



FARM COORDINATOR

... कृषि तकनीकी समन्वय पत्र



भाकृअनुप – राष्ट्रीय अजैविक स्ट्रेस प्रबंधन संस्थान

ICAR-NATIONAL INSTITUTE OF ABIOTIC STRESS MANAGEMENT

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निदेशक के लेखनी से...

‘फार्म कोऑर्डिनेटर’, पिछले एक साल से नियासम के प्रक्षेत्र में होने वाली घटनाओं के बारे में अपडेट करता रहा। हर महीने लक्ष्यों और उपलब्धियों के विश्लेषण के माध्यम से प्रगति के पथ पर चलते हुए, इसके सम्पादन तथा विवेचन कौशल में सुधार हुआ है। प्रक्षेत्र से जुड़े तकनीकी कर्मियों को बेहतर नतीजों के लिए कार्य निष्पादन में सुधार करने में इससे मदद मिली है। इसकी वजह से विभिन्न क्षेत्रों के हितकारकों के लिए नियासम की अनुसंधान गतिविधियों और सुविधाओं के प्रदर्शन हेतु ‘एग्री टूरिजम’ के रूप में एक नयी पहल सामनी आयी है।

पिछले दो महीनों के दौरान, क्षेत्र की परियोजनाओं को अच्छी तरह से जानने और इसे एक अलग परिप्रेक्ष्य देने के लिए विचार विमर्श हेतु प्रक्षेत्र के सफर का आयोजन किया गया था। बागानों का दौरा करते समय, पिछले लगभग छह वर्षों के निष्कर्षों को एकत्रित करने और विश्लेषण करने के साथ कई सिफारिशों को कलमबद्ध करने के लिए प्रत्येक बाग के लिए एक प्रधान अन्वेषक की पहचान करने का निर्णय लिया गया है। विभिन्न प्रकार के तनाव कारकों के बावजूद, जैव विविधता के रूप में नियासम परिसर में बड़ी वैज्ञानिक संपदा उपलब्ध है।

मैं ज्ञान और कार्य निष्पादन के बीच बेहतर समन्वय के लिए इस नियमित प्रकाशन की पहली वर्षगांठ की पूर्ति पर ‘फार्म कोऑर्डिनेटर’ टीम को बधाई देता हूँ। मैं डॉ. प्रवीण तावरे को इस प्रकाशन को नियमित रूप से प्रकाशित करने हेतु उनके समर्पण और प्रतिबद्धता के प्रति धन्यवाद देता हूँ।

From Director's Desk...

Farm Coordinator, for the last one year is keeping updated about happenings at NIASM farm. While chalking down the path for progress through analysis of targets & achievements every month, it has improved its quality of interpretation. It has helped the personnel associated with farm to improve work execution for better picture. This has resulted to one more initiative in the form of ‘Agri Tourism’ to showcase the research activities and facilities at NIASM to the visitors from various sectors.

During last two months, farm visits were arranged to know the field projects thoroughly and to collect inputs to give it a different perspective. While visiting orchards, it has been decided to identify a nodal person for each orchard to collect and analyse the findings of last almost six years and to pen down few recommendations. It's a vault of scientific wealth at NIASM campus in the form of large biodiversity, in spite of various stress factors.

I congratulate the Farm Coordinator team on the eve of first anniversary of this regular publication for better coordination between knowledge and work execution. I thank Dr. Pravin Taware for his dedication and sincerity for bringing out this publication very regularly.



Pravin

फरवरी / February 28, 2021

हिमांशु पाठक / Himanshu Pathak

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Maintenance of standing rabi crops was facilitated through timely irrigation and weed management. Crops like sorghum, wheat and chickpea were ready for harvesting. Harvesting of sugarcane and chickpea was carried out by using manpower while reaper was used to harvest wheat crop. All these were threshed with the help of tractor operated thresher machine by changing required sieves.

Field preparation: After harvesting of sorghum, the field was to be prepared for sugarcane planting through a project. Therefore the field was ploughed, cultivated and rotavated twice to bring it to fine tilth. Ridges and furrow layout was prepared by keeping distance of 1.5 M. Marking for planting was carried out on Feb 15 as per the treatments and basal dose treatment was given before planting. Sugarcane nursery plants of variety CO 86032 were planted at the distance of 60cm. Drip irrigation system was installed immediately after planting irrigation was facilitated through drip only. Ploughing in other fields was also initiated.

Pruning in custard apple was continued and completed in first week of month. The basin were pulverized and irrigation was started after 7-days. Compost application in the basins have been started from orchard near guest house.

Maintenance work in Agroforestry: Gap filling in mango, pruning of grape, application of compost, soil pulverizing, preparation of basins and watering was carried out.

Training of dragon fruit in field H-5 was carried out to grow the stems erect and the cut portions were planted in nursery for rooting. Excess growth of plants in I4 field was also removed for nursery planting.

Harvesting and disposal of produce from coconut, tamarind and grape was carried out in second fortnight.



Harvesting of rabi Sorghum



Harvesting of general wheat using reaper



Chickpea gerrplasm collection



Pruning in custard apple



Earthing up in sugarcane



Mango fruit setting

Weather Summary of February 2021 at ICAR-NIASM

Mr. Sunil V. Potekar & Mr. R.N. Singh

The long period average (LPA) of February rainfall and average temperature at Baramati is 0.9 mm and 24.3 °C, respectively. The details of weather during the February 2021 has been listed in Table 1 and depicted in following figure.

Table 1. Summary of weather variables recorded during February, 2021.

Weather Parameters	Week				Monthly	Max.	Min.
	1 st	2 nd	3 rd	4 th			
T Max (°C)	30.4	31.0	31.2	33.1	31.4	35.2	28.4
T Min (°C)	12.7	11.6	15.5	16.3	14.0	17.9	8.8
T Avg (°C)	21.6	21.3	23.4	24.7	22.7	26.6	19.0
RH Mean (%)	51	49	59	49	52	62	39
WS (km/h)	4.7	4.4	6.2	4.9	5.1	9.4	3.3
BSS (h)	8.5	9.3	7.5	9.0	8.6	10.0	3.7
Total PE (mm)	31.3	37.9	36.3	42.4	147.9	6.9	3.6
Total Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0

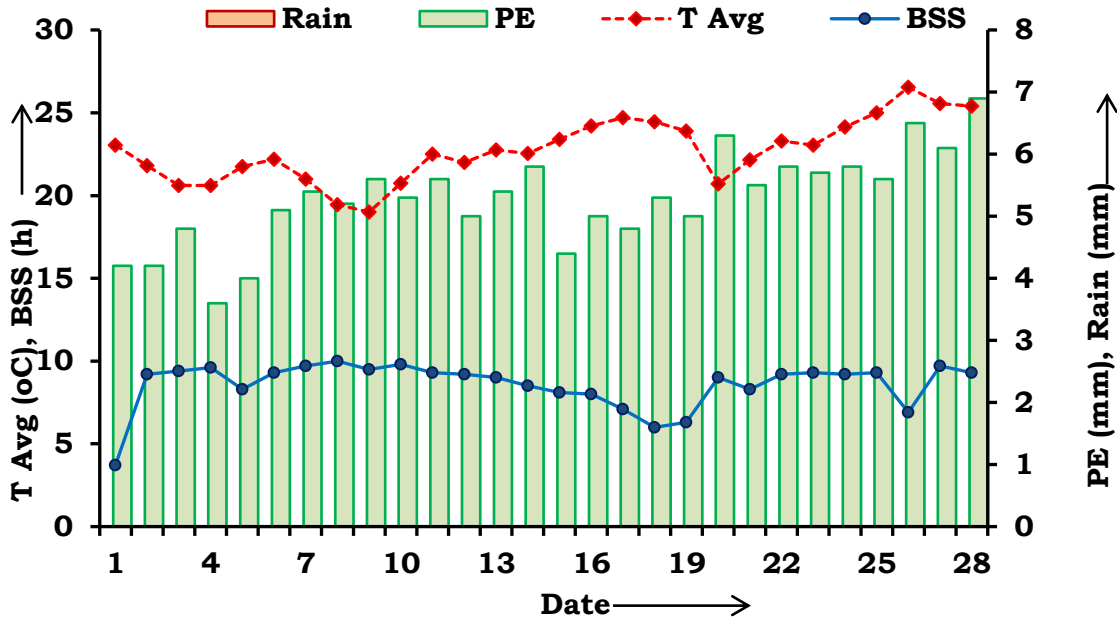


Fig . Variations of daily rainfall (Rain), pan evaporation (PE), mean temperature (T_{Avg}) and bright sunshine hours (BSS) during February, 2021 at ICAR-NIASM Baramati.



Grape ready for harvest



Fruiting in fig orchard

Maintenance, harvesting and threshing of experimental crops in south farm will go on simultaneously *rabi* depending on the crop growth stages. The crops being grown for research purpose, carry various treatment blocks. Therefore, the harvesting and threshing will be facilitated by need based manpower use.

Fallow cultivation of the fields will be carried out by ploughing and harrowing. Due to shortage of irrigation water only black soil fields only will be brought under summer crops.

Application of manure: The supply of farm yard manure is expected during March. All the fields in south farm, peripheral plantation and orchard plantations need organic manure application. Depending on the irrigation water availability, manure application in orchards will be completed on priority. As the harvesting of field crops completes, manure application will be taken up before primary tillage operations.

Pruning in Sharad seedless grape: It is planned this year to carry out back pruning in Sharad seedless grapes bit early as an effort to improve its fruitfulness. The back pruning will be carried out in second week of March.

Plant protection: Due care is required for pest management in various fruits by sucking pests, fruit borer and fruit fly. The integrated approach for this includes installation of pheromone, sticky and light traps, spraying of biological cultures and organic pesticides.

Training and pruning operations in sweet orange, guava, pomegranate and dragon fruit include removal of dried/ dead/ infected branches and creating canopy sparse enough for effective spraying and air movement.

Irrigation management: It is expected that the new lift irrigation project will alleviate the situation of water stress in all the tree crops. As the project getting delayed management of irrigation water will be crucial during this summer. As and when canal is flowing efforts will be made to pump maximum possible water through old lift system to store in existing water storage ponds and prioritize the utilization.



Wheat germplasm collection



Experimental maize crop



Experimental chia crop



Sapota at fruiting stage



Pumping work in progress



Pruning in Ber

Visit to North Farm was carried out on February 8-11, 2021 to discuss issues related to research and management activities in various orchards. All the scientists, technical and research associates participated in the visit along with the Director. Following are the points discussed during the visit;

- The Director took note that most of the orchards are under general maintenance and whatever research projects were there, have been completed. Therefore, it was decided to identify one nodal person for each orchard for chalking down ways for improvement.
- It was decided to narrate all past details of the orchards on common given point to come to one or two conclusions related to abiotic stresses and their impact on specific orchard and also the measures to alleviate the stress effects.
- Farm management to continue its job of orchard maintenance as usual by getting suggestions from the nodal person. In addition to management personnel, additional manpower may be employed as per requirement for carrying out research related activities like treatment imposition, collection of data and laboratory work.
- Peripheral plantation will also be considered under orchard management and one nodal person related to Agroforestry will be given responsibility to devise the plan for improvement.
- At sewage water treatment project it was decided to allot nearby orchard of Fig for using excess treated water at field conditions.
- While roaming through the orchards and medicinal garden, the concept of agri-tourism came forward and it was decided to have MOU with Agricultural Tourism Development Corporation for sharing the ideas to develop the concept of propagating Agricultural Research Tourism among various stake holders like students, farmers, industry workers and common peoples too. According MOU has been signed between NIASM and ATDC.
- It was decided to plan route for movement of visitors through farm and to create facilities accordingly for implementing Agri Tourism concept at campus.

Glimpses of field visit February 8-11, 2021



Visit to Sapota Orchard



Visit to sewage water treatment project



Visit to Sanjivani Udyan



Knowing plants at Sanjivani Udyan

Tillage Implements - 1

Moldboard Plough

A moldboard plough cuts, lifts and turns the soil and in doing so buries crop residue, aerates soil, controls weeds, insects and soil borne diseases, incorporates fertilizer into soil, provides good seedbeds and breaks hard pan. The plough should be used only on the land where topsoil is sufficiently deep to avoid mixing of the subsoil with surface soil.

The different parts and functions of a moldboard plough are;

Shear: The part penetrates the soil to make a horizontal cut.

Moldboard: It inverts the furrow slice, lifts, turns and pulverizes it.

Landslide: It moves along the furrow wall and provides stability to the plough against lateral forces.

Shin: A replaceable extension of the moldboard that wears fast.

Frog: An irregular metal piece on which the shear, moldboard, shin and landslide are bolted.

Operating procedure

In the first pass

- Raise the plough so that it does not touch the ground
- Check the top link, lift links and levelling screws for recommended settings
- Loosen the stabilizer chain so that the lower links have a swing of about 2" at respective ends
- Plough few meters of the field, use drift control lever to control the depth required, complete the pass

In the second pass

- Check whether the bottom is scouring properly, index the plough and operate it for few meters till it has reached the desired depth
- Level the plough laterally using levelling screws on the ploughing side
- Level fore and aft with top link, adjust the heel of landslide so that it touches with the bottom of the furrow
- At the end of the pass, adjust the opposite levelling screws and the near landslide heel to same setting

In the third pass

- Index the plough and operate over a few meters
- Make final adjustments with the levelling

screw and rear landslide heel.

Factors facilitating efficient and uniform operations:

Level: The plough should have a level surface, free from ridges and furrows. This is achieved when uniform ploughing depth and width of cut and speed are maintained.

Tilth: The quality of pulverization depends on ploughing speed. At low speed, the soil slice does not break properly.

Depth: Sharp plough shears ensure good penetration. The plough should run at level so that all plow bottoms give equal depth of cut. The draft control and response controls should be so adjusted as to give uniform depth in entire field. The 'guage wheel' (if provided) helps maintain desired depth under adverse soil conditions.

Ground speed and width of cut are two factors that affect field efficiency. A higher ground speed results in better field efficiency. Sometimes it is advisable to sacrifice working width to get more working speed.

The plough's width of cut should be used to its maximum for better field efficiency.

Reversible Mould Board Plough



Moldboard Plough at Work



Field preparation for sugarcane



Irrigation facility in progress



Management of sugarcane trash



New sugarcane planting with drip



Quinoa crop at maturity



Acid lime orchard in *bahar*



Ambia bahar progress in Sweet orange



Sprouting in custard apple after pruning



Dragon fruit nursery in field



Canopy management in progress

प्रगति के पथ पर

फार्म समन्वयक की पहल वैज्ञानिकों और तकनीकी कर्मचारियों के बीच समन्वय बढ़ाने के प्रयास के रूप में फरवरी 2020 से की गयी। हर महीने इस प्रकाशन के द्वारा न केवल इसकी सामग्री की गुणवत्ता बल्कि समग्र कृषि प्रबंधन गतिविधियों में भी सुधार हो रहा है। अनुसंधान प्रक्षेत्र प्रबंधन की प्रक्रिया में लक्ष्यों और उपलब्धियों के दस्तावेजीकरण से उसमें शामिल तकनीकी कर्मियों की पारदर्शिता, रुचि और उत्साह में वृद्धि हुई। 'टेक्निकल बेसिक्स' पेज में हर एक कार्य पर वैज्ञानिक प्रकाश डाला जानेसे वह जागरूकता से हो रहे हैं। अब यह पृष्ठ फार्म मशीनरी के बेहतर उपयोग और बेहतरीन प्रदर्शन के लिए फार्म के कार्यान्वयन को प्रस्तुत करेगा।

अनुसंधान प्रक्षेत्र प्रबंधन से प्रयोग के लिए उपलब्ध सीमित संसाधनों का कुशलता तथा विवेकपूर्ण उपयोग किया जाता है। पिछले दो महीनों के दौरान प्रक्षेत्र दौर के परिणामों ने 'मॉडल रिसर्च फार्म' में सुधार के लिए पथ और प्राथमिकताओं पर प्रकाश डाला है। इस दौरान 'क्यूआर नियासम' जो कैंपस को जानने के लिए एक ऐप है, और बाद में 'कृषि पर्यटन' जो आईसीएआर-नियासम को जानने के लिए विभिन्न क्षेत्रों के आगंतुकों के लिए द्वार खोलने की पहल की गयी। इन दोनों पहलुओं के साथ 'प्रक्षेत्र समन्वयक' अनुसंधान प्रक्षेत्र प्रबंधन को बेहतर बनाने में महत्वपूर्ण भूमिका निभाने जा रहे हैं।

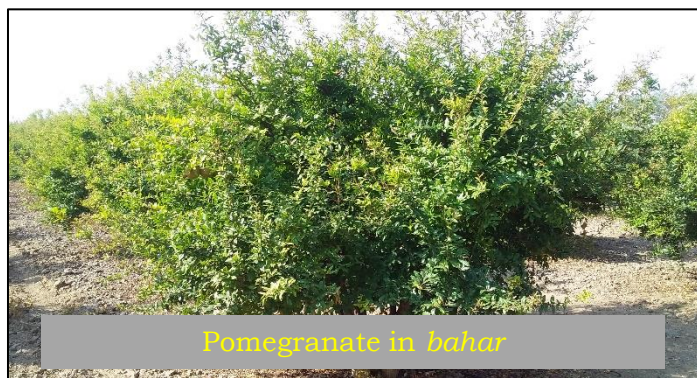
Plan For Progress

Farm Coordinator initiative came into action from February 2020 as an effort to increase coordination between scientists and technical staff. Every month the quality not only of its content but also of the overall farm management activities improved due to this publication. Documentation of targets and achievements in the process of research farm management increased the transference, interest and enthusiasm of technical personnel involved. The technical basics page put light on each and every action to not to play any card blindfold. Now this page will introduce the farm implements for their better utilization and the best performance.

Research Farm management is the judicious utilization of limited resources available for efficient field experimentation. The outcomes of the field visits during last two months have highlighted the path and priorities for improvements in Model Research Farm. These field visits come up with 'QR-NIASM'- an app to explore the campus followed by the 'Agri-Tourism'- an initiative to open the gates for visitors from various sectors to know ICAR-NIASM. Farm Coordinator along these two initiatives are going to play important role in improve research farm management in new year too.



Amla at fruiting stage



Pomegranate in bahar

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