



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...

खेतों की फसलों के लिए खरीफ से रबी मौसम और फलों की फसलों में मृग से हस्त बहर के रूप में अभी एक संक्रमण चरण है। पिछले सीज़न के प्रयासों के परिणाम और आगामी सीज़न के लिए नई आशाओं की योजनाओं का एक साथ होना वास्तव में एक अच्छा अनुभव है।

इस वर्ष मानसून पूरे राज्यमें औसत से अधिक था, और इसे नियासम परिसर में भी अनुभव किया गया। क्रॉपिंग पैटर्न और सामान्य तौर पर कृषि प्रथाओं पर मानसून का प्रभाव बहुत अच्छी तरह से अवगत है। इस बात को ध्यान में रखते हुए, इस माह के 'फार्म कोऑर्डिनेटर' से 'महीने का हवामान सारांश' शामिल किया गया है। आगे की उपलब्धियों, लक्ष्यों और चुनौतियों को देखते हुए, यह देखा जा सकता है कि वैज्ञानिक और तकनीकी कर्मचारी आनेवाले माह में बहुत व्यस्त रहनेवाले हैं। प्रायोगिक क्षेत्र की फसलों की कटाई और फलधारी बागों के रखरखाव पहले से ही प्रगति पर है और यह आगे भी जारी रहेगा। इसके साथ ही, उन्हें रबी फसलों की बुवाई, अंगूर की छंटाई, अनार में हस्त बहर की तैयारी और छटाई, खरपतवार प्रबंधन, पोषण प्रबंधन, पौध संरक्षण, आदि को योजनाबद्ध तरीके से क्रियान्वित करना होगा। मैं सभी वैज्ञानिक और तकनीकी कर्मचारियों को योजनाबद्ध गतिविधियों में बेहतर समन्वय और सफलता की कामना करता हूँ।

'फार्म कोऑर्डिनेटर', नियमित रूप से नियासम फार्म की उपलब्धियां, भविष्य की योजनाओं को प्रस्तुत करना जारी रख रहा है। मैं डॉ प्रवीण तावरे और टीम को इस उपयोगी प्रकाशन को प्रस्तुत करने में उनके समर्पण और लगन के लिए धन्यवाद देता हूँ।

From Director's Desk...

It's a transition phase of *kharif* and *rabi* seasons for field crops and *Mrig* and *Hasta bahars* in fruit crops. It's really good to experience together the reaping of results of last season's efforts and preparing and planning for new hopes in upcoming season.

This year monsoon was above average state-wide and so was experienced at NIASM campus too. Influence of monsoon on cropping pattern and agricultural practices in general is very well known. Keeping this in view, 'Weather Summary of a Month' have been included from this issue. Looking into the achievements, targets and challenges ahead, it can be seen that the scientific and technical staffs are going to have very busy schedule this month. Harvesting of experimental field crops & maintenance of fruiting orchards is already in progress and will continue. They have to prepare for sowing of *rabi* crops, forward pruning in grape, preparations for *hasta bahar* in pomegranate, weed management, nutrition management, plant protection, etc. need to be planned and executed judiciously. I wish scientific and technical staff for better coordination & success in planned activities.

'Farm Coordinator', as earlier, continues to present the activities; achievements and future plan for the NIASM farm. I thank Dr. Pravin Taware and the team for their dedication and sincerity in bringing out this useful publication.



Pravin

सितंबर / September 30, 2020

हिमांशु पाठक / Himanshu Pathak

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Guava fruiting in experimental orchard

Preparations for hasta bahar in Pomegranate : The stress required to initiate bahar treatment was not possible due to monsoon showers. Spraying of sulphate of potash and magnesium sulphate was carried out to enhance maturity and increase food storage. Timely removal of new shoots and suckers was executed to avoid extra sink. Spraying of copper oxy-chloride and Streptomycin sulphate was carried out to make orchard disease free.

Preparations in Grape for Forward Pruning: Forward pruning in grape is scheduled in the first fortnight of October. Due to continuous rains and cloudy weather, cane maturity was an issue. Therefore, to enhance cane maturity spraying of sulphate of potash and magnesium sulphate was carried out at 10-days interval. Use of *Trichoderma harzianum* and *Pseudomonas fluorescens* was preferred to take advantage of favorable conditions so as to reduce disease causing inoculum load before pruning.

Disposal of Farm Produce: Cluster bean, Okra and Mungbean from South farm and Dragon fruit, Sweet orange, Custard apple, Amla, Acid lime and Drumstick seeds from North farm were available for disposal during September 2020. The produce was initially sold at campus and remaining produce was sent to APMC, Baramati. Drumstick seeds were sent to Forest Department, Bhopal. Farm produce sale of Rs. 45,010/- could be achieved during this month totaling Rs. 2,14,323/- since April 2020.

Weed management: Heavy monsoon showers were an issue during this month from the point of weed management. Therefore, tillage operations and use of herbicides was preferred to get rid of weeds all over the campus. As soon as some dry spell was observed, tillage operations were carried out in orchards too. Herbicides used were Paraquat dichloride, Pendimethalin and Glyphosate. The results of all these herbicides were surprising and provided much relief from weeds. With available manpower, Parthenium eradication was taken up wherever herbicide use or tillage was not possible. Increased population of *Zygogramma* beetles was reported on Parthenium, may be due to continuous cloudy weather.



Experimental field C-5

Plant protection: The important insect pests reported during this month were fruit fly incidence in dragon fruit, lemon butterfly in sweet orange and mealy bug in custard apple. Simultaneously the disease infections observed were *Cercospora* leaf spot and oily spot in pomegranate and anthracnose and downy mildew in grape. Due to heavy rains leading to leaching of nutrients from root-zone, multiple nutrient deficiency symptoms were also observed in orchards.

- Spraying Buprofezin was carried out in custard apple to control mealy bug.
- For fruit fly management in dragon fruit biological control agents like *Beauveria bassiana* and *Metarhizium anisoplae* were used twice. Also spraying of Buprofezin and Imidachloprid was also taken up during the safe periods looking into period of fruit growth and harvest.
- For correcting multiple nutrition deficiencies in various orchards spraying of Mono-potassium phosphate @ 5 gL⁻¹ along with micronutrient mixture @ 2 mL⁻¹ was carried out in Sweet orange, Pomegranate, Grape, Guava, Custard apple and Dragon fruit.
- To take the benefit of cloudy and humid weather, spraying of biological control agents *Trichoderma harzianum* and *Pseudomonas fluorescens* was carried out @ 5 mL⁻¹ in almost all the orchards.



Soybean crop reaching maturity

Weather Summary of September 2020 at ICAR-NIASM

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

The long period average (LPA) of September rainfall and average temperature at Baramati is 158.8 mm and 26.4 °C, respectively. The details of weather during the September 2020 has been listed in Table 1 and depicted in following figure.

Table 1. Summary of weather variables recorded during September, 2020.

Weather Parameters	Week				Monthly	Max.	Min.
	1 st	2 nd	3 rd	4 th			
T Max (°C)	33.3	31.3	29.8	30.8	31.4	35.4	28.6
T Min (°C)	22.0	22.0	22.4	21.8	22.0	23.8	20.4
T Avg (°C)	27.6	26.7	26.1	26.3	26.7	29.0	24.9
RH Mean (%)	76	77	82	77	77	91	67
WS (km/h)	6.2	6.3	6.3	7.5	6.5	10.5	3.6
BSS (h)	6.7	5.4	2.3	6.0	5.2	9.0	0.0
Total PE (mm)	29.4	32.5	23.1	28.0	122.4	6.9	2.0
Total Rain (mm)	125.2	72.0	71.0	7.6	275.8	103.2	0.0

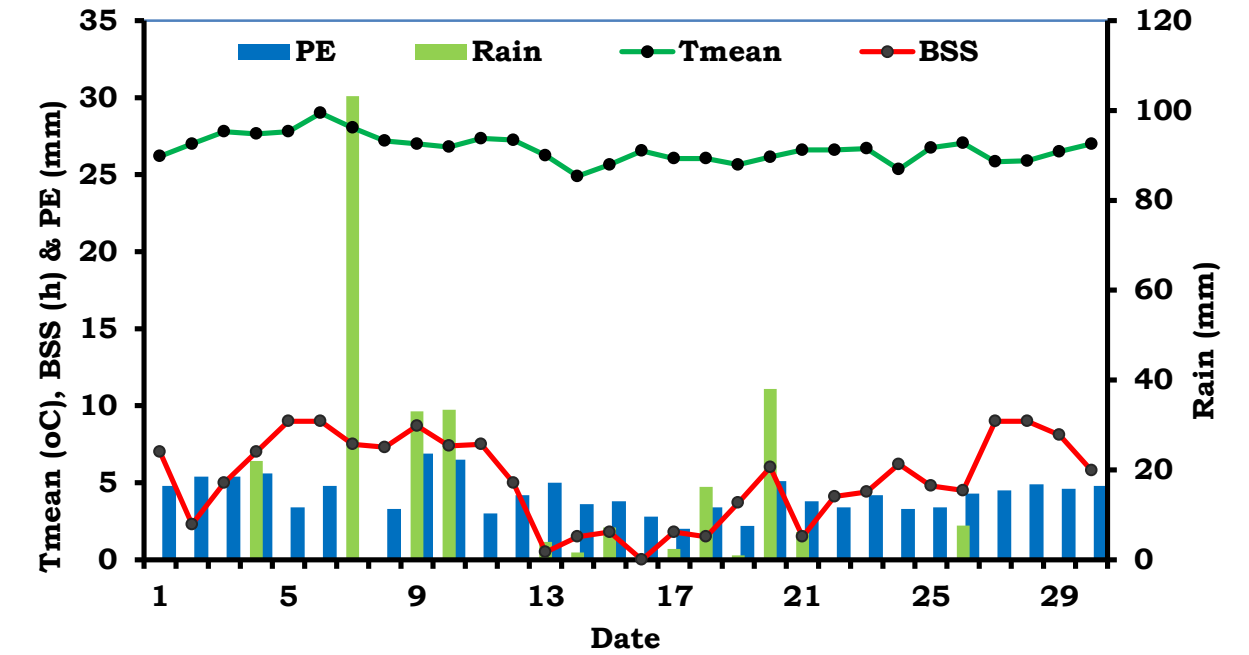


Fig. Variations of daily pan evaporation (PE), rainfall (Rain), mean temperature (T_{mean}) and bright sunshine hours (BSS) during September, 2020 at ICAR-NIASM Baramati.



Forward pruning in grape: Pruning for fruits i.e. forward pruning will be carried out during first fortnight of October 2020. Soil application of basal dose of fertilizers and defoliation will be carried out manually about 7-days before pruning. Fruitfulness pattern in sample canes will be ascertained microscopically. Pruning will be carried out manually by demonstration based on the fruitfulness pattern. Pasting the canes with Hydrogen cyanamide @ 2% will be done to promote sprouting of two distal buds. All the debris from orchard will be removed and disposed through burning.

Defoliation and Pruning for hasta bahar in Pomegranate: Preparations for 'hasta bahar' in pomegranate is in progress. Required water stress could not be achieved due to frequent rains during last month. Defoliation will be achieved chemically by spraying Ethephon @ 1200 ppm. Specialized manpower will be outsourced for pruning work. All the pruned debris will be disposed of by burning to avoid disease spread.

Harvesting and threshing of Kharif crops: Experimental and general soybean crop will be ready for harvesting during this month. Experimental harvesting and threshing will be carried out manually under the supervision of the project leaders. While general crop will be harvested manually and bulk threshing will be executed by machine.

Rabi crops sowing: Requisitions for field requirement for *rabi* experimentation have been received and field allotment will be done shortly. Preparatory tillage operations have been started already. The layout preparation will be carried out as desired by the project leaders. Experimental sowing will be done by dibbling method or through sowing machine. Chickpea, wheat, maize, etc. are the major crops targeted for growing in this season.

Campus cleaning: After continuous rains since June 2020, campus cleaning is to be taken up thoroughly. Eradication of *Parthenium* as being targeted every time along with integrated management of weeds will be practiced. Where ever possible tillage operations will be preferred to make the area clean. Road sides, bunds, peripheral area will be made weed free by the use of herbicides. In general fields recommended pre- and post-emergence weedicides will be used. Experimental fields will be made weed free by manual weeding or techniques suggested by the project leaders.

Trees Plantation & Landscape developments: Landscape development in the area in front of school buildings and tree plantation is targeted for beautification of campus. Plantation of various shrubs and trees is to be carried out in biodiversity block and agroforestry block. Replacement of trees supposed to touch the overhead electric wires is to be taken up on priority.

Plant Protection: Production phase of grape and 'hasta bahar' in pomegranate are in sight. Sweet orange, Dragon fruit, Amla, Guava and Custard apple are also in fruiting stage. Major issue during next month would be flea beetle thrips incidence, anthracnose and downy mildew disease in grape, thrips and oily spot in pomegranate, fruit borer, fruit fly in guava along with fruit rot and anthracnose, fruit fly and mealy bug in custard apple and fruit fly in dragon fruit. Integrated pest and disease management practices will be followed to tackle the biotic stresses. Use of sticky traps, pheromone traps, poison baits and light traps will be used primarily. Spraying and drenching of biological control agents like *Trichoderma harzianum*, *Pseudomonas fluorescence*, *Beauveria bassiana* and *Metarhizium anisoplae*, will be preferred.



Dragon fruit nursery preparations



Foliar nutrition in Sweet orange



Canopy management in pomegranate



Integrated weed management in orchards

Canopy management in Orchards: Canopy management in orchards is an important practice that indirectly demands ample skilled manpower. Understanding, demonstrating and teaching canopy management practices in diverse type of orchards is truly a tough task. NIASM farm has 18 types of fruit crops viz., grape, amla, date palm, fig, drumstick, dragon fruit, karonda, acid lime, sweet orange, mandarin orange, pomegranate, mango, custard apple, guava, sapota, tamarind, ber, jamun, etc. Out of this grape has highly manipulated canopy while pomegranate, mango, custard apple, fig and ber too have ample training pruning requirements. But all these want skill to train and prune the plants to maintain productivity along with quality management through plant protection. Canopy must not be too crowded to harbor insect pests and restrict flowering and fruiting while it should not be too sparse to reach average production. The challenge ahead is to develop such manpower under given circumstances. It has been decided to make this efficient by training the existing contractual staff and also outsourcing these works through specialized teams.

Protecting soybean near harvest: Soybean harvest generally coincides with return monsoon showers. The experimental and general soybean crop at south farm is at maturity and will be ready for harvest within 15-days. The main challenge ahead is to protect the crop from unprecedented showers. It is necessary to find out the safe period for harvest and safe place for drying and threshing.

- Simultaneously, the preparations for sowing of *rabi* crops and weed management during scheduled time is also a great challenge.
- Due to different type of fruit crops growing in vicinity, management of pests and diseases is always a big challenge ahead.



Installation of pheromone traps

Recommendations of Farm Advisory Committee:

The meeting of FAC was held on Sept 16, 2020 to discuss issues for farm improvement.

- Looking into manpower issues due to increasing threat of COVID-19 pandemic in surrounding villages, it was decided to take due care while engaging workers and to fix priorities based on urgent needs.
- Procedure for *rabi* experiments in south farm fields to be initiated by field allotment.
- Repairing of plastic lining of fishery ponds to be done to stop leakages and loss of water.
- Fulfill the work needs at Phenomics facility by engaging more workers.
- Committee took review of disposal of farm produce and decided to dispose of the fallen fruits damaged due to pest infestation by burring deep in pit.
- Use of different type of traps for integrated pest management in orchards and field crops.
- The list of safe and organic pesticides to be prepared to facilitate its procurement and use in research farm to protect honey bees.
- Looking in to priorities in orchard maintenance, outsourcing of specialized works may be considered to complete the operations in scheduled time.

Forward pruning in grape

Grape in tropical region undergoes 'double pruning' system. Its production cycle is marked with two distinct phases viz., foundation phase and production phase. Back pruning or April pruning is carried out after harvesting for vegetative growth, bud fruit fullness and food storage. At the end of this 'foundation phase' pruning for fruits i.e. forward pruning is carried out. It was previously called as 'October Pruning' as it was generally carried out during the month of October. However, practice of staggered pruning is implemented to avoid glut in market. The period after forward pruning till harvest is called as 'Production Phase' and it is divided into following steps in viticulture management.

Pre-pruning practices: At least 10-15 days moisture stress is advised before going for forward pruning. Application of basal dose of fertilizers along with organic manure. Soil pulverizing with root pruning of about 7-10 % is also prerequisite for fresh flush of white roots. Defoliation can be achieved manually or by spraying Ethephon 1200 ppm.

Pruning and bud break: Forward pruning is done by taking the reference of fruitfulness pattern through microscopic testing of sampled canes. Some thumb rules may be followed at the time of pruning like identifying tiger bud in sub-cane or shortened internode between 6 to 10 bud position in case of straight cane. Cut should be taken 2-3 mm from bud, not far away. To promote sprouting distal two buds are pasted with Hydrogen cyanamide 1.5 to 2 %. Shoot growth and flower bud emergence: Shoots start emerging after bud sprouting, it bears inflorescence behind 5th or 6th leaf. Too many shoots on a single cane will deplete food storage which is required for initial shoot and bunch development. Therefore, shoot thinning is carried out at the earliest as soon bunch primordial is felt in desired shoots. Not more than two shoots to be maintained on any given cane.

Pre-bloom stage: After about 18-21 days the white inflorescence turns parrot green, which is called as pre-bloom stage. This is important stage for the first application of GA3 @ 10 ppm for bunch elongation. In some table grape varieties second application of GA3 @ 10-15 ppm is given for further elongation of rachis.

Flowering and shattering: Flowering in grape generally start from 45 to 50 days after sprouting. There are thousands of flowers in a single bunch where 80 to 100 berries are required in case of table grapes. Therefore, some berries have to fall which can be achieved by sudden moisture stress from 50% flowering stage to shattering. Use of

GA3 20 ppm also helps in berry shattering.

Berry setting and berry growth: Grape bunch starts developing after berry setting simultaneously with the shoot development. At 5-6 mm grape berry stage GA3 30-40 ppm along with 6-benzyl adenine or brassinosteroid or 4-chlorfenuron is used for berry development in table grapes. If required some manual berry thinning is practiced for getting loose bunches and proper berry development. Girdling used to be practiced earlier to promote berry growth by diverting food movement towards the bunch. However, with the use of rootstocks and avoid extra stress on grapevines, this practice is escaped. At 6-7 mm berry stage GA3 40-50 ppm can be used to promote further berry growth. This period is observed as lag phase of berry growth which is followed by lag phase.

Veraison and maturity: After about 75-80 days from sprouting, berries start becoming soft which is marked with increase in berry size, accumulation sugars, phenolic compounds and colour development in colour varieties. It takes it takes about 45 to 60 days to achieve complete maturity depending on variety. Varieties like Manjri Naveen and Flame seedless are short duration varieties whereas Thomson seedless takes about 140 days to get matured.

Harvesting: Grape is a non-climacteric fruit where no physiological maturity can occur after harvest. Therefore, decision of harvesting have to be made wisely. Total soluble solids (TSS) and total acidity (TA) are important harvest indices where TSS of 16-18 °Brix and TA 0.6-0.8 % is preferred. TSS/TA ratio of about 20-30 stands as a better index for grape harvest. Table grape berries at harvest should preferably be of 18 mm size without any blemishes and with firm attachment to rachis in a perfectly loose bunch.

(Growth stages pics on page-8)

पीपल वृक्ष (*Ficus religiosa* L.)



पीपल का पेड़/ Peepal Tree

पीपल के पेड़ को 'सैक्रेड फिग' भी कहा जाता है, जो भारतीय उपमहाद्वीप और इंडो-चाइना की मूल प्रजाति है। यह Moraceae अर्थात् अंजीर या शहतूत परिवार से संबंधित है। इसे बोधि वृक्ष, पवित्र वृक्ष, पिप्पला, अराली, अरासु, रावी, या अश्वत्थ के नाम से भी जाना जाता है। पीपल के पेड़ का तीन प्रमुख धर्मों में धार्मिक महत्व माना जाता है, हिंदू धर्म, बौद्ध धर्म और जैन धर्म जो की भारतीय उपमहाद्वीप पर उत्पन्न हुए थे। हिंदू और जैन तपस्वी पेड़ को पवित्र मानते हैं और अक्सर उनके नीचे ध्यान लगाते हैं। यह वह वृक्ष है जिसके तहत गौतम बुद्ध को आत्मज्ञान प्राप्त हुआ माना जाता है। 'अश्वत्थ वृक्ष' को ओडिशा राज्य के 'राज्य वृक्ष' के रूप में नामित किया गया है।

- यह एक बड़ा पर्णपाती या अर्ध-सदाबहार वृक्ष है जो 30 मीटर तक ऊंचा होता है। पत्तियों आकार को एक विशिष्ट विस्तारित ड्रिप टिप के साथ कॉर्डेट जैसा होता है; फल छोटे अंजीर जैसे पकने पर हरे बैंगनी रंग के बन जाते हैं।
- पीपल के पेड़ का जीवनकाल बहुत लंबा होता है, औसतन 900 से 1,500 साल तक होता है। 'जया श्री महा बोधि', श्रीलंका के प्राचीन शहर अनुराधापुरा में एक पीपल का पेड़ 2,250 साल से अधिक पुराना है और इसे "धार्मिक महत्ववाला दुनिया में सबसे पुराना ऐतिहासिक पेड़" माना जाता है।
- यह उपयुक्त रूप से 10 मीटर से लेकर 1,520 मीटर ऊंचाई तक और अक्षांशों पर 30 °N से 5 °S तक होता है। यह हवा के तापमान को 0 °C से 35 °C के बीच सहन कर सकता है, इस ऊपरी सीमा से परे इसकी वृद्धि कम हो जाती है।
- यह मिट्टी की एक विस्तृत विविधता पर बढ़ता है लेकिन अधिमानतः अच्छी जल निकासी के साथ गहरी, जलोढ़ रेतीली दोमट भूमि की आवश्यकता होती है। यह चट्टानों सहित उथली मिट्टी पर भी पाया जाता है।
- बोधिवृक्ष के नीचे ध्यान करते हुए गौतम बुद्ध ने आत्मज्ञान प्राप्त किया। यह स्थल बिहार में वर्तमान बोधगया में है।
- साधु (हिंदू सन्यासी) पीपल के पेड़ों के नीचे ध्यान करते हैं। आमतौर पर सुबह के समय वृक्ष के चारों ओर सात प्रदक्षिणाएं की जाती हैं।
- यह दावा किया जाता है कि 27 नक्षत्रों में, बोधि वृक्ष पुण्य नक्षत्र का प्रतिनिधित्व करता है।
- पीपल के पेड़ का उपयोग पारंपरिक चिकित्सा में अस्थमा, मधुमेह, दस्त, मिर्गी, गैस्ट्रिक समस्याओं, सूजन संबंधी विकारों, संक्रामक और यौन विकारों सहित लगभग 50 प्रकार के विकारों में किया जाता है।

Peepal tree also called as sacred fig is a species native to the Indian subcontinent and Indo-china that belongs to *Moraceae*, the fig or mulberry family. It is also known as the Bodhi tree, Holy tree, Pippala, Arali, Arasu, Raavi, or Ashwattha. The Peepal tree is considered to have a religious significance in three major religions that originated on the Indian subcontinent, Hinduism, Buddhism and Jainism. Hindu and Jain ascetics consider the tree to be sacred and often meditate under them. This is the tree under which Gautama Buddha is believed to have attained enlightenment. Ashwatha is designated as the state tree of the Indian state of Odisha.

- It is a large deciduous or semi-evergreen tree up to 30 metres tall. The leaves are cordate in shape with a distinctive extended drip tip; The fruits are small figs green ripening to purple.
- Peepal tree has a very long lifespan, ranging on average between 900 and 1,500 years. The 'Jaya Sri Maha Bodhi', a peepal tree in the ancient city of Anuradhapura in Sri Lanka is estimated to be more than 2,250 years old and is regarded as the "Oldest historical tree in the world with religious importance".
- It suitably grows at altitudes ranging from 10 metres up to 1,520 metres and at latitudes ranging from 30°N to 5°S. It can tolerate air temperatures ranging between 0 °C to 35 °C, beyond this upper limit its growth diminishes.
- It grows on a wide variety of soils but preferably needs deep, alluvial sandy loam with good drainage. It is also found on shallow soils including rock crevices.
- Gautama Buddha attained enlightenment while meditating underneath a *Bodhi Vriksha*. The site is in present-day Bodh Gaya in Bihar, India.
- Sadhus (Hindu ascetics) meditate beneath sacred fig trees. Usually seven pradakshinas are done around the tree in morning time chanting "*vriksha rajaya namah*".
- It is claimed that of the 27 constellations, Bodhi Tree represents Pushya Naxatra.
- Peepal tree is used in traditional medicine for about 50 types of disorders including asthma, diabetes, diarrhea, epilepsy, gastric problems, inflammatory disorders, infectious and sexual disorders.

प्रगति के पथ पर

कृषि में क्रयशक्ति एक महत्वपूर्ण पहलू है। मार्च-अप्रैल 2020 के बाद से, कोविड-19 खतरों के कारण जारी लॉकडाउन के कारण न्यूनतम कर्मचारियों के साथ करना पड़ा। हालांकि, अनलॉक- 4 में पास के गाँव क्षेत्र में बढ़ते खतरे के साथ चिह्नित किया गया था, जिसने काफी हद तक लगे हुए जनशक्ति को कम करने के लिए मजबूर किया था। सितम्बर माह में औसत से अधिक वर्षा के साथ भी अनुभव किया गया। ऐसी परिस्थिति में विभिन्न प्रबंधन जैसे कि खरपतवार प्रबंधन, फसल प्रबंधन प्रथाएं, फसल कटाई, आदि में कुछ हद तक सफलता दर्ज करने के लिए बहुत ही विवेकपूर्ण ढंग से प्रबंधित करने की आवश्यकता है। अब आगे आने वाली चुनौतियां विशेष रूप से खरीफ की फसलों की कटाई, आगामी रबी सीजन की समय बद्धता, अंगूर में छटाई का मौसम, अनार का 'हस्त बहर' और अमरूद में फल सुरक्षा है। पौधों की सुरक्षा, पोषण प्रबंधन और खरपतवार प्रबंधन को एकीकृत तरीके से योजना और क्रियान्वित किया जाना चाहिए।

सितंबर 2020 का महीना 158.8 मिमी वर्षा वाले भारी वर्षा के साथ चिह्नित किया गया था। इसने क्षेत्र की फसलों, बागों, उद्यान क्षेत्रों, सड़कों और परिधीय वृक्षारोपण में खरपतवार प्रबंधन को प्रभावित किया। रोग फैलने के लिए मौसम की स्थिति बहुत योग्य थी। अंगूर में काड़ियों की परिपक्वता संबंधी समस्या पायी गयी तथा अनार में बहर हेतु पानी का आवश्यक तनाव असंभव रहा। हालांकि, समय पर जल निकासी की तैयारी के प्रावधानों से खेत की फसलों या बागों में पानी के ठहराव से बचा गया था।

Plan For Progress

Manpower is an important input aspect in agriculture. Since Mar-Apr 2020, lockdown due to COVID-19 threat works are required to be carried out with minimum manpower. However, the unlock-4 was marked with increased threat in nearby village area, which forced to reduce manpower engaged to great extent. The month was also market with the rainfall more than average. Under such situation various operations like weed management, crop management practices, harvesting, etc. required to manage very judiciously to register at least part success. Now challenges ahead are harvesting of kharif crops, upcoming *rabi* season, fruiting season in grape, pomegranate and guava in particular. Plant protection, nutrition management and weed management have to be planned and executed very efficiently through integrated manner.

Month of September 2020 was marked with heavy showers accounting 158.8 mm rainfall. It affected weed management in field crops, orchards, garden areas, roadsides and peripheral plantations. The weather conditions were very congenial for disease spread. Cane maturity became an issue in grape and lack of stress in pomegranate while preparing for '*hasta bahar*'. However, stagnation of water in field crops or orchards was avoided by timely drainage preparations provisions.



Upcoming growth stages after forward pruning in grape

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