effect of Rtx and non-Rtx *bradyrhizobial* strains on SPAD relative chlorophyll content (a), the quantum efficiency of PSII (b), number of pods (c), pod weight (d), total seed weight (e) and test seed weight (f) in soybean plants under watered and water-stressed conditions.

*Bradyrhizobial* strains exhibit better survival and nodulation protection in addition to conferring competitiveness to host legumes grown under abiotic stress. The effects of moisture stress were reduced in soybean inoculated with strains of Rtx-producing *Bradyrhizobium* spp., as these strains improved plant growth parameters and resulted in the highest biomass accumulation under water-stressed conditions in murum rich soil. A part of this research finding was published in high impact journal called "Scientific Reports" published by Nature group of publishing (Scientific Reports 7, Article number: 6958 (2017)

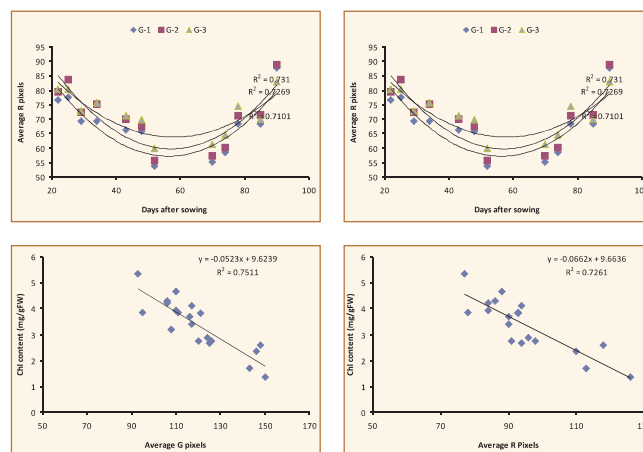


Inoculation effect of Rtx and non-Rtx bradyrhizobial strains on root nodulation in soybean plants under watered and water-stressed conditions

## Investigation of traits and genes associated with resilience to moisture stress in soybean

RGB Image based method has been developed to quantify chlorophyll content in soybean leaves. Chlorophyll content measured in soybean canopy was in the range of 0.41 to 5.71 mg g<sup>-1</sup> FW. When it regresses with different pixels obtained after image analysis, significant negative association was found in actual chlorophyll content to average R and G pixels in visible images. Soybean plot images were captured frequently to understand the distribution of chlorophyll content among the soybean groups. Results indicate that in all the three groups at pixel values of R and G reached its peak at mid growth

stage (R4-R6 stage) and became lower and at further later stage these pixel count increases. It shows less chlorophyll content at initial and later growth stage and more chlorophyll content at mid/reproductive stages. Chlorophyll content in leaves was higher in Group 1 than in Group 2 and 3. This indicates that image analysis based colour pixels can be used to estimate the chlorophyll content in the leaf of soybean.



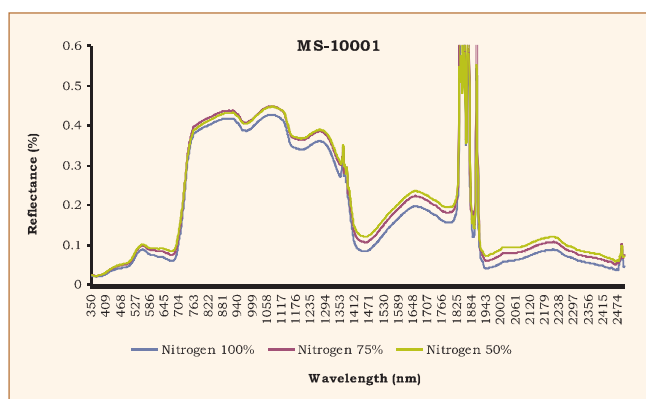
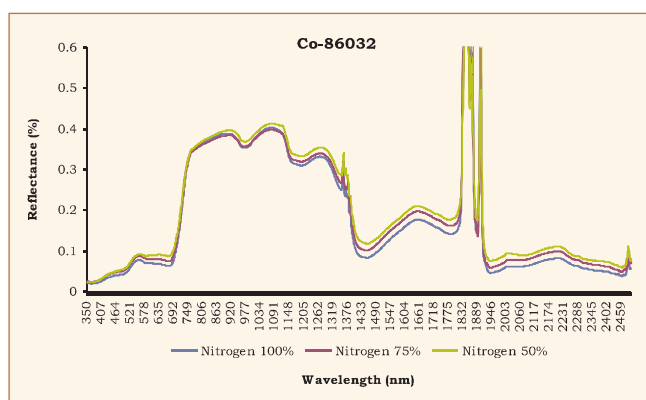
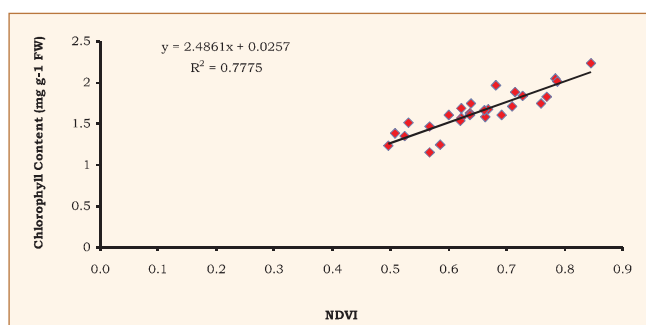
Relationship between chlorophyll content and average R (a) and G (b) pixels in soybean leaves and variation in R and G (c, d) pixels at different days after sowing (DAS)

## Characterizing sugarcane responses to abiotic stresses through hyperspectral remote sensing

Characterizing sugarcane responses to biotic and abiotic stresses through hyperspectral remote sensing was conducted at latitude 18°9'17.67"N and longitude 74°30'3.30"E with an objective to characterise sugarcane leaves with respect to its biochemical properties through hyperspectral remote sensing. The experiment consists of two sugarcane varieties i.e. MS-10001 and Co-86032 were exposed to deficit nitrogen and irrigation levels. The deficit nitrogen levels were maintained as 100, 75 and 50% N, while three irrigation levels depend on IW/CPE ratio. The IW/CPE ratio differs according to growth stage of plant. Treatment I1:- 0.75, 0.75 and 0.50, I2:- 0.50, 0.75 and 0.50 and I3:- 0.75, 0.50 and 0.50 IW/CPE at

# Research Highlights

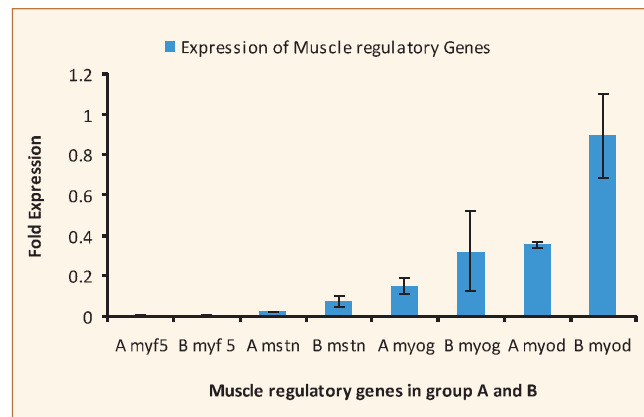
tillering, grand growth and maturity stage, respectively. The result showed that the indices calculated by the spectral data collected using ASD Field Spec 4 spectroradiometer, is showing good coefficient of determination ( $R^2$ ) in relation to the biochemical parameters.



## Diurnal fluctuating water temperature affects growth, myogenic regulatory factor genes, white muscle cellularity and thermal tolerance in tilapia, *Oreochromis mossambicus*

A study was conducted to understand the effect of diurnal temperatures on fish (Tilapia)

growth, muscle gene expression, white muscle cellularity and thermal tolerance. Five day post hatch tilapia larvae were randomly grouped in Group A and group B. Group A of larvae were exposed to environmentally fluctuating temperatures ranged from 25.1°C to 30°C and Group B, 30°C to 36.8°C for a period of 60 days. It was observed that Group B fish grew 11.2% more than Group A. Myogenic regulatory factor genes MyoD, myogenin and Myf5 expression increased several fold along with muscle growth regulatory myostatin gene in fry exposed to higher fluctuating temperature regime in Group B. Further in group B fish Haematoxylin-eosin staining of white muscle morphology exhibited hypertrophic growth. Enhanced thermal tolerance was observed in group B, CTMax of 43.26°C and CTMin of 11.3°C compared to group A, CTMax of 42.62°C and CTMin of 10.2°C.



## Mitigation of drought stress in summer mungbean through climate smart practices in sugarcane-mungbean cropping system

SORF machine was standardized for sowing of summer mungbean as an intercrop in sugarcane with surface retained chopped trash. The results revealed that retention of chopped trash as mulch increased the seed yield of summer mungbean by 4-32% under normal to deficit moisture conditions. Whereas, water stress at flowering, pod

development and at both the stages of summer mungbean resulted in yield penalty of 26, 14 and 45%, respectively as compared to normal irrigated condition. The spraying of thiourea also improved the seed yield of summer mungbean by 6-14% under deficit moisture condition where trash was retained in the field.



Establishment of summer mungbean as an intercrop in sugarcane by using the SORF machine

## Metal assessment of East Kolkata Wetland for safe consumption

A sampling survey was conducted in East Kolkata Wetland (EKW) to assess fish and water quality in terms of metals determination. Soil sediments, water and various fish tissues like liver, gill, muscle, brain and kidney were collected from EKW from 13 different sampling locations. The present study was carried out to delineates the health risk assessment and metals status such as Vanadium (V), Chromium (Cr), Manganese (Mn), Cobalt (Co), Nickel (Ni), Copper (Cu), Zinc (Zn), Molybdenum (Mo), Silver (Ag), Arsenic (As), Selenium (Se), Strontium (Sr), Tin (Sn), Cadmium (Cd), Lead (Pb) and Mercury (Hg) distribution in different fish tissue, soil sediments and water sample from 13 sampling sites of Kolkata Wetland/Sewage fed system. The metals status in soil sediments, water sample and fish tissues viz. muscle, gill, liver, kidney and brain has been well within safe level in reference to recommendation

of different national and international agency. Based on results the fish from Kolkata Wetland are completely safe for human thorough consumption.



## Zeolite based nanocomposite for alleviation of abiotic and biotic stresses in fish or aquaculture

Different forms of zeolites were subjected to trapping of nanosilver and nanozinc particles. Multiple stresses were mitigated using zeolite based nanocomposite and nanosilver based feed formulation; Ag and Zn nano particles bioaccumulated in fish and trapped in zeolite were estimated.



## Convergence of thoughts for Doubling Farmer's Income of Maharashtra

Concerns of farmer's income recently got a new twist with call by Hon'ble Prime Minister to double their income by 2022. As a follow up, ICAR constituted state level coordination committees (SLCCs) to prepare strategy document to complete the task. The meeting of SLCC, Maharashtra was convened by Director, NIASM on April 3, 2017 at Agricultural College Pune and was chaired by VC, MPKV, Rahuri. The meeting was attended by VCs of SAUs, Directors of ICARs, Director of Research and Representatives of SAUs and State Department of Agriculture. Technological options and possible work plan were highlighted in the meeting. Key representatives of the Krishi Vigyan Kendra (KVK) also attended the meeting. This meeting gave an opportunity to collect some of the ground truth related to hurdles in enhancing the farmer's income.

Second meeting of SSC was held on April 27, 2017 at ICAR-NRC Grapes, Pune and was chaired by Shri Deepak Vasant Rao Kesarkar, Hon'ble Minister of State for Home (Rural), Finance & Planning, Government of Maharashtra. The meeting was attended by VC of MPKV,



1<sup>st</sup> State level Coordination Committee meeting (SLCC) on Doubling farmer's income under chairmanship of Dr. K P Vishwanathan, VC, MPKV, Rahuri

Rahuri, Director of Research and Representative of SAUs, Directors of State Departments of Agriculture and Directors of ICAR institutes in Maharashtra. The representative of KVK, Chairman and Director of Natural Sugar & Allied Industries, Osmanabad and Progressive farmers were also present during the meeting.



2<sup>nd</sup> State level Coordination Committee meeting (SLCC) on Doubling farmer's income under chairmanship of Shri Deepak Vasant Rao Kesarkar, Hon'ble Minister of State for Home (Rural), Finance & Planning, Govt. of Maharashtra.

## Introduction of indigenous goat, buffalo and improved poultry breeds

A low cost livestock experimentation facility developed at ICAR-NIASM being used for housing various indigenous breeds of goat, buffalo and improved breeds of poultry. In poultry unit two improved backyard poultry breeds viz. Srinidhi and Grampriya have been



Murrah buffalo breed

housed. The eggs have been popular among the nearby villages for hatching under backyard conditions.

The goat shed constructed is being used for housing and stall feeding three different indigenous breeds of goats. The unit was started with Osmanabadi goats and now two other native Indian goat breeds viz. Konkan kanyal and Sangamneri goats also housed for research purpose. The buffalo unit is housing four high quality Murrah buffaloes and two calves.



Konkan kanyal goat breed



Srinidhi poultry breed



Grampriya poultry breed



## Major events

### Foundation Day

ICAR-NIASM celebrated its 9<sup>th</sup> Foundation Day on April 13<sup>th</sup> 2017. Padma Vibhushan Shri Sharadchandraji Pawar, Hon'ble Member of Parliament, Rajya Sabha and Ex-Union Cabinet Minister for Agriculture and Food Processing Industries was the Chief Guest. Mrs. Supriyatai Sule, Hon'ble Member of Parliament, Baramati; Shri Sunil Kumar Singh, Additional Secretary and Financial Advisor (DARE/ICAR), New Delhi; Mrs. Pournima Taware, President, Baramati Municipal Council; Mrs. Rohini Taware, Member,

Zila Parishad, Pune; Special guest Dr. R. K Pal, Director, NRC pomegranate, Solapur; Directors of NRC-Grapes, Pune; DFR, Pune; DOGR, Pune and farmers were present on the occasion of Foundation Day.

On the occasion of Foundation Day, 17 progressive farmers were felicitated for their contribution in agriculture, dairy, and horticulture. Twenty two publications including 14 Technical folders, 5 Technical bulletin, ICAR-NIASM Newsletter (April-September 2016), a Data book along with CD, and Proceedings of Expert

# Major events

Consultation Meeting held during 30-31<sup>st</sup> January, 2017 were released on the occasion.



Celebration of 9<sup>th</sup> Foundation of ICAR-NIASM, Baramati

## Programme on integrated farming for improving livelihood of Tribal farmers at Navapur {Scheduled Tribe Component (STC)}

Programme on integrated farming for livelihood improvement of tribal farmers as part

of Tribal Sub-Plan (TSP) was organized on 14<sup>th</sup> May 2017 at Navapur and Nandurbar. Hon'ble Member of Parliament from the Nandurbar constituency Dr. Heena Gavit addressed a gathering of more than 700 farmers and appreciated the work done by ICAR-NIASM at Nandurbar district for implementation of improved technological interventions in integrated farming, which led to higher production/marketable yield of rice, sugarcane, onion, banana, baby corn, milk, and fish. She also asked farmers to follow soil health card based fertilizer recommendations, disseminated by the Institute. Hon'ble Member of Legislative Assembly of Nandurbar, Dr Vijaykumar Gavit, has applauded ICAR-NIASM for distribution of inputs for livelihood improvement of Tribal farmers of various villages of Nandurbar District



Farmer-Scientist interaction under Scheduled Tribe Component (STC) programme

as part of TSP. Prof. Narendra Pratap Singh, Director, ICAR-NIASM appreciated farmers for adopting integrated farming in field and horticulture crops, dairy, poultry and fish farming, integrated agri-aquaculture and urged tribal farmers to take up additional farming activities, improved technology interventions in Goat farming as backyard enterprise and dragon fruit cultivation as kitchen gardening. Dr. K. K. Krishnani, Chairman-TSP implementation Committee briefed about TSP program of the Institute on the activities related to successful implementation of improved technology interventions in integrated farming, soil health assessment/card based fertilizer recommendation, inputs distributed and training programmes/exposure visits/field day conducted. Dr N. P. Kurade, member-TSP implementation committee, described the advantages of backyard poultry farming, apart from dairy and subsequently, distribution of inputs to tribal farmers was facilitated.

### International Yoga Day Celebration

The 3<sup>rd</sup> International Day of Yoga was celebrated at ICAR-NIASM on 21<sup>st</sup> June 2017 by following the Common Protocol published by Ministry of AYUSH, Govt. of India. All staff members along with the Director, ICAR-NIASM, attended the session. The program started with the recorded message of Hon' Prime Minister Sh.



Narendra Modi, Hon' Minister for External Affairs and Hon' State Minister for AYUSH, Govt. of India. This was followed by an introduction to Yoga and the Prayer. All the attendee performed Yoga practices like Asanas, Pranayama, Dhyana, etc. with overwhelmed enthusiasm.



Celebration of International Yoga Day at ICAR-NIASM, Baramati

### Farmers meet at Khandala

Prof. Narendra Pratap Singh, Director, ICAR-NIASM along with the team of scientists Dr. K. K. Krishnani, Dr. Yogeshwar Singh, Dr. D. D. Nangare and Dr. R. L. Choudhari visited Andhori, Waghoshi and Bhadvade villages in Khandala tehsil and participated in farmers meet at Bhadvade village on June 25, 2017. Director, NIASM addressed the farmers and suggested to avail benefits of the various schemes of NABARD and RKVY for farmers.

## Major events



Scientists-Farmers Interaction during Farmers meet at Khandala

### Workshop for sugarcane growers

It is essential to address mitigation and adaptation options to cope up with climate change in sugarcane as it is a major contributor to national bioeconomy. Therefore, a two day Workshop on “Challenges and Opportunities in Sugarcane Cultivation under Changing Climatic Scenario” for sugarcane growers was organized during July 10–11, 2017 by the ICAR-National Institute of Abiotic Stress Management, Malegaon, Baramati. Mrs. Supriya Sule, Hon’ble Member of Parliament, Baramati was the Chief Guest on this occasion. In her inaugural address, she emphasized that collective efforts of all the stakeholders (scientists, farmers, policy makers, sugar industrailists etc.) are needed to tackle challenges like poor sugar recovery, lower cane and water productivity, deterioration of soil health, increasing production cost and to bring dynamism in the sugar industry. Shri. Rajendra Pawar, Chairman, Agriculture Development Trust, Baramati, Shri. Purushottam Jagtap, Chairman, Shree Someshwar Sahakari Sakhar Karkhana Ltd., Someshwar, Dr. A.D. Pathak, Director, ICAR-Indian Institute of Sugarcane Research, Lucknow and Dr. K. K. Singh, Head-Agri Services, Zuari Agro Chemicals Ltd., Pune were guests of honour on this occasion. Prof. Narendra Pratap Singh, Director, ICAR-National Institute of Abiotic Stress Management, Malegaon, Baramati briefed the issues and



challenges in sustainable sugarcane production under the changing climate scenario.

The workshop was attended by more than 350 progressive farmers of Maharashtra. Officers from State departments and KVK, Baramati, representatives from nearby sugar factories and various government and private organizations were also present.



Workshop for Sugarcane growers at ICAR-NIASM, Baramati

### Training on “Phenomics: Perspectives for application in improvement of abiotic stress tolerance in crop plants”

A short training course on plant phenomics was organized at ICAR-NIASM from 20-29 July, 2017 for scientists working on abiotic stresses in different crops. The training was sponsored by Education Division of ICAR. The objectives of the short course was to update the scientists of ICAR

institutes, SAUs and CUs/DUs about ‘phenotyping and phenomics concepts and tools’ for abiotic stress tolerance in crop plants and to prepare the trainees as potential contributors for Crop Phenome Database critical 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, low cost phenomics tool. Inaugural lecture was delivered by Dr K.D. Kotate Ex DDG Extension, ICAR and Director of Research, MPKV Rahuri. He advised the participants to make the best use of this training based on state of the art facility available at NIASM, Baramati. Prof. Narendra Pratap Singh, Director, ICAR-NIASM briefed about the genesis of training and institute recent initiatives to carry



Shor-term training on “Phenomics: Perspectives for application in improvement of abiotic stress tolerance in crop plants” at ICAR-NIASM, Baramati

## Major events

forward research and academic activities with the state of art facilities in place. More than 20 lectures were delivered in the area of phenotyping and abiotic stress research by expert from the institute. In addition, there were six online lectures delivered by experts in phenomics from CIMMYT, Mexico, Plant Accelerator, Australia, John Innes Centre, UK and CSIRO, Australia. Dr. Arvind Kumar, Principal Scientist, IRRI, Manila Philippines delivered a lecture on improving drought tolerance in rice.

### 71<sup>st</sup> Independence Day Celebration

Institute celebrated with great enthusiasm the 71<sup>st</sup> Independence Day on August 15, 2017. The Director hoisted the national flag and addressed the staff members on these occasions. In his speech, director appreciated the efforts of the staff in establishing the institute and encouraged the scientist to transfer their technologies to farmers for improving their livelihood.



Celebration of 71<sup>st</sup> Independence Day at ICAR-NIASM

### Summer School training on “Recent Advances in Abiotic Stress Management for Climate Smart Agriculture”

Twenty one days Summer School on “Recent Advances in Abiotic Stress Management for Climate Smart Agriculture” was conducted at ICAR-NIASM during 8-28 September, 2017. Training was inaugurated by Dr A. K. Singh, Vice Chancellor, RVSKVV, Gwalior and valedictory function was chaired by Dr. Mangla Rai, Former Secretary, DARE and DG, ICAR on 28<sup>th</sup> September, 2017. The objective of the training was to update the scientists in the ICAR institutes, SAUs and CUs/DUs about strategies for management of various abiotic stresses in crop plants and animals to meet the challenges of food security. Lectures and practicals by experts in the field of agriculture were included. Twenty seven participants from ICAR Institutes and SAU's comprising ten different states of our country participated in this training programme. During the training programme participants got acquainted with the emerging concepts and approaches for climate smart agriculture and hands on training on various highend equipment like Phenomics, ICPMS, Spectroradiometer, IRGA, UHPLC, AAS, Infrared Camera. Two exposure



visits at MPKV, Rahuri and KVK, Baramati were arranged during the training programme. Nineteen resource persons including Dr. H. P. Singh, Former, DDG Horticulture, ICAR; Dr. O. P. Yadav, Director, ICAR-CAZRI; Dr. Major Singh, Director, ICAR-DOGR; Dr. S. Reddy, Acting Director, ICAR-CRIDA; Dr. V. K. Singh, Head, Division of Agronomy, ICAR-IARI and many others were invited from other Institutes.



Summer School training on “Recent Advances in Abiotic Stress Management for Climate Smart Agriculture” at ICAR-NIASM, Baramati

### Inauguration of Animal Research Farm

Animal research farm was inaugurated on September 28, 2017 by Dr. Mangala Rai, former Secretary DARE and Director General, ICAR. The experimental livestock shed is being constructed by CPWD. This shed can be used for housing 24 large cattle and 15 calves/small ruminants.



Inauguration of Animal Research Farm at ICAR-NIASM, Baramati

### Swachh Bharat Abhiyan

As a part of Swachata Abhiyan, a programme Theme PLASTIC FREE CAMPUS was organised at ICAR-NIASM campus on 29<sup>th</sup> July 2017. All the plastics and other debris accumulated in the campus were removed and the campus was made plastic free.



# Major events

Observed 'Seva Diwas' under the 'Swachhata hi Sewa Hai' campaign at ICAR-NIASM, Baramati on 17<sup>th</sup> September, 2017. In this campaign all the scientists, technical, administrative, contractual staffs, research fellows, young professionals and farm workers from the institute were administered Swachhata Shapath with Director and Senior Administrative Officer and participated in dedicated cleaning and sweeping of the premises of the institute office and farms.



Swachata Abhiyan at ICAR-NIASM Baramti

## Research Advisory Committee Meeting

6<sup>th</sup> Research Advisory Committee Meeting was held during 4-5 September, 2017 at ICAR-NIASM, Baramati. Prof. Narendra Pratap Singh, Director emphasized that the institute has scaled up its infrastructure facilities and logistics to meet the mandate of the institute that includes academic activities to impart training and education on abiotic stress management in agriculture. It was intimated that institute is gearing up to cater the immediate needs of farmers in abiotically stressed agroecologies. While expressing the gratitude for ICAR, Dr. A. K. Sikka, Chairman of RAC appreciated the efforts of the present and past Directors leadership and Scientists of NIASM to establish this unique institute. He added that the present leadership will provide valuable guidance to the scientific staff in research and outreach activities as most of the requisite facilities are available at the institute. Since all the agricultural research institutes are expected to establish meaningful farmers interface, he suggested to make efforts for translating research outputs into developmental outcome. As limited human resource can be a constraint, these issues can be addressed after prioritization and in collaboration with other institutes.

Actions taken on previous recommendations of RAC were presented by Dr. Jagadish Rane. It



was mentioned that institute complied with all the recommendations including the suggestion for scaling up research facilities for livestock and further strengthening the linkages with other institutes for collaborative research. Chairman and members of RAC visited laboratory facilities, experimental field and provided valuable advice.



7<sup>th</sup> RAC meeting of ICAR-NIASM

### हिन्दी पखवाड़ा/हिन्दी दिवस

भारतीय कृषि अनुसंधान परिषद के अंतर्गत राष्ट्रीय अजैविक स्ट्रैस प्रबंधन संस्थान, मालेगाँव, बारामती में राजभाषा हिन्दी के प्रयोग को बढ़ावा देने हेतु हिन्दी पखवाड़ा (14 से 30 सितम्बर 2017) का आयोजन किया गया। हिन्दी दिवस व हिन्दी पखवाड़ा कार्यक्रम का उद्घाटन दिनांक 14 सितम्बर 2017 को अध्यक्ष, हिन्दी दिवस समारोह कार्यक्रम, डा. एच पी सिंह, संस्थापक एवं अध्यक्ष, भारतीय बागवानी संघ संघटन (कंफेडरेशन ऑफ हॉर्टिकल्चर असोशिएशन ऑफ इंडिया), नई दिल्ली तथा मुख्य अतिथि श्री सुरजीत कुमार साह, मुख्य प्रबन्धक, भारतीय स्टेट बैंक, बारामती की उपस्थिति में सम्पन्न हुआ। संस्थान के निदेशक एवं राजभाषा कार्यान्वयन समिति के अध्यक्ष, प्रो. नरेंद्र प्रताप सिंह ने अतिथियों का स्वागत करते हुये अपने सम्बोधन में संस्थान के दैनिक कार्यों में राजभाषा हिन्दी के प्रयोग को बढ़ावा देने का आव्हान किया। इस अवसर पर डा. आर. एल. चौधरी (वैज्ञानिक (सस्य विज्ञान) एवं प्रभारी हिन्दी अधिकारी) ने राजभाषा हिन्दी के प्रयोग को बढ़ावा देने हेतु संस्थान में किए जा रहे प्रयासों व काम-काज का ब्योरा प्रस्तुत किया। हिन्दी पखवाड़ा- 2017 के दौरान कार्यालय में हिन्दी लेखन, हिन्दी टाइपिंग व हिन्दी में बात-चीत को बढ़ावा देने के लिए विभिन्न प्रतियोगिताओं जैसे-हिन्दी टिप्पण लेखन, हिन्दी निबंध

लेखन, अंग्रेजी से हिन्दी में अनुवाद, हिन्दी गायन प्रतियोगिता, कम्प्यूटर पर यूनिकोड में हिन्दी टंकण प्रतियोगिता, हिन्दी सामान्य ज्ञान प्रतियोगिता, हिन्दी गायन, हिन्दी कविता पाठ एवं वाद-विवाद इत्यादि प्रतियोगिताओं का आयोजन किया गया। इसी दौरान हिन्दी के प्रयोग को बढ़ावा देने के लिए 26 सितम्बर 2017 को एक दिवसीय हिन्दी कार्यशाला का आयोजन भी किया गया जिसमें मुख्य अतिथि श्री संजय भारद्वाज, अध्यक्ष-हिन्दी आंदोलन परिवार, पुणे ने संस्थान के सभी कर्मचारियों को सम्बोधित किया। हिन्दी पखवाड़ा कार्यक्रम का समापन एवं पुरस्कार वितरण समारोह 29 सितम्बर 2017 को मुख्य अतिथि डा. वी. चन्द्रशेखर मुरुमकर, प्राचार्य, टी. सी., कॉलेज बारामती की उपस्थिति और डा. जगदीश राणे, प्रभारी निदेशक, राष्ट्रीय अजैविक स्ट्रैस प्रबंधन संस्थान की अध्यक्षता में सम्पन्न हुआ। इस अवसर पर मुख्य अतिथि तथा प्रभारी निदेशक महोदय ने विभिन्न प्रतियोगिताओं में विजयी कर्मचारियों को नकद पुरस्कार एवं प्रमाण-पत्र प्रदान किया। हिन्दी प्रोत्साहन योजना के अंतर्गत गतवर्ष के दौरान राजभाषा हिन्दी के प्रयोग में उल्लेखनीय योगदान देने वाले कर्मचारियों को भी नकद पुरस्कार एवं प्रमाण-पत्र दे कर सम्मानित किया।



# Major events



हिन्दी पखवाड़ा/हिन्दी दिवस का भाकृअनुप-राअस्ट्रैप्रसं, बारामती में सफलतापूर्वक आयोजन

## Workshops/Seminar/Symposia/Conference/Training attended

- Dr. Narendra Pratap Singh participated in conference on "Climate change and Agricultural Production-Adaption Crops to Increased Climate Variability and Uncertainty"

Sabour, Bhagalpur, Bihar during 06-08 April, 2017.

- Dr. Narendra Pratap Singh attended Krishi Mela held at Motihari during 17-20 April, 2017.
- Dr. Mahesh Kumar, Scientist (Plant Physiology) and Dr. Neeraj Kumar, Scientist (Fish Nutrition) participated in Krishi Mela in Motihari, Bihar from 15-20<sup>th</sup> April, 2017.
- Dr. K. K. Krishnani participated in the Meeting of State-wise Coordination committee for doubling the farmer's income by 2022 at ICAR-NRCG-Pune on 27<sup>th</sup> April 2017.
- Dr. Narendra Pratap Singh participated in 2<sup>nd</sup> National Seminar cum farmer's fair: 'Pomegranate: Health, growth and prosperity' during 28-30 April, 2017 at NRC pomegranate, Solapur as Member of National Advisory Committee.
- Dr. Narendra Pratap Singh participated in Annual review and planning workshop of the project "Stress Tolerance Rice for Africa and South Asia (STRASA) at Chaudhary Devi Lal National Agricultural Science Complex, Pusa Campus, New Delhi during 01-03 May, 2017.
- Dr. Yogeshwar Singh participated in Annual review and planning workshop of the project "Stress Tolerance Rice for Africa and South Asia (STRASA) at Chaudhary Devi Lal National Agricultural Science Complex, Pusa Campus, New Delhi during 01-03 May, 2017.
- Dr. D. D. Nangare participated in 2<sup>nd</sup> National Seminar cum farmer's fair: 'Pomegranate: Health, growth and prosperity' during 28-30 April, 2017 at NRC, Solapur
- Dr. K. K. Krishnani attended Joint Agresco-2017 on 29<sup>th</sup> May, 2017 held at VNMKV-Parbhani.

- Dr. K. K. Krishnani participated in the Foundation Day and 24<sup>th</sup> Annual General Body Meeting of the National Academy of Agricultural Sciences on 4-5 June, 2017.
- Dr. M.P Brahmane presented research paper entitled “Immunoglobulin M (IgM) response of Tilapia, *Oreochromis mossambicus* to acute thermal stress”, at 29<sup>th</sup> All India Congress of Zoology (29 AICZ) International Symposium on ‘Culture Based Fisheries in Inland Open Waters, International Satellite Symposium on Fish Immunology’ during 9-11 June, 2017 organized at ICAR-Central Inland Fisheries Research Institute, Barrackpore, West Bengal
- Dr. K. K. Krishnani was invited by PDEA-Waghire College, Saswad (Pune) as a chief guest and delivering inaugural lecture at International Conference on Environmental Science, Ecology, Biodiversity, and Climate change on 22<sup>nd</sup> July, 2017.
- Dr. Narendra Pratap Singh attended programme on Research Excellence in Organisations, Administrative Staff College of India, Hyderabad, during 07-09, August, 2017.
- Dr. M.P. Brahmane attended 5 day training programme at Rajiv Gandhi Centre of Aquaculture on “Breeding, seed production and grow-out farming of GIFT Tilapia” from 17-21 August, 2017 at Manikonda, Vijayawada, Andhra Pradesh.
- Dr. Neeraj Kumar attended Training on “Advanced Statistical Techniques in Biometrics” held at ICAR-Indian Agricultural Statistics Research Institute (IASRI), New Delhi from 10th-30<sup>th</sup> August, 2017
- Dr. K. K. Krishnani participated in “Regional Consultation Workshop on Mainstreaming Biodiversity: National Biodiversity Action Plan, National Biodiversity Targets and India’s Sixth National Report to Convention on Biological Diversity” held at Ahmedabad on 8<sup>th</sup> September, 2017.
- Dr. G. C. Wakchaure, Dr. D. D. Nangare, Dr. Bhaskar Gaikwad and Mr. Sunil Potekar participated in PDCC Agro-Expo 2017 exhibition during 9-10<sup>th</sup> September, 2017.
- Dr. R. L. Choudhary, Scientist (Agronomy) participated in the mid-term progress cum review meeting of CRP on CA Project at KAB II (NRM Division), ICAR, New Delhi on 11<sup>th</sup> September, 2017.
- Dr. R. L. Choudhary, Scientist (Agronomy) participated in the International Symposium on “Sugarcane Research Since Co 205: 100 Years and Beyond” at Coimbatore, India during 18–21 September, 2017.
- Dr. G.C. Wakchaure, Mr. Rajkumar, Mr. Lalitkumar Aher, Mr. Sunil Potekar attended Kisan Adhar Sammelan 2017 at MPKV Rahuri from 24-29 September, 2017

### Lectures

- Dr. Yogeshwar Singh delivered lecture on ‘Innovative techniques to obviate edaphic and drought stresses in orchards grown on shallow basaltic soils of Deccan Plateau’ during conference on “Climate change and Agricultural Production-Adaption Crops to Increased Climate Variability and Uncertainty” at Sabour, Bhagalpur, Bihar during 06-08 April, 2017.
- Dr. Narendra Pratap Singh delivered lecture on Farming issues in abiotic stress management in agriculture in Brainstorming workshop on “Emerging Applications of Space Technology

## Major events

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in Agriculture and Allied Sectors at Space Applications Centre, ISRO, Ahmedabad during 28-29 June, 2017

- Dr. K. K. Krishnani delivered invited/resource lecture at Microbiology Department of Shardabai Pawar Mahila College, Shardanagar, Baramati on “Metagenomics for examination of functional genes implicated in bioremediation and stress tolerance” on 26<sup>th</sup> September 2017.
- Dr. R.L. Choudhary, Scientist (Agronomy) delivered a lecture as Resource person in Workshop on “Challenges and Opportunities in Sugarcane Cultivation under Changing Climatic Scenario” at ICAR-National Institute of Abiotic Stress Management, Baramati, Pune during 10-11 July, 2017.
- Dr. R. L. Choudhary, Scientist (Agronomy) delivered lectures as Resource person in Short course on “Phenomics: Perspectives for Application in Improvement of Abiotic Stress Tolerance in Crop Plants at ICAR-National Institute of Abiotic Stress Management, Baramati, Pune during 20-29 July, 2017
- Dr. D. D. Nangare, Scientist (Soil & Water Conservation Engineering) delivered a lecture as Resource person in training on “Phenomics: Perspectives for application in improvement of abiotic stress tolerance in crop plants” held during July 20- 29 July, 2017 at ICAR-NIASM Baramati
- Dr. Ajay K Singh, Sr. Scientist (Agril. Biotechnology) delivered a lecture as Resource person in training on “Phenomics: Perspectives for application in improvement of abiotic stress tolerance in crop plants” held during 20-29 July, 2017 at ICAR-NIASM Baramati
- Dr. R. L. Choudhary, Scientist (Agronomy) delivered lectures as Resource person in 21 days summer School on “Recent Advances in Abiotic Stress Management for Climate Smart Agriculture” at ICAR-National Institute of Abiotic Stress Management, Baramati, Pune during 08-28<sup>th</sup> September, 2017.
- Dr. D. D. Nangare, Scientist (Soil & Water Conservation Engineering) delivered a lecture as Resource person in 21 days summer school on “Recent advances in abiotic stress management for climate smart agriculture” held during 08-28<sup>th</sup> sept, 2017 at ICAR-NIASM Baramati
- Dr. Ajay K Singh, Sr. Scientist (Agril. Biotechnology) delivered a lecture as Resource person in 21 days summer school on “Recent advances in abiotic stress management for climate smart agriculture” held during 08-28 sept, 2017 at ICAR-NIASM Baramati
- Dr. M. P. Brahmane, Sr. Scientist (Biotechnology-Animal Science) delivered a lecture as Resource person in 21 days summer school on “Ways of increasing fish production in an era of climate change” held during 08-28 Sept, 2017 at ICAR-NIASM Baramati





### Award/ Recognition

- Dr. K. K. Krishnani was awarded prestigious membership of the National Academy of Sciences, India (NASI)
- Dr. D. D. Nangare Scientist (Soil & Water Conservation Engineering) was awarded best poster paper entitled “Techniques to obviate drought and edaphic stresses in pomegranate grown on shallow basaltic soils of Deccan Plateau under limited water condition’ in the National seminar cum exhibition fair on Pomegranate for health, growth and prosperity at NRCP, Solapur held during 28-30 April, 2017

- Dr. Yogeshwar Singh, Sr. Scientist (Agronomy) was awarded Young Scientist Award by Society for Advancement of Research on Pomegranate (SARP), Solapur during National seminar cum exhibition fair on Pomegranate for health, growth and prosperity at NRCP, Solapur held during 28-30 April, 2017

### Patent

- Dr. K. K. Krishnani. Quantitative method for detecting a microbial pollutant. Patent Application No 741/DEL/2010. Grant No. 286667. Date of grant 28<sup>th</sup> August 2017.





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Prof. Narendra Pratap Singh, Director, ICAR-NIASM, Malegaon, Baramati- 413 115, Pune (MS), India.  
 Phones : (02112) 254057, 254058 • Fax : (02112) 254056 • Email: [director@icar.gov.in](mailto:director@icar.gov.in)  
 website: [www.niam.res.in](http://www.niam.res.in)

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