





अजैविक स्ट्रैस प्रबंधन समाचार Abiotic Stress Management News July to December 2023



भाकृअनुप- राष्ट्रीय अजैविक स्ट्रैस प्रबंधन संस्थान बारामती, पुणे, महाराष्ट्र ४९३९९७ ICAR- National Institute of Abiotic Stress Management Baramati, Pune, Maharashtra 413115



अजैविक स्ट्रैस प्रबंधन समाचार Abiotic Stress Management News

भाकृअनुप- राष्ट्रीय अजैविक स्ट्रैंस प्रबंधन संस्थान

ICAR-National Institute of Abiotic Stress Management

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PERSONALIA

Editorial Committee

- Dr Sachinkumar S Pawar (Chairman)
- Dr Bhaskar B Gaikwad (Member Secretary)
- Dr Sangram B Chavan
- Dr Gopalakrishnan B
- Dr Vijaysinha D Kakade
- Mr Ravi Kumar
- Dr Aliza Pradhan
- Dr Basavaraj PS

Published By

Dr K Sammi Reddy Director, ICAR-NIASM

From the Director's Desk Greetings from ICAR-NIASM

I am delighted to present the latest edition of the Institute's Newsletter, "Abiotic Stress Management News" featuring the accomplishments and ongoing initiatives at ICAR-National Institute of Abiotic Stress Management, Baramati. The institute is committed to enhancing resilience and sustainability in



agriculture by addressing the challenges posed by abiotic stresses. Factors such as temperature extremes (high or low), water (excess or deficit), and soil (salinity, sodicity, acidity, heavy metal presence, nutrient deficiencies, and toxicity) are increasingly impacting agricultural production and productivity. The institute plays a crucial role in establishing a knowledge base regarding the effects of these stressors on plants, animals, and fish while also developing appropriate technologies for climate-resilient agriculture.

In order to manage abiotic stresses, interdisciplinary research is being done in various areas like, identifying genotypes resistant to abiotic stressors, such as drought, high temperatures, and salinity; evaluating these genotypes in the field, etc. Various new projects and activities were also executed in addition to these. This newsletter has provided snippets of all of these.

As we address the complexities and possibilities within the agricultural sector, the research aspects highlighted in this newsletter represent our institute's dedication to achieving excellence. I express profound appreciation to our committed scientists, collaborators, and staff for their unwavering commitment to advancing the institute's mission. My gratitude extends to the Editorial Board for their earnest work in bringing out this newsletter, as well as to all ICAR-NIASM staff members for their valuable contributions to this edition. I encourage you to delve into the newsletter's content and join us in acknowledging the achievements of ICAR-NIASM.

KSNERRY

(K Sammi Reddy)

RESEARCH HIGHLIGHTS

Identification of floral traits and mechanisms associated with delayed and partial pollination in dragon fruit

Boraiah KM

The extensive cultivation of white-fleshed varieties in India during the initial commercial expansion has led to lower productivity in dragon fruit. Field observations and surveys have revealed that these particular white-fleshed varieties yield a higher proportion of smaller fruits despite occasional larger fruits. The formation of a more significant proportion of smaller fruits was associated with delayed and partial pollination. A series of floral and pollination biology experiments conducted unravelled the traits and mechanisms contributing to delayed and partial pollination in dragon fruit. The data on fruit set, fruit weight, and number of seeds per fruit in different varieties upon stigma isolation at various time intervals after anthesis indicated the delayed and insufficient (due to less number of viable pollen) pollination in white varieties. In the white variety, though, a significant fruit set was observed in the flowers exposed for 12 hrs after anthesis, and then onwards, fruit set was continuously increased in all the sets of flowers whose stigma was isolated at later hours of anthesis till 24 hrs after anthesis. However, there was no significant difference between the fruit set of flowers isolated at 21 and 24 hrs after anthesis and not observed 100% fruit set even at 24 hrs after anthesis. Whereas almost all the flowers isolated at 9 hrs were set into fruits. Differential floral morphological and behavioural traits are linked to the cause of delayed and partial pollination in dragon fruit.

The short and sturdy flower in the white variety is less prone to shaking and is crucial for natural pollination in heterostyly nature flowers. Further, though all the varieties exhibit heterostyly, the distance between stigma and anthers was greater in white varieties than in red varieties, making it difficult for natural self-pollination. Additionally, the continuous opening of the flowers for a longer time and the absence of complete unclasping of shorter stigma lobes in white varieties also contributed to delayed and partial pollination. However, bending of flowers at 2.00 PM on the next day of anthesis (i.e. 18 hrs after anthesis) favours pollination in white-fleshed dragon fruit (*Hylocereus undatus*) varieties so that by that time, pollen viability is reduced to below 50%. Therefore, the deviation of floral morphological and behavioural traits during evolution was linked to the cause of delayed and partial pollination in dragon fruit, particularly in white fleshed varieties.



Figure 1. Differential patterns of flower closing in red and white varieties at 9 AM in the next day of anthesis (13 hrs AA). The flower closed completely in red variety (A), whereas only partially closed in white variety (B). AA-After anthesis.



Figure 2. Sequence of flower bending in white variety starting from 9.00 AM (A), 11 AM (B), 1.00 PM (C) and 3.00 PM (D) on the next day of anthesis.

Screening and identification of waterlogging tolerant pigeonpea genotypes

Basavaraj PS

Two hundred ten pigeonpea genotypes, including germplasm, breeding lines and checks, were screened for waterlogging tolerance at the seed following the procedure stage of seed submergence. Two seeds of each genotype were sown in pots (replicated four times); immediately after sowing, pots were submerged under water (water maintained above 3 cm of pots) in a cement pot for 96 hrs. After stress treatment for 96 hrs, pots were well-drained, kept in the greenhouse and allowed for germination. Of the total screened genotypes, ICP-16309, ICP-7148, ICP-8255, ICP-6845, ICP-6815, ICP-10228, ICP-6370, ICP-10397, ICP-4903, ICP-7869, ICP-7507, NAM-2282 and NAM-314 germinated in all the replications and found tolerant and better than waterlogging tolerant check MAL15.



Figure 3. Screening of pigeonpea at seed stage

Subsequently, the same set of genotypes were screened for waterlogging tolerance at the early seedling stage (21 days after emergence) for about ten days of waterlogging following standard protocol.

Identification of deficit moisture-tolerant cowpea germplasm accessions using the phenomic approach

Basavaraj PS

A total of 48 pigeonpea genotypes including advanced breeding lines, previously identified tolerant lines, germplasms were screened for deficit moisture stress at early vegetative stage (45 days after stress) using plant phenomic facility. There were significant differences between irrigation (control and drought stress), genotypes and Genotypes x Treatment with respect to phenomic parameters such as digital biomass and tissue water content. Among the genotypes, ICPX140203-B-2 recorded significantly higher biomass under stress than checks GRG811, 152 and TS3R. However, genotype IC73959 could retain higher tissue water content than all other tested genotypes.



Figure 4. Genetic variation in digital biomass and tissue water content among pigeonpea genotypes under control and deficit moisture stress treatment

Adventitious root formation contributed tolerance to waterlogging in cowpea varieties

Basavaraj PS

Five elite and popular cowpea varieties, viz., DC15, PL3, PL4, GC3 and RC101, were screened for waterlogging tolerance at the V4 stage (21 days after emergence) for ten days of waterlogging following standard screening protocol. Among the varieties, DC15 and PL4 were found to be tolerant to waterlogging. Waterlogging tolerance in these varieties was associated with rapid formation and an increased number of adventitious roots under ten days of waterlogging stress than other varieties.



Figure 5. Genetic variation for Adventitious Root (AR) formation and Adventitious Root Length (ARL) under waterlogging conditions in cowpea varieties.

Isolation of candidate microorganisms for management of moisture deficit and nutrient stress in different crops of arid and semi-arid tropics

Pal KK

To alleviate moisture- deficit and nutrient- stress in potential (Quinoa, Chia and Dragon fruit) and other major crops like Sugarcane, candidate microorganisms (endophytes and mineral (Zn, K, Mn and P) solubilizing microbes) were isolated (Table 1, Fig. 6), characterized for plant growth promoting traits and are being evaluated both in potted and field conditions. Based on *in vitro* Tricalcium phosphate (TCP) solubilization capacity and seedling bioassay, twenty-seven and five phosphate solubilizers are evaluated in potted and field conditions, respectively, in quinoa.

Table 1. Microbial isolates obtained from different crops for characterization and evaluation

| Crop | Nutrient solubilizers | | | | Endophytes | | |
|--------------|-----------------------|----|----|----|------------|------------------|------|
| | Р | K | Zn | Mn | Root | Stem/ cladode | Seed |
| Quinoa | 26 | 11 | 28 | 7 | 22 | 13 | 11 |
| Chia | 35 | 36 | 18 | 10 | 10 | 13 | 16 |
| Dragon fruit | 49 | 16 | 22 | 25 | 19 | 36 | - |
| Sugarcane | 15 | 18 | 21 | 23 | 311 | 34 | - |





Zn-solubilizing

fungus

P-solubilizing *Pseudomonas* sp.

Zn-solubilizing Pseudomonas fluorescens OZn-1





Figure 6. In vitro germinating seedling bioassay with phosphate solubilizing bacteria in quinoa

Combined effect of drought and heat stress on quinoa (*Chenopodium quinoa*) morphology, physiology and yield

Aliza Pradhan

Quinoa (*Chenopodium quinoa*) is emerging as a promising alternative crop that can adapt to marginal environments characterized by drought,

heat, and various challenges such as rapid population growth and limited resources. However, quinoa plants often face simultaneous exposure to multiple abiotic stresses, including water deficit stress and heat stress, which can severely impact their growth, physiology, and productivity. To study these challenges, a pot experiment was conducted with four treatments: Control (100% FC, 32/20°C), Drought (50% FC, 32/20°C), Heat (100% FC, 36/24°C), and Drought + Heat (50% FC, 36/24°C), each replicated eight times. These stresses were applied at different growth stages (vegetative, flowering, and grain-filling) to assess their impact on quinoa morphology, physiology and yield. Results revealed that drought + heat stress had the most detrimental effect on overall plant growth, development and vield. Morphological parameters viz., plant height, stem girth, leaf area, shoot and root biomass were most affected by stress at the flowering stage and decreased substantially by 33.7, 44.8, 57.3, 65.8 and 73.7%, respectively under drought + heat stress as compared to control. Similarly, physiological parameters drought + heat stress was more detrimental at the grain filling stage and reduced NDVI, membrane stability index (MSI), relative water content (RWC), chlorophyll content and PS-II efficiency by 51.30, 25, 33, 47 and 57%, respectively as compared to control. The stages of flowering and grain filling were crucial for predicting quinoa yield. The most significant reductions in various yield measures were observed during the grain filling stage under drought + heat stress. Panicle length, panicle weight, the number of panicles per plant, and the number of branches per plant all experienced successive reductions of up to 75%, 64.14%, 53.38%, and 49%, respectively, compared to the control.



Figure 7. Effect of treatments on quinoa seed yield (kg ha⁻¹)

Among all treatments, the control group achieved the highest 1000 seed weight of 3.2g. However, during the grain filling stage, the combination of drought and heat stress exhibited the most significant decline (43%) in the 1000 seed weight parameter. Seed yield was substantially reduced under stress conditions, with the combination of drought and heat stress during the grain filling stage leading to a 94% reduction compared to the control.

Green synthesis of silver nanoparticles (AgNPs) from *Parthenium hysterophorus* weed for potential application for drought stress alleviation

Changan SS

Silver nanoparticles (AgNPs) were synthesized through a green method utilizing a plant extract derived from Parthenium hysterophorus. The Parthenium plants were collected from the ICAR-NIASM campus for the experiment. Silver nitrate (AgNO₃) sourced from Himedia was used in the synthesis of AgNPs. The water-soluble phenolics such as caffeic acid, ferulic acid, vanillic acid, anisic acid, and fumaric acid and sesquiterpene lactones, predominantly parthenin and/or hymenin, present in the plant, acted as the reducing agents. Initially, the characterization of these AgNPs was performed using a UV-VIS Spectrophotometer and a zeta/particle size analyzer (Fig. 8). Further characterization will be conducted through techniques like TEM, SEM, FTIR, etc., and their potential for drought stress tolerance will be evaluated.





Collection, conservation and maintenance of vegetable germplasm

Khapte PS

The germplasm of tomato, eggplant and chilli was collected from international, national institute and from local area from 2020-2023. The collected germplasm was purified through self-pollination and maintained in field and greenhouse conditions. The collected germplasm includes wild species of fruiting solanaceous vegetable crops. This germplasm (Fig. 9) is being used for screening for multiple stresses.





Figure 9. Diversity in tomato and chilli fruit shape and size of the evaluated germplasm

Flowering phenology and yield of Chia in relation to various sowing dates and prevailing weather

Harisha CB

To standardize the ideal time of sowing in Chia (Salvia hispanica) the sowing was taken up from 1st July to 1st February at fortnightly intervals. The flowering behaviour and seed yield were recorded to find the suitable sowing window. Flowering stages were recorded per the BBCH scale suggested by Brandan et al., (2019). The results showed that early sowing from July produced more biomass production and took a longer duration for flowering and maturity (130-140 days). This also affects the sowing of regular kharif crops. It was observed that sowing from 15th September to 30th November made the crop mature in less than 100 days. Further, sowing of chia from the first week of August to the first week of September realizes a higher seed yield of 793-811 kg.ha⁻¹. If sown beyond 15th December, it is uneconomical due to partial flowering and low yield. If the sowing delayed, the flower parts converted to vegetative parts due to the prevalence of long-day situations. genetic improvement. However. for two generations of the crop could be achieved if sowing 1st generation on 1-15 July and 2nd sowing on 15-30 November. The positive and significant correlation between growing degree days (AGDD) for flower bud appearance (FBA) and Flowering duration (FD) was observed in chia. FD was positively and significantly correlated with T_{max} , bright sunshine hours (BSH) and pan evaporation (CPE), whereas it negatively correlated with relative humidity (RH) and rainfall (RF) between FBA and completion of flowering. Similarly, the FBA was positively and significantly correlated with T_{min} , RH_{min} and AGDD, whereas negatively correlated with BSH prevailed during sowing to FBA. These results highlighted that high temperature and BSH makes delayed flowering in chia.



Figure 10. Correlation of Flower bud appearance and Flowering duration in chia with weather parameters

Rootstock identified for drought and salinity tolerance in Eggplant

Khapte PS

Rootstock identification for drought tolerance: Eggplant cv. Suraj (SUR) was grafted onto five different wild eggplant species: S. *gilo* (GIL), S. *indicum* (IND), S. *macrocarpon* (MAC), S. *sisymbriifolium* (SIS), and S. *torvum* (TOR). These five rootstocks' performance and non-grafted control were evaluated for under three levels (100%, 80%, and 60% ETc) of deficit irrigation based on crop evapotranspiration from November to May, 2021-22. The eggplant grafted on these rootstocks exhibited better growth, and improved physiological traits, such as leaf RWC, PS II efficiency, chlorophyll content, NDVI, and cooler canopy, indicating their sturdy and tolerant nature. The grafted plants were able to maintain higher root to shoot ratio under water deficit condition compared to non-grafted plants (Fig. 11). The eggplant grafted on S. sisymbriifolium rootstock gave 40% higher and S. torvum rootstocks gave 21% higher yield under water deficit stress (0.6 ETc) over non-grafted in field evaluation. Grafting eggplant on these rootstocks positively enhances the scion variety growth, yield, and water use efficiency in the semi-arid deccan plateau of India.



Figure 11. Comparative performance of grafted and non-grafted plants under control (wellwatered) and water deficit conditions in greenhouse conditions

Rootstock identification for salinity tolerance: The above-mentioned graft combinations and nongrafted control seedlings were planted in pots containing 4 kg of soil. The grafted plant was allowed to establish for fifteen days after transplanting. Following this, salinity treatments were applied at three different levels of saline water concentration (ds.m⁻¹) of ECiw0 (S 1), ECiw3 (S_2), and ECiw6 (S_3). The growth and physio-biochemical parameters were assessed every two weeks. Shoot and root ion uptake and partitioning were studied after 45 days of transplanting. The impact of salinity stress significantly affected the growth and physiology of non-grafted eggplants. Notably, eggplants grafted onto S. macrocarpon (MAC) rootstock exhibited less ion toxicity at ECiw6.0 ds.m⁻¹ compared to non-grafted eggplants (Fig. 12). Those grafted onto S. macrocarpon rootstock maintained higher PS II efficiency, showing reduced chloride uptake by

60% in shoots and 38% in roots compared to nongrafted plants. Additionally, these grafted plants displayed higher potassium uptake, with 52% higher in shoots and 39% higher in roots over nongrafted plants. Consequently, a significantly higher K:Na ratio was maintained in eggplants grafted onto S. *macrocarpon* and S. *torvum* rootstocks under ECiw 6 ds.m⁻¹. S. *macrocarpon* and S. *torvum* rootstocks exhibited a twofold higher K:Na ratio compared to non-grafted eggplants under severe salinity stress (ECiw6). These wild species show potential as rootstocks for enhancing salinity tolerance in eggplants.



Figure 12. Grafted and non-grafted eggplant in different levels of salinity stress treatment

Role of dietary quinoa husk (*Chenopodium quinoa*) for gene regulations for growth and immunity against multiple stresses in *Pangasianodon hypophthalmus*

Neeraj Kumar

The quinoa (Chenopodium quinoa) husk (the waste material of quinoa) was used to prepare fish feed by replacing fish meal. Six isonitrogenous diets (30%) and isocaloric diets were prepared by replacing fish meal with quinoa husk (containing 25% protein) at different percentages: 0% quinoa (control), 15%, 20%, 25%, 30%, and 35%. The formulated feed was also assessed for gene antioxidative regulation related to status. immunity, stress proteins, growth regulation, and stress markers. The gene regulation of sod, cat, and gpx in the liver was noticeably upregulated with concurrent exposure to ammonia, arsenic, and high-temperature (NH₃+As+T) stress. However, quinoa husk at 25% downregulated sod, cat, and gpx expression compared to the control group. Moreover, genes related to stress proteins HSP70 and DNA damage-inducible protein (DDIP) were significantly upregulated in response to stressors (NH₃+As+T), but quinoa husk at 25% considerably downregulated HSP70 and DDIP to mitigate the impact of stressors. Growth-responsive genes such as myostatin (MYST) and somatostatin (SMT)

were remarkably downregulated, whereas growth hormone receptor (GHR1 and GHR β), insulin-like growth factors (IGF1X, IGF2X), and growth hormone gene were significantly upregulated with quinoa husk at 25%. The gene expression of apoptosis (Caspase 3a and Caspase 3b) and nitric oxide synthase (iNOS) were also noticeably downregulated with quinoa husk (25%) when reared under stressful conditions. Immune-related gene expression, including immunoglobulin (Ig), toll-like receptor (TLR), tumor necrosis factor (TNF α), and interleukin (IL), also strengthened fish immunity with quinoa husk feed. Interestingly, the results of the present study revealed that replacing 25% of fish meal with quinoa husk could improve the gene regulation of *P. hypophthalmus* involved in mitigating ammonia, arsenic, and hightemperature stress in fish.

■TLR-L ■Ig-L





A

NEW INITIATIVES

Initiation of B.Sc. (Hons.) Agriculture programme at IARI-NIASM, Baramati Hub

The B.Sc. (Hons.) Agriculture program was started at IARI-NIASM, Baramati Hub, under the umbrella of ICAR-Indian Agricultural Research Institute, New Delhi. The first semester of B.Sc. (Hons) Agriculture for the academic year 2023-24 commenced on 28th November 2023. A total of 21 UG students belonging to different states (Bihar, Kerala, Telangana, Andhra Pradesh, Himachal Pradesh, Madhya Pradesh, Arunachal Pradesh and Jharkhand) were admitted at IARI-NIASM Baramati Hub.



Memorandum of Understanding between ICAR-NIASM and Ambronics Pvt. Ltd., Parbhani

An MoU was signed between ICAR-National Institute of Abiotic Stress Management (NIASM), Baramati and Ambronics Pvt. Ltd., Parbhani on 4th December, 2023 to evaluate pot for alleviating drought stress in vegetable crops. Dr K Sammi Reddy, Director ICAR-NIASM, Baramati chaired the MoU meeting. Mr Swapnil Ambure, CEO, Ambronics Pvt. Ltd., and Mr Sagar Ambhure attended the MoU meeting. Dr K Sammi Reddy, Director ICAR-NIASM, underscored the adverse impact of drought stress on horticultural crops and engaged in discussions concerning the execution of the project. The primary objective of the contract research project is to evaluate the effectiveness of the Ambronics pot in mitigating drought stress during initial trials, with a specific focus on tomato cultivation.



MAJOR EVENTS

Inauguration of "Pre-examination Training for LDA&A Examination"

The inauguration of "Pre-examination Training for LDA&A Examination (20th July to 6th October 2023)" was held at ICAR-NIASM, Baramati, on 20th July 2022. The programme was attended by more than 300 registered participants from various institutes of ICAR across India through a virtual platform. A brief introduction about the training programme was given by Dr SK Das, Course Director and Chief Finance & Accounts Officer of ICAR-NIASM, who highlighted the importance and uniqueness of the training programme and the pedagogy to be followed during the training sessions by involving subject matter experts, seniors, master trainers within and outside of ICAR system. The Guests of Honors viz., Mr SK Pathak, Senior Comptroller, IVRI, Izatnagar, Mr DD Verma, Senior Comptroller, IARI, New Delhi and Mr Rajeev Lal, Joint Secretary (Administrative & Technical Services), ICAR, New Delhi, graced the inaugural programme virtually and accentuated the importance of the programme and the benefits that the participants are going to get from the training program. Mr Lal underlined that, as no LDA&A examination has been conducted after 2014, the training course will help the trainees with all the necessary preparations. Dr K Sammi Reddy, Director, ICAR-NIASM and Chief Guest of the programme, stressed the intricacies of good governance that are being followed in the ICAR.



Distribution of Tractor to Scheduled Caste Selfhelp group under DAPSC 2023-24

A programme was organized by the institute to hand over the tractor to the Scheduled Caste selfhelp group namely, Shiv Parvati Mahila Bachat gat, Kadethan, Tal. Daund on 21.07.2023. The tractor was handed over by Dr Sammi Reddy, Director, ICAR-NIASM, to the self-help group's chairperson. Director, ICAR-NIASM advised the group to best utilize the tractor for the livelihood upliftment of the group. Dr BB Gaikwad, briefed the group about the functioning and further maintenance of the tractor. Dr AV Nirmale and Dr NP Kurade informed the group about how to best utilize the provided input for the benefit of the group. Dr SS Pawar (Member Secretary), Dr Aliza Pradhan (Member) besides Heads of schools Dr AK Singh, Dr KK Pal, Dr DD Nangare and Dr Kochewad were also present during the function.



Field day-cum-Farmers Scientist interaction meet on "Awareness about DAPSC programme and need assessment" under DAPSC 2023-24

ICAR-NIASM, Baramati, organized a field dayscientist interaction meet cum-farmers on "Awareness about DAPSC programme and need assessment" under DAPSC 2023-24 scheme on 26th July 2023 at Karanje village of Baramati Tehsil, Dist. Pune. Dr AV Nirmale welcomed participants from the village for the programme. Dr DD Nangare provided information about the institute's various activities. Dr NP Kurade briefed about the DAPSC scheme of the Government of India and various interventions/activities carried programme for individual out under the beneficiaries and self-help groups. Dr AV Nirmale and Dr BB Gaikwad were briefed about various success stories that emerged under the DAPSC programme through the interventions carried out by the institute. All DAPSC committee members interacted and responded to the queries raised by the beneficiaries about the scheme. More than 60 beneficiaries participated in the programme.



MANAGE and ICAR-NIASM collaborative online Training program

The training programme on "Abiotic Stress Management in Agriculture for Enhancing the Farmer's Income with Special Reference to Natural Resource Management" was conducted virtually at ICAR-NIASM, Baramati, from 01-06 August 2023. The National Institute of Agricultural Extension Management (MANAGE), Hyderabad, sponsored the training programme. Dr K Sammi Reddy, Director, ICAR-NIASM, inaugurated the training programme on 8th January 2023. The objective of the training was to upgrade the knowledge of researchers working on abiotic stress impacts, management and mitigation, create awareness of abiotic stress management to enhance farmer's livelihood and well-being in scarcity zones. This training targeted senior and middlelevel extension functionaries from the Department of Agriculture and other line departments involved in this sector. Faculty from ICAR institutes, SAU, KVKs, other research organizations, SAMETIs, and NGOs across the country participated in the programme.



Celebration of 77th Independence Day

The institute celebrated 77th Independence Day on 15th August 2023. All the Scientists, Technical, Administrative, Senior Research Fellows, Young Professionals and supporting staff attended the function. The celebration started with the flag hoisting by Director, Dr K Sammi Reddy. In his speech, the director highlighted the day's importance and expressed gratitude to all those who contributed to the national development.



Abiotic Stress Management News अजैविक स्ट्रैस प्रबंधन समाचार

Inauguration of Malad Research Farm

ICAR-NIASM research farm is standing on a hard basaltic rock with very shallow 'murum' soil. Therefore, a farm representing black cotton soil has been established at Village Malad, which is about 15 Km away from the main campus. The development of the farm has been going on for the last five years with simultaneous crop cultivation. A farm pond was developed for supplementary irrigation during canal closure. Also, a drip irrigation system with a solar pump has been laid and operated. The boundary line fencing and main gate installation have also been completed. Dr Himanshu Pathak, Secretary, DARE and DG, ICAR inaugurated the Malad farm on 22nd August 2023. Dr SKChaudhari, DDG (NRM), Dr K Sammi Reddy, Director, ICAR-NIASM, Baramati, Dr PL Patil, VC, UAS, Dharwad and Directors from other institutes were present during the inauguration of Malad Research Farm. All the dignitaries visited the farm experiments and expressed satisfaction with the developments during the short period. Tree plantation was also done by the dignitaries on the occasion.



Inauguration of Shivdhara Water Treatment Plant

The 'Shivdhara' Water Treatment Plant at ICAR-NIASM Residential Complex, MIDC Baramati was inaugurated by Dr Himanshu Pathak, Secretary, DARE & Director General, ICAR, New Delhi, in the presence of Dr SK Chaudhari, DDG (NRM), Dr K Sammi Reddy Director, ICAR-NIASM on 22nd August 2023. Dr PL Patil, Vice Chancellor, UAS, Dharwad, Directors from other ICAR institutes, Er. Varad Salke, Executive Engineer (Civil) Central Public Works Department (CPWD) Pune, Dr DD Nangare OIC (Works), Shri Charles Ekka, CAO, Dr Sunil Kumar Das, CFAO and members of the works committee, ICAR-NIASM were present during the inauguration of Shivdhara Water Treatment Plant.



Organization of National Seminar on Millets

To commemorate 'The International Year of Millets 2023', a National Seminar on "Abiotic stress management for sustainable millet-based production systems" was organized at ICAR-NIASM, Baramati, from 22-23 August 2023.



The primary aim of the seminar was to make strategies for regaining the old glory of millets, the traditional nutritious and nutrient-rich food of India, by popularizing and promoting the cultivation of millets in abiotic stress conditions enhanced productivity, branding with and marketing products nationally and internationally. The seminar was jointly organized by the Society for Agricultural Research on Abiotic Stresses (SARAS). This seminar was inaugurated by Dr Himanshu Pathak, Secretary DARE and Director General, Indian Council of Agricultural Research (ICAR), New Delhi and was attended by about 400 delegates across 16 states. DDG (NRM), Dr SK Chaudhari, was the special guest on the occasion. Dr SR Gadakh, VC, PDKV, Akola; Dr PL Patil, VC, UAS, Dharwad; Shri Rajendra Pawar, Chairman, ADT, Baramati were the Guests of Honours. Dr K Sammi Reddy, Director, ICAR-NIASM, Baramati, formally welcomed all the dignitaries and highlighted the importance and need of the seminar in the context of the importance of millets and the need to harness the benefits from millets to ensure food, nutritional and environmental security. Shri Rajendra Pawar, Agricultural Chairman. Development Trust. Baramati also addressed the delegates. Dr PS Patil, VC, UAS, Dharwad addressed the gathering. He expressed his concerns about the frequency and intensity of extreme events in agriculture and their effect on productivity. He also emphasized that the millets are best suited for poor soil and abiotic stress conditions. Dr SR Gadakh, VC, PDKV, Akola congratulated institute for organizing this seminar. He highlighted the importance of different management practices for enhancing the productivity of millets. Dr SK Chaudhari, DDG (NRM) emphasized the need to develop highvielding varieties and matching production and protection technologies to enhance productivity. Dr Himanshu Pathak emphasized the importance of enhancing production by improving acreage and productivity of millets in the mainstream of crop production to harness the enormous health benefits owing to their richness in nutrition and minerals besides being climate-smart crops for arid and semi-arid tropics. He further highlighted the efforts of the Government of India in promoting millets to ensure its health benefits for all. He emphasized that the seminar will provide a unique opportunity showcase India's potential in science-led to development of millet production on global platform.



Distribution of Onion Transplanter to Scheduled Caste Self-help group under DAPSC 2023-24

The institute organised a programme to hand over the "Onion transplanter" to the Scheduled Caste self-help group, namely, Padmavati Mahila Bachet Gat, Waysewadi, Tal. Karjat on 22nd August 2023. The Onion transplanter was handed over by Dr Himanshu Pathak, Secretary DARE and Director General, ICAR to the chairperson of the self-help group. Dr Sammi Reddy, Director, ICAR-NIASM advised the group to best utilize the Onion transplanter for the livelihood upliftment of the members of the group. Dr BB Gaikwad, briefed the group about functioning, benefits and further maintenance of the Onion transplanter. Dr PL Patil, Vice Chancellor, UAS, Dharwad; Shri Rajendra Pawar, Chairman, ADT, Baramati; Heads of schools; Chief Administrative Officer Mr Charles Ekka; Chief Finance and Accounts Officer

Dr SK Das, Mr Nilesh Nalawade, CEO, ADT and Dr Vivek Bhoite, KVK Baramati were also present during the occasion. The DAPSC Implementation Committee members coordinated the programme, namely, Drs NP Kurade (Chairman), SS Pawar (Member Secretary), DD Nangare, AV Nirmale, BB Gaikwad, SB Chavan, VD Kakade, Aliza Pradhan, Rajkumar and Ravi Kumar.



हिन्दी पखवाड़ा समारोह २०२३

राजभाषा हिंदी के प्रगामी प्रयोग को बढावा देने हेत् भाकअनूप-राष्टीय अजैविक स्टैस प्रबंधन संस्थान द्वारा 14 सितम्बर से 29 सितम्बर के दौरान हिंदी पखवाडा का आयोजन किया गया। हिन्दी दिवस तथा हिन्दी पखवाडा का उद्घाटन राजभाषा कार्यान्वयन समिति के अध्यक्ष डा के सम्मि रेड़ी, निदेशक, राअस्ट्रैप्रसं के मार्गदर्शन में 14 सितम्बर को किया गया। उद्घाटन समारंभ में मख्य अतिथि के रूप में डा चंदा निंबकर (निदेशक, पशपालन विभाग, निंबकर कषि अनसंधान संस्थान, फलटण) मौजद रहे। उन्होने संशोधन संस्थानों में राजभाषा हिन्दी का महत्व के बारे उपस्थित सभी को अवगत किया। इसके बाद हिन्दी पखवाडा में हर दिन विविध प्रतियोगिताओंका जैसे कि. हिन्दी निबंध लेखन. टिप्पण एवं प्रारूप लेखन, टंकलेखन, स्वरचित काव्यपाठ, वाद-विवाद, आशुभाषण, प्रश्नोत्तरी आदि प्रतियोगिताओंका आयोजन किया गया। जिसमे संस्थान के सभी सदस्यों ने बढ-चढकर हिस्सा लिया और प्रतियोगिताए सफल बनाई। हिन्दी पखवाडा समारोह के दौरान संस्थान में हिंदी भाषा के रुझान हेतू 27 सितंबर 2023 को हिन्दी कार्यशाला का आयोजन किया गया। इस कार्यशाला में डा प्रवीण तावरे, सहायक, मुख्य तकनीकी अधिकारी, भाकृअनुप-राअस्ट्रेप्रसं, बारामती ने "योग: समग्र व्यक्तिगत विकास का राजमार्ग" इस विषय पर उपस्थित सभी को प्रशिक्षित किया। इस कार्यशाला का संस्थान के सभी कर्मचारियों ने प्रत्यक्ष रूप से लाभ लिया। हिन्दी पखवाडा समारोप एवं पुरस्कार वितरण समारंभ का आयोजन 29 सितम्बर को संस्थान के सरदार पटेल सभागार में किया गया। डा के सम्मि रेड्री, निदेशक एवं अध्यक्ष राजभाषा कार्यान्वयन समिति, राष्टीय अजैविक स्ट्रैस प्रबंधन संस्थान, बारामती, डा प्रवीण राव (कुलपति, प्रो. जयशंकर तेलंगाना राज्य कृषि विश्व विद्यालय), डॉ एस डी सावंत, (पूर्व कुलपति, बाळासाहेब सावंत कोकण कृषि विद्यापीठ, दापोली), डा जी राजेश्वर राव (पूर्व निदेशक, उष्ण कटिबंधीय वन अनुसंधान संस्थान, जबलपुर), डा ईश्वर पवार (विभागाध्यक्ष, चांदमल ताराचंद बोरा कॉलेज, शिरुर) इन्होंने कार्यक्रम की शोभा बढाई। समापन समारोह में उपस्थित मान्यवरों ने प्रतियोगिता विजेताओंको पुरस्कार प्रदान करके सम्मानित किया। मुख्य अतिथि ने राजभाषा के रूप मे हिन्दी का महत्व सभी को अवगत किया। राजभाषा कार्यान्वयन समिति के अध्यक्ष डा के सम्मि रेड्डी जी ने हिंदी भाषा के रुझान के लिए किए गए उचित प्रयास पर समाधान जताया। डा वनिता सालुंखे (सदस्य सचिव, राजभाषा कार्यान्वयन समिति), डा परितोष कुमार, डा प्रवीण तावरे आदि ने कार्यक्रम का आयोजन किया एवं कार्यक्रम को सफल बनाया।



Inplant Training Programme on "Abiotic Stresses in Agriculture, Management Strategies and Engineering Interventions"

ICAR–National Institute of Abiotic Stress Management, Baramati, successfully organized One Month of Inplant Training on "Abiotic Stresses in Agriculture, Management Strategies and Engineering Interventions" from September 4 to October 3, 2023. The main objective of the training program was to sensitize students, particularly those from SAUs, with cutting-edge knowledge in the field of "Abiotic Stresses and their Potential Management Solutions". Total 22 students (UG, PG, and PhD) of different agricultural disciplines including agricultural engineering (17 No.) and horticulture sciences (5 No.) from MPKV, Rahuri and its affiliated Agricultural Engineering Colleges (Paniv and Karad); VNMKV, Parbhani and IARI-NIASM, Baramati were participated During the course more than 25 lectures and 25 practicals sessions were covered by distinguished resource persons.Hon'ble Chief Guest Dr K. Sammi Reddy, Director ICAR-NIASM, Baramati chaired the valedictory session. He has highlighted the importance of training topic and agricultural engineers' role in alleviating abiotic stresses, particularly in rainfed regions.



11th Research Advisory Committee meeting

11th Research Advisory Committee (RAC) meeting took place on 17th October 2023, under the chairmanship of Dr B Venkateshwaralu, former Vice-Chancellor Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani. Other RAC experts present at the meeting included Dr C Viswanathan, Joint Director, ICAR-Indian Agriculture Research Institute, New Delhi, Dr N Sarangi, Former Director, ICAR-Central Institute of Freshwater Aquaculture in Bhubaneswar, Dr B. B. Barik, Former Director, Vaikunth Mehta, National Institute of Co-operative Management in Pune, Dr DK Pal, Former Principal Scientist at ICAR-National Bureau of Soil Survey and Land Use Planning in Nagpur, and Dr A Velmurugan, ADG (S&WM) from NRM Division, New Delhi. Additionally, Dr PK Ghosh, Director, ICAR-National Institute of Biotic Stress Management, Raipur, was a special invitee for the meeting. Dr K Sammi Reddy, Director, ICAR-NIASM, extended a warm welcome to all the members of the RAC committee and provided an overview of the research and development activities of ICAR-NIASM during the year 2022-23. Dr B Venkateshwaralu, Chairman of RAC, praised NIASM's progress and research achievements. Dr Neeraj Kumar presented the Action Taken Report. Heads of schools presented a comprehensive report on the research and achievements for the year 2022-23. The special invitee, Dr PK Ghosh, discussed about the potential research collaborations between ICAR-NIASM and ICAR-NIBSM. Dr Venkateshwaralu, emphasized the importance of basic and strategic research in abiotic stress, focusing on tolerance mechanisms, research methods and protocols, and intermediary products, including promising strains and stress alleviation options. All the RAC members deliberated upon the various aspects of research programmes and the future research plans of the institute through their insights and vast expertise in their respective domains.



Abiotic Stress Management News अजैविक स्ट्रैस प्रबंधन समाचार

State-Level Joint Workshop on "Commercial Dragon Fruit Cultivation"

One day State Level Joint Workshop on "Commercial Dragon Fruit Cultivation" was organized by ICAR-NIASM and SIILC, Sakal-Agrown Media Group (Pune) at ICAR-NIASM on 19th October 2023, for farmers across Maharashtra. Hon'ble Dr K Sammi Reddy, Director, ICAR-NIASM, inaugurated the event. He focused on the importance of dragon fruit and the role of ICAR-NIASM in promoting such exotic fruit as a key component of crop diversification in water-scarce degraded lands across the country, including Maharashtra. Dr GC Wakchaure gave an overview of the workshop and highlighted the need for scientific research to enhance productivity, quality, promote value addition and export of dragon fruit. Mr. Amol Birari, AGM (SIILC), expressed gratitude to ICAR-NIASM for organizing the workshop. During the technical session, Dr Vijaysingha Kakade expressed his views on dragon fruit production technologies and pollination. Dr Vanita Salunkhe and Mr Rajkumar, briefly discussed the integrated pests, diseases, and insect management in dragon fruit. After this, a Kisan Goshti and dragon fruit orchard visit was organized. Sixty-five farmers, government, and Sakal media group officials participated in the programme.



Valedictory Programme of Special Campaign 3.0 and Awareness Campaign on "Solid Waste Management and Disposal"

As a part of the Valedictory Programme of Special Campaign 3.0 for institutionalizing Swachhata and minimizing pendency in Government offices (2nd October 2023 to 31st October 2023) ICAR-NIASM, Baramati organized an Awareness Campaign on "Solid Waste Management and Disposal" on 31.10.2023 at Malegaon Khurd. The program commenced with the garlanding of flowers in honour of Sardar Vallabhbhai Patel. Dr K Sammi Reddy, the Director, ICAR-NIASM, Baramati welcomed Smt. Pallavi Balaso Kate, Sarpanch and Shri Vishal Deokate, Deputy Sarpanch as VIPs/guests for the programme. Dr Boraiah KM, Chairman of Swachhata Committee, provided a brief overview of the important events conducted during the Swachhta Hi Seva (15th September 2023 to 2nd October 2023) and Special Campaign 3.0 (2nd October 2023 to 31st October 2023). Dr Paritosh Kumar elucidated various solid waste and wastewater management methods demonstrations. through video The event concluded with Dr K Sammi Reddy, emphasizing the critical role of soil health in agriculture.



Swachhta Hi Seva and Special Campaign 3.0

ICAR-NIASM, Baramati, observed the "Swachhta Hi Seva" Pakhwada from September 15, 2023, to October 2, 2023 and followed by "Special Campaign 3.0" from October 2, 2023, to October 31, 2023. As a part of Swachhta Hi Seva, several events were conducted. On 26.10.2023 all the staff of ICAR-NIASM, Baramati took the Pledge on Single Use Plastic (SUP) ban and Zero Waste which was led by Dr Sammi Reddy, Director, ICAR-NIASM, Baramati. On the 27th September, NIASM staff participated in Shramdaan to clean the roadside/footpaths by collecting plastic waste and uprooting parthenium and other weeds. On 29th September, Dr Paritosh Kumar, delivered a lecture on "Solid and Liquid Waste Management in Agriculture" and demonstrated the technologies related to "Conversion of waste to wealth, safe disposal of all kinds of wastes including farmbased wastes and use of wastewater in Agriculture". On 2nd October, 2023 as part of Gandhi Jayanthi Around 20 staff/ members of the residential colony participated in a one-hour Shramadhan programme at NIASM quarter residential complex to clean roads of residential quarters. The two weeks long Swachhta Pakhwada or Swachhta Hi Seva succeeded with the commencement of one-month Special Campaign institutionalizing Swachhata 3.0 for and minimizing pendency in Government offices from 2nd October, 2023. As a part of this one-month programme, ICAR-NIASM, Baramati organized various events cleanliness drive at schools, labs and farm office. Further distributed dustbins to two newly established UG/PG classrooms. On 31st October 2023 organized an Awareness Campaign on "Solid Waste Management and Disposal" cum Valedictory Programme of Special Campaign 3.0.



Celebrations of Ayurveda Day- 2023

The celebrations of Ayurveda Day 2023 on the theme "Ayurveda for One Health" with tag line of "Ayurveda for everyone on every day" was carried out at ICAR-National Institute of Abiotic Stress Management, Baramati. The main objective of the programmes is to create awareness of Ayurveda among farmers, students and the general public. The programme was organized from 29 September 2023 to 10 November 2023. Various activities were organized during this period, including essay writing on "Ayurveda for One Health" and the identification of medicinal plants for the institute's staff and students. A lecture on 'Ayurveda for wellbeing' and the distribution of medicinal plants took place. Throughout the celebrations, 123 students, 35 farmers, and 52 other members of the public visited the medicinal garden at ICAR-NIASM. A total of 210 visitors acquired information and knowledge about medicinal plants during this period. On Danvanthari Javanti. November 10. 2023, a Special Lecture was delivered by Dr Vanita Kokare, BAMS, Baramati. Dr K Sammi Reddy, Director of ICAR-NIASM, Baramati, emphasized the need for a more focused study on medicinal plants concerning cultivation under abiotic stress for its impact on the quality of herbs. As part of the program, essential medicinal plants for backyards were distributed to the staff, students, and other members of the public for their daily use. The Kadamb plants were planted in medicinal garden by the Director, ICAR-NIASM and other guests.



Vigilance awareness week

ICAR-NIASM observed "Vigilance Awareness Week" from 30th October to 5th November, 2023 with a theme "Say no to Corruption: Commit to Nation. Dr K Sammi Reddy, Director, ICAR-NIASM administered the integrity pledge to all the staff of the institute on the first day. In his inaugural address, the director asked all the staff to be vigilant about their duties. He urged all the staff to strictly follow the principles of Good Governance i.e., Accountability, Transparency and Corruption free in discharging their duties. Dr AK Singh, Vigilance Officer, appraised the staff about the importance of preventive, detective, and punitive vigilance. Dr SK Das, CF&AO delivered a lecture on "The Integrity-as Preventive Vigilance". He talked about various examples of integrity, and integrity at the workplace. Mr. Dayanand Kharat, AAO talked about the "Purchase procedure". To mark the occasion, the Institute also organized various events like "on the spot essay competition" on "My Vision for Vigilant India", a Debate competition on "Vigilance Awareness for Developing Corruptionfree India" and a Quiz competition on "Vigilance and Corruption". Three-month campaign on preventive vigilance measures was conducted from 16th August-15th November 2023. During the 3month campaign on preventive vigilance measures, posters on "Public Interest Disclosure & Protection of Informer Resolution" (PIDPI) were displayed at prominent places. Capacity-building programme for the staff was also organized during the threemonth campaign on preventive vigilance measures.



Celebration of World Soil Day

ICAR-NIASM organized the "World Soil Day-2023" programme under the theme "Soil and Water: A Source for Life" at Sangavi Village, Tehsil- Phaltan, District- Satara on 5th December 2023. About 120 male and female farmers from the village participated in the programme. The programme was chaired by Dr K Sammi Reddy, Director. ICAR-NIASM. Dr NP Kurade. Chairman, DAPSC implementation committee; Dr Nangare DD and Dr Kochewad SA, Heads of Schools and Dr Rajagopal Vadivel, Convenor of the programme and Dr Gaikwad BB, Dr Aliza Pradhan, Dr Kakade VD, and Dr Nirmale AV, members of the DAPSC committee attended the programme. Additionally, the village Sarpanch along with other panchayat members attended the programme. Dr K Sammi Reddy, actively interacted with the farmers, discussed the diverse roles of soils and emphasized the importance of maintaining soil health for both animal well-being and environmental quality. He also distributed soil health cards to 50 farmers of the scheduled caste community, promoting awareness about soil health monitoring. Various agricultural inputs were also distributed to the identified DAPSC beneficiaries from the village.



National Level Pause and Reflect Meetings and Launch of Circular Bioeconomy Innovation Hub

ICAR-NIASM in collaboration with CGIAR institutes in India. International Water Management Institute (IWMI), and Bioversity International, is working on the Nature+ initiative to restore depleted natural resources and to mitigate climate change. This project involves National Bureau of Plant Genetic Resources (NBPGR), New Delhi, Mahatma Phule Krishi Vidyapeeth (MPKV), Rahuri, and Bharatiya Agro Industries Foundation (BAIF), Pune under the CGIAR initiative "Nature+ Positive: Naturepositive solutions" in India. The project is formulated with five different working areas called

work packages (WP): WP1 - Conserve, WP2 -Manage, WP3 - Restore, WP4 - Recycle, and WP5 - Engage. At the outset, Dr K Sammi Reddy, Director, NIASM welcomed Dr H Pathak, Director General, Indian Council of Agriculture Research (ICAR) & Secretary, Department of Agriculture Research and Education (DARE), Gol (virtual) and other delegates i.e. Dr Carlo Fadda, Lever Director (Principal Scientist), Alliance Bioversity-CIAT (ABC) & Initiative Lead (NATURE+), Dr Solomie Gebrezgabher, Senior Researcher, IWMI-Ghana & Initiative Co-Lead (NATURE+), Dr Alok Sikka, Country Representative, IWMI India & Country Focal Point (NATURE+), Dr Jai Rana, Senior Scientist & Country Representative, ABC, and Mr. Bharat Kakade, President & Managing Trustee, BAIF Development Research Foundation, Pune, India. National Level Pause and Reflect Meetings was held from 14-15 December 2023 at the institute. In his welcome address, Dr K Sammi Reddy underscored soil quality and soil resilience in relevance to nutrient management systems and recommended the continuation of the project for a long-term study to visualize clearer and more distinguished results. In his presidential address, the DG, ICAR emphasized the significance of the project for achieving food security under the changing climate and stressed the need to change soil and crop management practices for greater mitigation and adaptation to climate change in agriculture. He successfully launched the Nature+ India documentary and the Circular Bioeconomy Innovation Hub of India Website. The lead and colead of the Nature positive project emphasized the significance of the project under the existing agriculture scenario worldwide as well as in India. The project results were presented for each work package after group discussions.



ICAR Zonal sport meets at IGFRI, Jhansi

ICAR-NIASM, Baramati contingent (16 members) participated in the ICAR Zonal (West Zone) Sport meet at IGFRI, Jhansi during 16-19 December, 2023. The participants were taken part in

individual and team events such as carrom (men and women), chess (men and women), badminton and cricket as team events and in athletics. ICAR-NIASM has received runner up trophy for badminton (men) team event during this sport meet. Mr Sunil Potekar received sixth position in Chess championship (Men) as per Swiss manager tournament rule. Dr DD Nangare was Chief-demission (CDM) for the sports meet.



International Webinar on "Technological Advances and Innovations for Abiotic Stress Management"

ICAR-NIASM, in collaboration with the National Institute of Agricultural Extension Management Hyderabad, organized (MANAGE), an International Webinar on "Technological advances and innovations for abiotic stress management" to showcases technologies developed by the ICAR-NIASM on 27th December 2023. The webinar was a part of MANAGE International Webinar Series, witnessing a remarkable gathering of over 70 participants, including national and international scientists and officials in the field of agriculture. Dr K Sammi Reddy, Director, ICAR-NIASM briefed about the mandate and activities of the institute. He also highlighted ten innovative technologies developed by the institute, shedding light on their potential to combat abiotic stresses in agriculture. Dr Boraiah KM, Senior Scientist, delivered a lecture on "Technological interventions for enhancing the productivity and quality of dragon fruit." The webinar served as a platform to showcase the activities and technologies developed by institute.



हिन्दी कार्यशाला: "अवलोकनीय खगोल विज्ञान"

संस्थान की राजभाषा कार्यान्वयन समिति के द्वारा, शुक्रवार दि. 29 दिसंबर 2023, दोपहर 4.30 बजे से, एक दिवसीय कार्यशाला का आयोजन किया गया। संस्थान के राजभाषा कार्यान्वयन समिति के अध्यक्ष तथा संस्थान के निदेशक की अध्यक्षता में बी पी पाल समिति कक्ष में कार्यशालाका उदघाटन हुआ। कार्यशाला का विषय "अवलोकनीय खगोल विज्ञान" था जिसमें प्रेजेंटेशन दोपहर 4.30 बजे समिति कक्ष में, और आकाशदर्शन शाम 6.30 के बाद खले मैदान में रखा गया था। कार्यशाला के प्रशिक्षक डॉ प्रविण भि. तावरे, तकनीकी अधिकारी ने कुल 31 सहभागीयोंकों खगोल विज्ञान में छिपे आश्चर्यों से अवगत कराया। दूरबीन के सहायता से बृहस्पति और शनि गृहों का दर्शन कराया। बृहस्पति के चाँद और शनि के वलयोंको देखकर सभी अचम्बित हुए। कार्यशाला में आकाश स्थित ध्रुव तारा, मृगशिरा नक्षत्र, सप्तऋषि तारका समूह, आदि के बारे में हिन्दी में अलौकिक जानकारी प्राप्त ह्यी। आकाशदर्शन के बाद शाम 7.30 बजे कार्यशाला का समापन हआ।



Conduct of 3rd meeting of IAEC and annual inspection of animal experimentation facility

The 3rd meeting of Institutional Animal Ethics Committee (IAEC) of ICAR-NIASM, Baramati was conducted on 22.12.2023. the meeting was attended by external CCSEA nominees along with all the internal IAEC members. The committee reviewed the overall activities, use of animals in experiments and the functioning of IAEC for the year 2023. The annual inspection of the facility was carried out by Dr SC Borkar (Main Nominee) and Dr SP Ingle (Link Nominee). The committee also discussed the proposal submitted by the establishment for amendment of registration of institute animal experimentation facility.



Abiotic Stress Management News अजैविक स्ट्रैस प्रबंधन समाचार

LIST OF PROJECTS

Umbrella Projects

- 1. Abiotic Stress Information System (ASIS): Geo-spatial digital maps of multiple abiotic stresses, management options and future scenarios (IXX15659).
- 2. Germplasm Conservation and Management (GCM): Genetic Garden and gene bank for abiotic stress tolerant plants, animals and fisheries for food security and sustainability (IXX15674).
- 3. Model Green Farm (MGF): Environmentfriendly, economically viable, state-ofthe-art model farm for abiotic stressed regions (IXX15700).
- 4. Climate-smart IFS (CIFS): Climate resilient integrated farming system in semi-arid region (IXX15697).

Flagship Projects

- 1. Adaptation and mitigation of atmospheric stress in crops, livestock, poultry and fishes for sustainable productivity and profitability (IXX15676).
- 2. Augmenting farm income in water scarce regions with alternative crops (IXX15656).
- 3. Bio-saline Agriculture: Exploitation of halophytic plant and associated microbiome for amelioration of saline agricultural land of arid & semiarid regions (IXX15657).
- 4. Targeting prospective technologies for abiotic stress resilience in rainfed and dryland region (IXX15699).

Institute Projects

- 1. Wastewater treatment synergizing with integrated approach of constructed wetland and aquaponics (IXX14228).
- 2. Nutrient and gene interaction approaches through nutrigenomics in response to multiple stressor (IXX15014).
- 3. Mitigating water stress effects in vegetable and orchard crops (IXX16553).
- 4. Genomics, genetic and molecular approaches to improve water stress tolerance in soybean and wheat (IXX15660).
- 5. Climate resilient agriculture practices for enhancing food grain production from low soil available water storage capacity areas of Deccan Plateau region (IXX20120).

- 6. Assessing the host-sandalwood interactions under abiotic stressed environment for adaptability & income generation.
- 7. Marginal Quality Water Remediation by Integrated Constructed Wetland and Aquaponics (IXX19881).
- 8. Exploring morpho-physiological, biochemical, and molecular traits in onion and its wild relatives for tolerance to combined waterlogging and anthracnose.
- 9. Pilot Study on multiple abiotic stress mapping for Western Maharashtra (IXX20117).
- 10. Salinity and drought tolerance studies in Mango (Mangifera indica L.) (IXX20121).
- 11. Climate variability, teleconnections and their impact on selected crops of India (IXX20119).

External/Contractual/Consultancy Projects

- 1. Establishment of model herbal garden for medicinal and aromatic plants (OXX4927: Funded by NMPB, New Delhi).
- 2. Development of effective mass propagation technique for rapid multiplication and easy transportation of quality planting material in Bajra X Napier hybrid. (Funded by Department of Animal Husbandry & Dairying under National Livestock Mission)
- Development of Agroforestry Business Models for long term sustainability. (OXX6939: Funded by MITCON Nature Based Solution Ltd, Pune).
- 4. Agri-Drone Project (OXX5501: Funded by Sub-Mission on Agricultural Mechanization, MoAFW, GOI).
- 5. Development of Nano-based delivery system to mitigate arsenic pollution, ammonia and temperature stress on growth and immune related gene expression in fish (OXX5181: Funded by LBS-ICAR).
- 6. Molecular characterization and identification of gene involved in the multiple stresses: Nanomaterial for mitigation (OXX5467: Funded by DST-SERB).
- 7. Conservation Agriculture for Enhancing Resource-use Efficiency, Environmental Quality and Productivity of Sugarcane Cropping System (OXX03355: Funded by ICAR-Consortia Research on Conservation Agriculture Platform).

- 8. Phenotyping of pulses for enhanced tolerance to drought and heat. (OXX01737: ICAR-National Innovation on Climate Resilient Agriculture).
- 9. Climate smart management practices (OXX4928: Funded by IRRI).
- 10. Studies on N-(n-butyl) Thiophosphoric Triamide (NBPT) as a Urease Inhibitor for Improving Nitrogen Use Efficiency in major cropping systems in India (OXX4926: Funded by CIMMYT).
- 11. Efficacy of bio-stimulants in alleviating drought stress in tomato (Solanum

lycopersicum L.) (OXX5500: Funded by Yara Fertilizers India Pvt. Ltd.).

- 12. Investigating the impact of varying nutrient composition on morphometric, physiological and yield traits in Potato. (OXX6276: Funded by Novem Solutions Pvt Ltd, Hospet, Karnataka).
- 13. Atlas of Climate Adaptation in South Asian Agriculture (ACASA): interconnections between climate risks, practices, technologies, and policies. (OXX7240: Funded by Bill & Melinda Gates Foundation, anchored by BISA-CIMMYT).

| Name of staff | Title of Seminar/Workshop/ Symposia/Conference/Training attended | Venue | Organized by | Dates |
|---|--|--|--|-------------------------------|
| Dr K Sammi Reddy | National Seminar on Abiotic Stress Management for Sustainable Millet based Production Systems | ICAR-NIASM, Baramati | SARAS, Baramati | 22-23 August 2023 |
| | XVI Agricultural Science Congress & ASC expo | CMFRI, Kochi, | NAAS, New Delhi | 10-13 October 2023 |
| | VIII Annual Review Workshop of National Innovations in Climate Resilient Agriculture (NICRA) | NASC, New Delhi | NICRA, ICAR- CRIDA, Hyderabad | 8-9 November 2023 |
| | International Conference on Plant Health Management ICPHM 2023: Innovation and Sustainability | PJTSAU, Hyderabad | Plant Protection Association of India, Hyderabad | 15-18 November, 2023 |
| | State level Seminar on "Rejuvenating soil health for food security and agriculture sustainability" | VNMKV, Parbhani | Parbhani Chapter of Indian Society of Soil Science | 21-22 December 2023 |
| | FAI Annual Seminar- 2023 | Pullman Hotel, Aerocity, New Delhi | Fertilizer Association of India, New Delhi | 06-07 December 2023 |
| | Conference on Role of Journalism and Media in Promoting the Climate Smart and Digital Agriculture | Hotel Sheraton, Pune | NAHEP, MPKV, Rahuri | 08 December 2023 |
| Dr AK Singh, Dr DD Nangare & Dr GC Wakchaure | Training Programme on "Enhancing Pedagogical Competencies for Agricultural Education" | NASC, New Delhi | NASC, New Delhi | 31 July to 05 August, 2023 |
| Dr SS Pawar | Workshop on 'Genome editing in farm animals for improved productivity and health' | Online mode | ICAR-NDRI, Karnal | 03 March 2023 |
| | Training Programme on "Next Generation Sequencing and Data Analysis" | Online mode | ICAR-NAARM, Hyderabad | 16-20 October 2023 |
| Dr GC Wakchaure | 57 th ISAE Annual Convention on 'Agri-Food Systems' Transformation through Engineering Innovations and International Symposium on 'Engineering Interventions for Marking Millets a Global Food | UAS, Raichur | UAS, Raichur | 06-08 November, 2023 |

SEMINAR/WORKSHOP/SYMPOSIA/TRAINING ATTENDED

| Dr DD Caikwad | International conference on | Hotal Sharatan | MDKV Doburi | 20 December |
|-----------------------|---|---|--|----------------------------|
| Dr BB Galkwad | Hyperspectral Imaging | Pune | WIPKV, Kanuri | 20 December, 2023 |
| | National Symposium cum Industry Meet (NSIM) 2023 on Agri-business in Alliums: Innovation, Promotion & Sustainability | Maratha Chamber of Commerce, Pune | ICAR-DOGR, Maratha Chamber of Commerce & Agriculture and Indian Society of Allium, Pune | 21 December, 2023 |
| Dr Vanita Salunkhe | Training on Biosecurity and Biosafety: Policies, Diagnostics, Phytosanitary Treatments and Issues | ICAR-NBPGR, New Delhi | ICAR-NBPGR, New Delhi | 04-14 September 2023 |
| Dr SB Chavan | Annual group Meet of AICRP on Agroforestry | PJTSAU, Hyderabad | AICRP on Agroforestry | 16-18 October 2023 |
| Dr Harisha CB | 3 rd International conference cum buyers sellers meet for medicinal plants used in lifestyle products | Online mode | JU and RCFC Eastern region, NMPB, Kolkata | 06-08 December 2023 |
| Dr Neeraj Kumar | Agriculture Science Congress (Display of NIASM Technologies) | Kochi | Agriculture Science Congress, | 09-14 October, 2023 |
| | ICAR Foundation Day (Display of NIASM Technologies) | ICAR, New Delhi | ICAR, New Delhi | 16-19 July, 2023 |
| Dr KM Boraiah | International Webinar on Technological Advances and Innovations for Abiotic Stress Management | Online mode | MANAGE, Hyderabad and ICAR-NIASM, Baramati | 27 December 2023 |
| | International Seminar on Exotic and Underutilized Horticultural Crops | ICAR-IIHR, Bengaluru | ICAR-IIHR, Bengaluru | 17-19 October 2023 |
| Dr Aliza Pradhan | Annual workshop on "AGROTAIN Incorporated Urea Produces with N- TEGRATIONTM Technology for improving N Use Efficiency in Major cropping systems of India" | ICAR-IISS, Bhopal | CIMMYT, India | 26-27 August 2023 |
| | XXII National Symposium of the on "Climate smart agronomy for resilient production systems and livelihood security" | ICAR-CCARI, Goa | Indian Society of Agronomy | 22-24 November, 2023 |
| | One day conference on "Role of journalism and media in promoting the climate smart and digital agriculture" | Sheraton hotel, Pune | CAAST- CSAWM, MPKV, Rahuri | 08 December 2023 |
| | 12 th advanced course on "Conservation agriculture for Asia and North Africa: Gateway for sustainable and climate resilient agrifood systems" | Delhi, MP, Ludhiana and Karnal | CIMMYT, BISA and ICAR-CSSRI, Karnal | 09-24 December 2023 |
| Dr Basavaraj PS | Training on Genomic Tools in Plant Genetic Resource Management | ICAR-NBPGR, New Delhi | ICAR-NBPGR, New Delhi | 18-19 September 2023 |
| Dr PS Khapte | International Plant Phenotyping Symposium – PhenoVeg 2023 | World Vegetable Centre, Taiwan. | World Vegetable Centre, Taiwan | 26 to 27 September 2023 |
| Dr Gurumurthy | Plant Biology 2023 | Savannah, Georgia, USA. | Savannah, Georgia, USA | 05-09 August 2023 |
| | National Conference of Plant Physiology on Physiological and molecular approaches for climate smart agriculture | ICAR-IARI, New Delhi | ICAR-IARI, New Delhi | 09-11 December 2023 |

| Dr Sonam | Sonam Professional attachment training (PAT) | | ICAR-CCARI, Goa | 01 September to 30 November | |
|------------------------|--|----------------|--------------------|-----------------------------|--|
| | | | | 2023 | |
| Dr Nobin | Professional attachment training | ICAR- | ICAR- | 19 October 2023 | |
| Chandra Paul | (PAT) | NBSS&LUP. | NBSS&LUP. | to 17 January | |
| | () | Nagpur | Nagpur | 2024 | |
| Ms Ponnaganti | Professional attachment training | ICAR-NAARM, | ICAR-NAARM, | 28 August to 28 | |
| Navyasree | (PAT) | Hyderabad | Hyderabad | November 2023 | |
| Dr NP Kurade, | Five days training on Pedagogy | NAAS Complex, | NAAS Complex, | 20-24 November | |
| Dr SB Chavan | Development Training Program (3rd) | New Delhi | New Delhi | 2023 | |
| & Dr HM Halli | | | | | |
| Dr | National workshop on "Atlas of | ICAR-CRIDA | ICAR-CRIDA | 21-22 August, | |
| Gopalakrishnan | Climate Adaptation in South Asian | | | 2023 | |
| В | Agriculture" | | | | |
| | National Conference on "Generative | Virtual mode | ICAR-NRCG, | 11-12 September | |
| | AI in Practice for Empowering | | NAAS, & SAVE | 2023 | |
| | Agricultural Research Productivity". | | | | |
| | International Conference on | UAS, Bangalore | RMSI, ICAR- | 2-4 December | |
| | "Feeding the Future Through | | IGFRI & UAS, | 2023 | |
| | Sustainable Eco-Friendly | | Bangalore. | | |
| | Innovations in Rangeland, Forages | | | | |
| | and Animal Science" | | | | |
| Mr Rajkumar | International Conference on "Plant | PJTSAU, | ISPP, New Delhi. | 15-18 November | |
| | Health Management (ICPHM 2023) | Hyderabad | | 2023 | |
| | Innovation and Sustainability" | | | | |
| All Scientific & | National Seminar on "Abiotic Stress | ICAR-NIASM, | SARAS, ICAR- | 22-23 August | |
| Technical Staff | Management for Sustainable Millet | Baramati | NIASM, Agri. | 2023 | |
| | based Production Systems" | | Dept. (GoM), | | |
| | | | KVK Baramati | | |

PERSONALIA Awards

1. **Dr K Sammi Reddy** received Dhiru Morarji Memorial Award (2022-23) of Fertilizer Association of India (FAI), New Delhi by the hands of Sri Mansukh Mandaviya, Union Minister of Health and Family Welfare and Chemicals and Fertilizers of India.



 Wakchaure GC, Gawhale BJ, Bhavani, Pal KK, K Sammi Reddy received Best Poster Award at National Seminar on 'Abiotic Stress Management for Sustainable Millet based Production Systems' held at ICAR-NIASM, Baramati (22-23 August 2023).



3. *Dr SB Chavan* received the ISAF Gold Medal 2022 for outstanding contribution to agroforestry research and development from the Indian Society of Agroforestry, Jhansi at the event held at PJTSAU Hyderabad on 17th Oct 2023.



4. *Dr Aliza Pradhan* received Best oral presentation at XXII National Symposium of the Indian Society of Agronomy on "Climate-smart agronomy for resilient production systems and livelihood security" at ICAR-CCARI, Goa (22-24 Nov 2023).



5. *Dr Gurumurthy S* won third prize at the Plant Biology 2023 Hackathon on "The role of science communication in enhancing the adoption of innovative technologies in agriculture" organized by the American Society of Plant Biologists in Savannah, Georgia, USA.



- 6. *Dr Gurumurthy S* received Best poster presentation award for the poster entitled "Accelerating Genetic Gain in Common Bean (Phaseolus vulgaris L.): Performance Evaluation of Genotypes Across Three Seasons or Generations" during 09-11 December, 2023 held at ICAR-IARI, New Delhi.
- 7. *Dr Sushil S Changan* received Best Paper Award for paper entitled "Utilization of potato waste for production of bioethanol: A novel technology" by Indian Potato Association (IPA) on 30 November 2023.
- 8. Choudhari JD, Wakchaure GC, Gawhale BJ, Aliza Pradhan, Amresh Chaudhary, Singh RN received Best Poster Award at National Seminar on 'Abiotic Stress Management for Sustainable Millet based Production Systems' held at ICAR-NIASM, Baramati (22-23 August, 2023).



- Uthappa AR, SB Chavan, Gopal Ramdas Mahajan, A Raizada, Parveen Kumar received Best Poster Award at National Seminar on 'Abiotic Stress Management for Sustainable Millet based Production Systems' held at ICAR-NIASM, Baramati (22-23 August, 2023).
- 10. Mr Rajkumar received "Budding Innovators Award" in a National Level Krishi Vigyan Vidhi 1.0 Conclave organized by Krishna Vishwa Vidyapeeth, Karad; Jaywantrao Bhosale Krishna College of Agriculture Rethare Bk. & SPPU-Research Park Foundation, SPPU, Pune in Association with Indian Institute of Technology Ropar, Punjab from 08-09 September, 2023.
- 11. *Dr Gopalakrishnan B* received the "Best Oral Presentation" award during International Conference on "Feeding the future through Sustainable Eco-Friendly Innovations in Rangeland, Forages and Animal Science" held during December 2-4, 2023 at UAS, Bangalore.



12. Badminton men's team (Dr H Halli, Dr VD Kakade, Dr Mr AS Morade, Dr SS Changan & Dr Basavaraj) received Runner up trophy during 16-19 December 2023 at ICAR Zonal (West zone) sport meets at IGFRI, Jhansi.



Joinings



Dr AK Singh joined as Head, School of Atmospheric Stress Management at ICAR-NIASM on 16.06.2023 from ICAR-NIASM, Baramati.



Dr Sonam joined ICAR-NIASM on 14.07.2023 after completion of FOCARS training at ICAR-NAARM, Hyderabad.



Dr Rinku Dey joined ICAR-NIASM



Dr KK Pal joined as Head, School of Water Stress Management at ICAR-NIASM on 03.07.2023 from ICAR-DGR, Junagadh.



Miss P Navyasree joined ICAR-NIASM on 20.07.2023 after completion of FOCARS training at ICAR-NAARM, Hyderabad.



on 26.12.2023 after transfer from ICAR-DGR, Junagadh.

Promotions



Dr Boraiah KM, promoted to Senior Scientist (RGP 8000) w.e.f. 15.09.2021.







Dr Neeraj Kumar, promoted to Senior Scientist (RGP 8000) w.e.f.

01.01.2023.





Dr Aliza Pradhan, promoted to Scientist (RGP 7000) w.e.f. 02.07.2022.

Foreign Visits



Dr Gurumurthy S, underwent three months visiting post-doctoral fellowship (International Exchange Fellowship) at Kansas State University, USA from 01.07.2023 to 30.09.2023



Dr Gopalakrishnan B participated in the Annual Project Review and Planning Meeting 2023 at Kathmandu, Nepal from 12.12.2023 to14.12.2023 (ACASA project).

Selections



Dr AS Tayde joined as Head, Division of Crop Production at ICAR-CICR Nagpur on 18.07.2023.



Dr PS Khapte participated in International Plant Phenotyping Symposium-PhenoVeg 2023 at World Vegetable Centre, Taiwan from 26.09.2023 to 27.09.2023 (SERB-International Travel Support).

Transfers



Dr Amresh Chaudhary relieved form ICAR-NIASM on 22.12.2023 on transfer to ICAR-CSRI, Karnal.

Glimpses of National Seminar on

"Abiotic stress management for sustainable millet-based production systems"















સંગ્રાવન

बारामतीत भरडधान्यावर उद्या राष्ट्रीय परिसंवाद

कल्याण पाचांगणे : सकाळ वृत्तसेवा

माळेगाव, ता. बारामती, जि. पुणे बारामतीमध्ये शाख्तत भरड धान्यावर ः बारामतामध्य शाखता भरड याज्यात आधारित राष्ट्रीय परिसंवाद मंगळवारी (ता.२२) होणार आहे. माळगाव खुर्द (ता. बारामती) वेथे भारतीय कृषी संशोधन परिषद-राष्ट्रीय अजैविक तान व्यवस्थापन संस्थेत (एनआयएएसएम) हा परिसंवाद होईल. यात "अजैविक ताण व्यवस्थापनातून शाश्वत भरड धान्य आधारित उत्पादन प्रणाली' या विषयावर चर्चा होईल.

त्हाराष्ट्र, आंध्र प्रदेश, कर्नाटकसह विविध

राज्यातील शाखज्ञ, घोरणकर्ते, शेतकरी, स्वयंसेवी संस्था आणि विद्यार्थ्यांसहसुमारे ४०० प्रतिनिधी या परिसंवादात भाग चेतील. केंद्रीय कृषी मंत्रालयाचे (कृषी व संशोधन व शिक्षण विभाग) सचिव डॉ. हिमांशू पाठक शिलेम विभाग संबंध के हिशाल पाठम यांच्या हस्ते उद्या (ता. २२) सकाळी ११ जायुक्त सुमील चव्हाण,भारतीय कृषी संशोधन नवीं दिल्लीचे उपमहासंचालक डॉ. एस. के चौधरी प्रमुख पहुणे मरणून उपस्थित राहतील, अशी माहिती बारामती 'एनआयएएसएम'चे संचालक डॉ. सम्मी रेड्री यांनी सांगितली.

भरडधान्य वर्ष २०२३ च्या निमित्ताने बारामतीत राष्ट्रीय चर्चांसत्र आयोजिले आहे. यात नामांकित शाखज्ञ, संशोधक, विद्यान, शेतकरी आणि विद्यार्थ्यांना एकत्र करोत त्यांना भरड धान्यांवरील संशोधनावाबत माहिती दिली जाईल. बातावरणीय बदलांसारख्या विविध आव्हानांना शेतात तोंड कसे शायचे याबाबतही चर्चा होईल. हा परिसंवाद भरड धान्य उत्पादकता, गुणवत्तेवर अजैविक ताणांचा प्रभाव शोधण्यासाठी आणि भरड धान्य उत्पादन बाढवू इच्छिणाऱ्या शेतकऱ्यांना धोरणात्मक गोष्टींची माहिती होण्यासाठी महत्त्वपूर्ण ठरेल. परिसंवादाचा समारोप बुधवारी (ता. २३) होईल."

रकेपाल, ला. २३ : 'भात कृषी विधिश्री सामुद्ध आते. साजादेव आंतरराष्ट्रीय भारड लॉ २०२३ पाल्यून घोषित केठे या ज्यासमातांते साम्पातित भारड माल्याका आपालित राष्ट्रीय परिसंचार मारण्य प्राप्त का ज्यास्मार्ट्स अविधिक त्राप्त ्राम् स्वर्थ आल्फ मारम् अवायक तथ प्रारथम् भरहः धान्य तः प्रगटधावा प्रचार त्रेणाः आहे," असे वः कृमी मंत्रारूपाचे विधान य सिंधण हॉ. हिस्तंशू पालक

या परिसंशाताचे उत्पा पांच्या तरते डाजे, वाजेतां होने, भारतीय कृत्री उनुसंध (नवी विराजी) जन्म डॉ. एस.के. चीचरी, देतासुख कृषी विद्यार्थेठ (ता. जातम्बर्ती) ((त), कारण्याः) तेकतावरणवस्यानन रासस्य) "अवैतिक त्यादन प्रयास्त्रे" या वर्षी (त), २२) दौन विद्यवादाचे आयोजन नुजनगुरू

मुखी हॉ. एन.आ



@ सकाळ

मुख्युरू थी. एत. पाटील, मारामने एकागपएसगपने संसारक डॉ.एप्टने हिंही, जॉवजरूकार वेजारजेंट ट्रान मारामलेंचे उन्हार प्रदेश प्रथा, संसाल संयोगक डॉ. संसार कलाण ज्यादी पदायिकारों प्रायंत्री उपस्तित होते. वे उद्यादन पालेगी ते बोलत रेजन परिपटने दरम्यान, महाराष्ट्र, जांध प्रदेश, बानांटक राज्यासह विविध सहरातांत प्रामवद्य धोजपाठी प्रेणकर्ता



भरड धान्यावरील उत्पादनाचा सार

होणार