



FARM COORDINATOR

... कृषि तकनीकी समन्वय पत्र



भारतअनुप - राष्ट्रिय अजैविक स्ट्रेस प्रबंधन संस्थान

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निदेशक के लेखनी से...

शुरुआती कुछ बारिश के बाद अभी क्षेत्र में मानसून शुरू नहीं हुआ है। पश्चिम में ऊंची 'सह्याद्री' पर्वत श्रृंखला के कारण वर्षा छाया क्षेत्र में होने के वजह यह आम बात है। हालांकि, अधिकांश खरीफ बुवाई गतिविधियां जून 2021 के दौरान पूरी हो चुकी हैं। जुलाई में ड्रैगन फ्रूट में पर्याप्त फूलन का अनुभव किया गया। अगले सीजन के दौरान बेहतर प्रदर्शन को लक्षित करते हुए उच्च घनत्व वाले आम के बागान में खुलाने और उचित वायुविजन हेतु छटाई कार्य पूरा कर लिया गया है। मलद फार्म की गतिविधियों को भी सुव्यवस्थित किया गया है।

इस माह की सबसे महत्वपूर्ण उपलब्धियों में से एक मल्हार तालाब के दूसरे चरण का पूरा होना था। जून 10 को 'जल पूजन' किया गया। लॉकडाउन प्रतिबंधों के रहते हुए दोनों चरणों को सफलतापूर्वक पूरा किया गया है। इस कार्य को बड़ी सटीकता लेकिन न्यूनतम लागत के साथ पूरा किया गया। श्री पतवारु चहांदे और श्री अनिकेत मोरे के सक्षम समर्थन से डॉ. प्रवीण तावरे के नेतृत्व में किए गए इन प्रयासों के लिए मैं कृषि तकनीकी टीम को बधाई देता हूँ।

'फार्म समन्वयक', गतिविधियों को प्रस्तुत करने, उपलब्धियों का आकलन करने और भविष्य के लक्ष्यों के लिए योजना बनाने में महत्वपूर्ण भूमिका निभा रहा है। मुझे पूरी उम्मीद है कि इस प्रयास से नियासम और अन्य जगहों पर अनुसंधान फार्म प्रबंधन में सुधार होगा। मैं डॉ. प्रवीण तावरे और उनकी टीम को इस प्रकाशन में उनके समर्पण और निरंतरता के लिए धन्यवाद देता हूँ।

From Director's Desk...

After the first few showers, monsoon is yet to start in the area. It is common here being in rain shadow zone due to tall 'Sahyadri' mountain range at the West. However, most of the *khariif* sowing activities are completed during June 2021. In July, ample flowering was experienced in dragon fruit. The pruning operation for opening-up and proper ventilation in high density mango plantation are completed targeting better performance during next season. Activities at *Malad* farm are also been streamlined.

One of the most important achievements of the month was completion of the second phase of *Malhar* pond. The 'Jal Poojan' was carried out on 10th June. Both the phases have been successfully completed during the period of lockdown restrictions. I congratulate the farm technical team led by Dr. Pravin B Taware with able support of Mr. Patawaru Chahande and Mr. Aniket More for accomplishing the task with great precision but minimum cost.

'Farm Coordinator' is playing a crucial role in presenting the activities, assessing the achievements and planning for future targets. I sincerely hope that this effort will improve research farm management in NIASM and elsewhere. I thank Dr. Pravin Taware and the team for their dedication and sincerity in bringing out this publication.



Pravin

जून / June 30, 2021

हिमांशु पाठक / Himanshu Pathak

Contents

Page 1	निदेशक की लेखनी से/ From Director's Desk
Page 2	Achievements June 2021
Page 3	Weather Summary June 2021
Page 4	Targets July 2021
Page 5	Challenges Ahead
Page 6	Technical Basics for a Month
Page 7	Glimpses of June 2021
Page 8	प्रगति के पथ पर / Plan for Progress



Fruiting in Date palm

Kharif sowing activities: Looking in to the availability of water, *Kharif* sowing activities for field research were intensified. This included Soybean (B6, B7, C6 and C8), Soybean + Maize (C5), Pigeon pea (C1), Cowpea (D1), etc. Some of the fields (B3, B4 and C7) reserved for Rabi crops, were sown with green manure crop *Dhaincha*. All other fields are kept ready to continue sowing activities as per requirements. Drip installation in D5,6 & E7,8 is ready for precision irrigation.

Canopy management in orchards: Post harvest pruning in high density Mango plantation was carried out to open the canopy to improve next season production. After pinching for sub-cane the shoot growth was harnessed by tipping at 12-14 leaves. The damaged & infected fruits in Sweet orange, Acid lime, Guava & pomegranate were removed and destroyed by burying in soil.

Plant Protection: The important spraying activities included use of Copper oxychloride and Sulphur in grape for control of downy mildew and powdery mildew in persisting cloudy and humid weather. Insecticide Fipronil was also used in grape to manage sucking pests. Simultaneously Uracil and 6BA were used in grape for increasing fruitfulness and cane maturity. Spraying of Azadirachtin was carried out in dragon fruit to manage fruit fly issue. In pomegranate, Copper hydroxide was sprayed to control *Cercospora* and *Xanthomonas*.

Malad farm activities: Cleaning activities in Malad farm were initiated to remove thorny shrubs. Seven fields of 1ac each were cleaned and six out of these were sown with Soybean. Although no irrigation required at sowing due to good monsoon showers, the layout have kept ready for irrigation if canal water is available.

Agro-waste management: Pruned biomass weeds etc. received at dumping site was cut into pieces with the help of shredder machine. It will be used for composting. The pruned material in mango orchard was mulched *in-situ* to improve soil conditions.

Peripheral maintenance: One round of cutting dried coconut leaves was taken up. Weed management along periphery was initiated by spraying herbicide as well as manual weeding.



Field layout preparation



Pigeon pea germplasm



Experimental Soybean + Maize crop



Soybean crop at Malad Farm



Pruning in Mango

Weather Summary of June 2021 at ICAR-NIASM

The long period average (LPA) rainfall and average temperature of June at Baramati is 108.1 mm and 28.3 °C, respectively. The details of weather during the June 2021 has been listed in Table 1 and depicted in following figure.

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

Weather Parameters	Week				Monthly	Max.	Min.
	1 st	2 nd	3 rd	4 th			
T Max (°C)	33.4	31.6	30.9	30.8	31.9	35.2	26.3
T Min (°C)	21.9	22.4	21.7	22.1	22.0	23.4	20.4
T Avg (°C)	27.7	27.0	26.3	26.5	26.9	28.9	23.7
RH Mean (%)	70	73	73	73	73	88	64
WS (km/h)	6.5	14.0	10.0	12.5	10.6	15.6	5.3
BSS (h)	7.2	4.9	4.2	3.0	5.1	11.4	0.0
Total PE (mm)	36.0	46.1	34.9	40.6	167.9	8.3	1.8
Total Rain (mm)	40.0	1.4	22.4	9.4	82.4	25.2	0.0

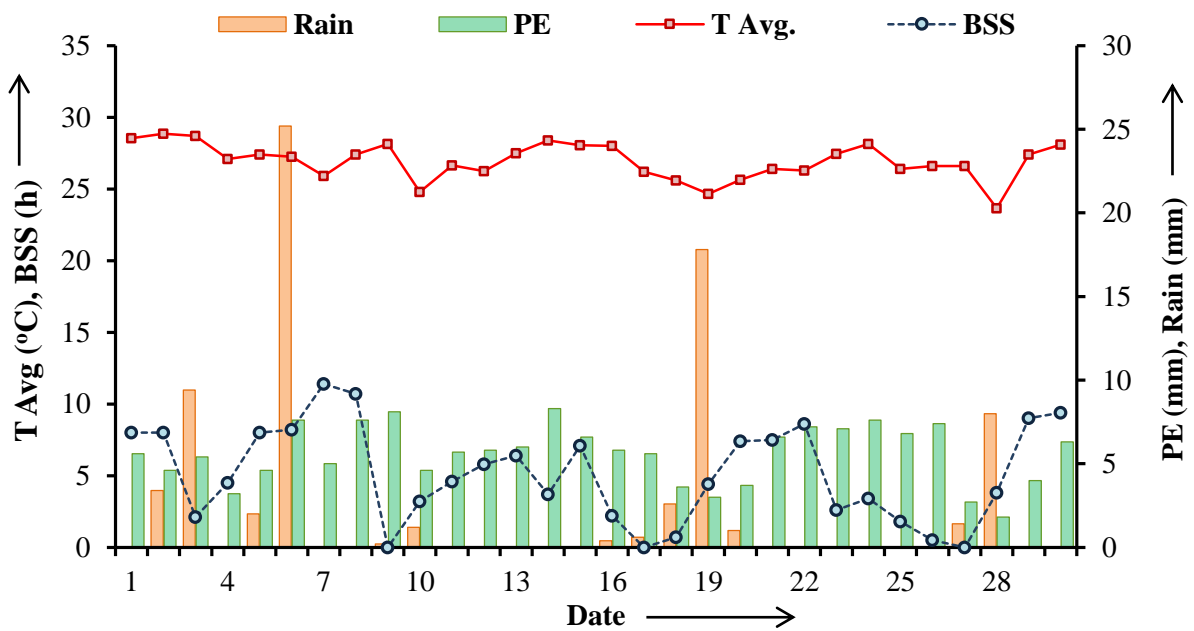
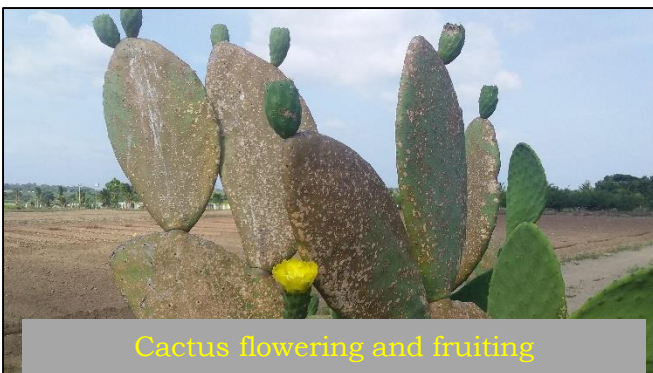


Fig 1. Variations of daily rainfall (Rain), pan evaporation (PE), mean temperature (T_{Avg}) and bright sunshine hours (BSS) during June, 2021 at ICAR-NIASM Baramati.



Maintenance of Kharif crops: Almost 80% Kharif sowing have been completed and remaining sowing to be completed in the first fortnight of July 2021. Weed management and irrigation activities are important from the point of maintenance. Wherever possible/ permitted, use of selective herbicides will be done to achieve better weed management and uniform crop stand. Though canal has been closed, ample water is available in storage ponds so there will not be any issue pertaining to irrigation.

Orchard maintenance: Canopy management activities in dragon fruit, grape, pomegranate, guava and fig are need to be continued during next month. Flowering in dragon fruit has been initiated and protection of fruits from fruit fly is required. After pruning in Mango plants, to improve its vegetative growth good care of irrigation and nutrition have to be taken care of. In grape, it's time to take care of shoot density, controlled shoot growth by tipping, removing laterals and enhance cane maturity. Pomegranate (K5) orchard is under *bahar* treatment to get '*Hasta bahar*', will de-suckering and pruning after proper defoliation. Drumstick pods will be harvested for seed purpose.

Plant protection: Pest forecasting attracts management of lemon butterfly in citrus, leaf eating caterpillars in drumstick, stem borer in mango and grape, fruit borer and fruit flies in various fruits. The climate becomes congenial for oily spot in pomegranate, powdery and downy mildew in grape and rotting in dragon fruit. Recommended pesticides and fungicides along with biological control agents will be used.

Nutrition management: Application of fertilizers in field crops and orchards will be done through soil application/ drip as per recommendations. Fertigation through automated unit will be started for trial. Foliar application of soluble grades like 19:19:19, 0:52:34 and 0:0:50 along with micronutrient mixtures will be to correct deficiencies.

Disposal of farm produce: Harvesting and disposal of drumstick, amla and dragon fruit, pomegranate and lemon.

Landscape garden maintenance: Pending development at triangular portion is to be done on priority. Plants' training, weeding, soil pulverizing and manuring of peripheral plantations is also on target.



Flat beds prepared for crops



Manual weeding in Cowpea crop



Plant Protection



Inter-cultivation with tractor



A path through Medicinal garden

Improving Soil Conditions and Water budgeting

The native soil at NIASM campus is very coarse with very low water holding capacity. The soil is having poor organic carbon content. The development of land to make it arable was a tedious task. Further for sustainable production it needs much care for irrigation and nutrition. Due care is taken to improve soil conditions by application farm yard manure, green manure, etc. Therefore, as it can be observed, maximum efforts are made to recycle agro-wastes. Pruned biomass from orchards, weed biomass from manual weeding, removal of dried coconut leaves, etc. generates lot of agro-wastes. Some of these are used as fodder for animals or as bedding material which in turn converts into good manure. Diseased plant material or thorny biomass is necessarily burnt or buried. However, the remaining biomass is shredded with the help of tractor drawn chaffer and used in decomposition. A method has been developed to shred the pruned biomass *in-situ* with mulcher and incorporate it to soil by using cultivator. These efforts need to be continued persistently to maintain sustainable production.

Irrigation water is one of the most important limiting resource at NIASM campus because of complete dependence on canal running status. Although ample water

storage capacity have been developed during last one year and new lift irrigation is at its completion, judicious use of irrigation water is necessary. An exercise is being done to calculate water requirement of respective field crops, orchards and all other plantations at different growth stages. The coarse texture of soil have to be kept in mind while calculating the actual water requirement. Once water requirement of each field is known, proper water budgeting and irrigation scheduling can be implemented. This will not help in sustainable production but also for the better experimentation. Under new irrigation project, volume based automation of irrigation activities have been planned as under trial. However, the best demonstration of this automation can achieved through micro-irrigation. The orchards, medicinal garden, landscape garden, peripheral plantation are already brought under drip irrigation. But very few field crops have this facility. Therefore, it is necessary to bring all field crops too, under drip irrigation or micro-sprinklers, to increase water use efficiency. Also the various techniques like mulching, deficit irrigation, partial root-zone drying and subsurface irrigation must become a general practice.



Dhaincha for green manure



In-situ mulching of pruned biomass



Flood irrigation for field crops



Drip irrigation system installation

Making of Malhar Pond

'Malhar pond', a water balancing cum storage tank is the most needed basic facility located at south-west corner of NIASM campus. The concept was approved in April 2020 to fulfill immediate need for balancing tank to install pumping facilities in new lift irrigation project. The second phase was approved in February 2021 and completed in early June 2021. Following are the details of the photographic illustrations of this development;

1. It is the original site seen as a depression of 2 to 3-meter depth with a weathered rock debris inside. During the development of campus, it was decided to construct water tank at this spot but anyhow it could not be implemented. While preparing roads in the campus, some *murum* material required for filling was dug out from this area. Looking in to all these facts, this site was proposed for building a water storage tank. Initially it was to be made of concrete but the concept lagged behind due huge cost. Therefore, it was proposed in April 2020 to make it lined with HDPE geo-membrane that to in two phases.
2. This picture shows the pond completed through two phases, filled with water and named as 'Malhar'.

3. The pond development was carried out in two phases as illustrated in the diagram (Page 7). The first phase was completed in May to July 2020 while second phase completed during Mar to June 2021. Initially both the ponds were going to be separate ponds but it was decided to keep the height of dividing bund of the height 1.75M that is going to remain submerged as water level rises above it. This structure will help in operation & maintenance of ponds without interrupting water supply at any given time.
4. This picture shows already commissioned first phase and plastic lining work of second phase completed on June 9, 2021. The water filling was continued overnight so as to enter second phase.
5. As water entered the second phase of the pond it was celebrated with 'Jal Poojan' with the hands of Dr. Himanshu Pathak, Director, ICAR-NIASM at 10.10 am on June 10, 2021. Dr. Jagadish Rane, Chairman, Farm Advisory Committee was also present for this small event. It was really an overwhelming and emotional celebration of a 'Dream come true' for all the farm team.

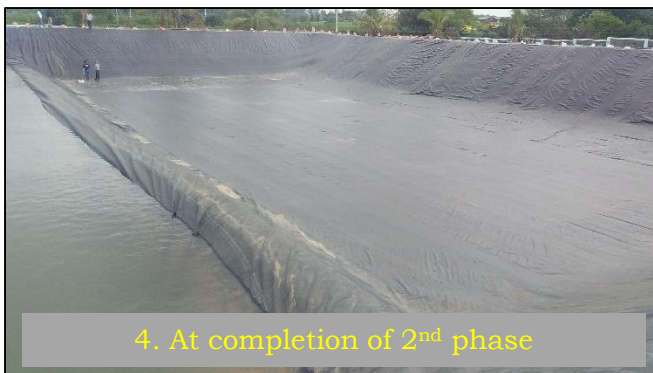
(Illustration Image 3 on page 7)



1. Original Site



2. After Development



4. At completion of 2nd phase



5. Jal Poojan



Puned orchard of Mango



Intercultural operation in Grape



Custard apple bio-diversity block



Pomegranate fruiting



Drumstick pods retained for seed



De-trashing in Sugarcane

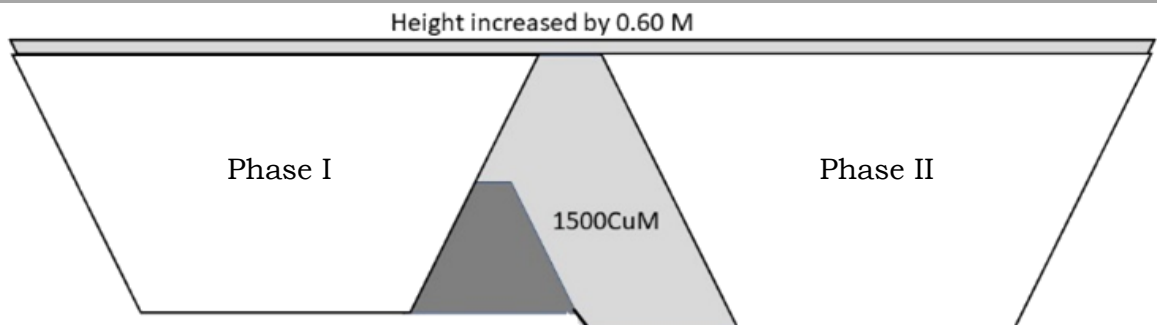


Nursery maintenance



Peripheral road-side maintenance

3. Illustration of Malhar tank development in two phases (from pg. 6)



प्रगति के पथ पर

‘रहस्य’ यह है कि जो कुछ भी शारीरिक प्रयासों से प्रदर्शित होता है वह पहले से ही विचारों में हो चुका हुआ होता है। ‘मल्हार तालाब’ के विकास के बाद इसे फिर से रेखांकित किया गया। क्योंकि, इसकी योजना अलग-अलग तरीकों से बहुत पहले अनेक दिमागों में थी। अंत में, इसकी संकल्पना की गई, प्रस्तावित किया गया, अनुमोदन मिला, मूर्त रूप दिया गया और उसे कार्यान्वित भी किया गया। इस दृष्टिकोण को ध्यान में रखते हुए, यह महसूस किया कि हमें विचारों में कल्पना और पहलों को रखना होगा और निश्चित है कि किसी दिन उन्हें हासिल भी किया जाएगा।

पहली बार खरीफ की बुवाई की गतिविधियां 1 जून से ही शुरू की गईं और 15 जुलाई से पहले इसे पूरा करने की उम्मीद है। ‘फार्म कोऑर्डिनेटर’ के माध्यम से सार्वजनिक किए गए लक्ष्यों पर ध्यान केंद्रित करने का यह जादू है। यह कार्य के आकलन और अगले माह की कार्य योजना तैयार करने का परिणाम है। यह एक टीमवर्क के लिए इकट्ठा बांधने की शक्ति पैदा कर रहा है। जून 2021 का महीना बहुमुखी गतिविधियों के माध्यम से एक व्यस्त समय था और आनेवाले अगले महीने में भी ऐसा ही होगा। फसल रखरखाव, बाग प्रबंधन और लैंडस्केप उद्यान विकास अब बहुत नियमित गतिविधियां हैं। हमें उन्नति को बनाए रखने के लिए हर महीने कम से कम एक पहल जोड़ने की जरूरत है। इस महीने के दौरान शुरू की गई मलद क्षेत्र की गतिविधियों को जारी रखते हुए अनुसंधान परियोजनाओं के लिए इसी तरह के संसाधनपूर्ण सुविधा के साथ तैयार किया जाना है।

Plan For Progress

The Secret’ is that whatever results through physical efforts now, had already been happened in thoughts. This was again underlined after development of ‘Malhar Pond’. Because it was planned long before in various minds, though in different ways. At last, it was conceptualized, proposed, approved, materialized and commissioned too. Keeping this view, it is realized that one must come up with ideas and initiatives in mind and damn sure those will be achieved one or the other day.

For the first time ever the *Kharif* sowing activities were started from 1st June and hope to complete it before 15th July. This is the magic of concentrating on targets made public through ‘Farm Coordinator’. This is the result of assessment of work and chalking down the plan of action for next month. It is creating a binding force for a teamwork. So, better coordination is the progressive plan for progress. The month of June 2021 was a busy time through versatile activities and so do the next month and many more will be. Crop maintenance, orchard management and landscape garden development are very regular activities now. And we need to add at least one initiative every month to maintain the tempo. Malad farm activities started during this month have to be expanded to facilitate it into similar resourceful place for research projects.



Acid lime fruiting



Sweet orange fruiting

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