

Recommended Technologies - 2017

45th Joint Agricultural Research and Development Committee Meeting 2017 was held at Vasantrya Naik Marathwada Krishi Vidyapeet, Parbhani during May 29-31, 2017. Following varieties and implements of VNMKV were released and recommendations were passed during this meeting.

Variety Released

1. Pearl Millet hybrid: AHB-1200

High yielding, rich in Fe (88 ppm) and Zn (38 ppm), downy mildew resistant pearl millet hybrid AHB-1200 is recommended for its release in Maharashtra state.

2. Linseed : LSL-93

Linseed variety LSL-93 (808 kg/ha) produced 14.28 percent higher seed yield over state check NL-260 (707 kg/ha). This variety matures 10 – 15 days earlier than NL-260. LSL-93 recorded moderately resistant reaction against to powdery mildew, *Alternaria blight*, wilt diseases and resistant to rust. It is also recorded moderately resistant to pest bud fly. Hence linseed variety LSL-93 is recommended to release for rainfed cultivation in Maharashtra state.

3. TOMATO PBNT-5 :

PBNT-5 variety of Tomato recorded the highest average yield (618.00 q/ha) in Rabi season is recommended for release for cultivation during Rabi season in Marathwada region.

Implements released

1. VNMKV developed bullock operated inter culturing implement is recommended for inter culturing operations in sugarcane & Turmeric.
2. VNMKV developed Single Bullock operated Harrow is recommended for Harrowing operation & for Inter culturing operation in wide spacing crops.
3. VNMKV developed Single Bullock operated Twin ferti hoe is recommended for Inter culturing operation and fertilizer application in wide spacing crops.
4. VNMKV developed Bullock drawn turmeric and ginger digger implement is recommended for digging turmeric and Ginger crop on raised bed.

Research Recommendations

Agronomy

1. In *Kharif* season, for getting higher seed yield and monetary returns, it is recommended to sow sunflower crop on ridges and furrow at 60cm x 30 cm spacing in vertisol of Marathwada region .
2. Seed treatment of *Azotobactor* + PSB @ 25 g each/kg seed + in situ green manuring of sunhemp @ 50 kg seed/ha and its incorporation in soil after 45 DAS is recommended for soil enrichment and profitable organic cultivation of American cotton varieties.
3. High density planting of American cotton varieties on raised bed (bottom width 90 cm and top width 75 cm) with application of 125 % RDF (75:37.5:37.5 NPK kg/ha) + soil test based micronutrients is recommended for higher yield and profitable returns on medium soils of Marathwada under rainfed condition.

Varieties Released



Pearl Millet hybrid: AHB-1200



Linseed : LSL-93



TOMATO PBNT - 5



Kharif Sorghum - PVK 1009 (Pre-released)



Tamarind : Shivai

Implements Released



Bullock Drawn Turmeric and Ginger Digger Implement



Single Bullock Operated Twin Ferti Hoe



Single Bullock Operated Harrow



Bullock Operated inter Culturing Implement for Sugarcane & Turmeric



Agriculture Mechanization

4. For higher seed cotton yield and net monetary returns of rainfed Bt. cotton, it is recommended to plant rainfed Bt cotton on broad bed furrow in medium to deep black soils with in-situ green manuring (at 50% flowering / at 45 DAS) of sunhemp as a inter crop OR apply 5 t/ha of FYM with the application of 75% RDF (90:45:45 NPK Kg/ha) + two sprays of potassium nitrate (KNO₃) at 35 days (1.0%) and at 75 days (2.0%) after planting respectively OR two sprays of micronutrient mixture (grade-II)(@ 0.5% each) at days and at 75 days after planting respectively.
5. To cope with dry spells and to attain stable rainfed Bt cotton yield it is recommended to apply two sprays of 19:19:19 @ 0.5% at 35 days and at 75 days after sowing respectively OR potassium nitrate (KNO₃) at 35 days (@ 1.0%) and at 75 days after sowing (@ 2.0%) respectively alongwith recommended dose of fertilizers (120:60:60 NPK kg/ha) in medium to deep black soils.
6. For higher seed yield and net monetary returns of soybean, it is recommended to undertake sowing of soybean on broad bed furrow in medium to deep black soils with the application of RDF (30:60:30 NPK Kg/ha) and during dry spell two sprays of potassium nitrate (KNO₃) (@ 1.0 & 2.0 %) OR two sprays of 19:19:19 (@ 0.5%) at 30-35 days and at 60-65 days after sowing respectively.
7. Application of 50% recommended NPK + 3.5 t/ha safflower residues along with 2.5 t/ha FYM to soybean and application of 50% recommended NPK + 3 t/ha soybean residues along with 3 t/ha FYM to safflower is recommended for saving of 50% NPK requirement of both crops in soybean – safflower cropping system on vertisols of Marathwada.
8. It is recommended to undertake sprays of Mepiquat chloride (5%) @ 25 g. a. i./ha at square formation and flowering stage is recommended for retarding vegetative growth, increasing seed cotton yield and profitable monetary returns of Bt cotton under rainfed conventional cultivation.
9. Spacing of American hybrid Bt. Cotton for high density planting system at 90 x 30 cm (37037 plants ha⁻¹) is recommended for higher seed cotton yield and economic returns.
Application of mepiquat chloride (5%) @ 25 g a.i. ha⁻¹ twice at square formation and flowering is recommended for higher seed cotton yield and economic returns.
10. Seed treatment of PSB and Azospirillum along with recommended dose of fertilizer (60:30:30 NPK kg/ha) is recommended for hybrid pearl millet during kharif season in Marathwada region is recommended.
11. For obtaining higher production and monetary returns in rabi maize, application of 150 : 75 : 75 NPK kg/ha fertilizer dose with three equal splits of nitrogen at 33.3 % (50 kg/ha) basal + 33.3 % (50 kg/ha) after one month and 33.3 % (50 kg/ha) after two month and full dose of phosphorus and potash applied at the time of sowing is recommended.

Soil Science

12. In Vertisol of Marathwada region, to get maximum yield and monetary returns of green gram in kharif season, application of recommended dose of fertilizer i.e. 25:50 kg N and P₂O₅ with 25 kg K₂O and soil application of 25 kg grade I micronuritent fertilizer per ha. or foliar spraying of grade II @ 0.5% at 20 and 35 DAS is recommended.

Entomology

13. Application of neem cake @ 1.0 kg/m² in the seed bed, covering of nursery with 40 mesh white nylon net, spraying of Cyantraniliprole (10.26 % OD) @ 1.2 ml/l three days before transplanting, seedling dip of

Technologies Recommended



BBF Method for Soybean



Ratoon Crop of Banana Retaining of $\frac{3}{4}$ Pseudostem from Base of Main Crop



Effective Management of Chilli Leaf Curl.



Turmeric Planted on 1.5m Wide Raised Bed



Functional *Heartdibocare* Snack as a Breakfast Food



Sprinkler Irrigation for Gram

Imidacloprid (17.8 % SL) @ 0.5 ml/l for 15 minutes and sowing of two rows of maize as border crop in the main field 15 days before transplanting along with sliver agrimulch sheet and five spray of Cyantraniliprole (10.26 % OD) @ 1.2 ml/l at seven days interval after transplanting is recommended for effective management of chilli leaf curl.

14. The IPM module on chickpea for *H. armigera* recommended is as follow.

- 1) Clean up campaign and summer deep ploughing.
- 2) During sowing mix with 100g of sorghum seed in chickpea.
- 3) Sowing of two border rows of coriander and mustard around crop.
- 4) Use of bird perches @ 50/ ha.
- 5) Use of pheromone traps @ 5 /ha.
- 6) Spraying of 5% NSKE during 50 % flowering.
- 7) Spraying of HaNPV 500 LE/ha at pod initiation stage for *H. armigera*.
- 8) Spraying of emamectin benzoate 5 SG @ 4g/10 lit. of water at pod development stage for *H. armigera*.
15. VNMKV developed following forewarning model regarding maximum grey mildew incidence in cotton and crop growth stage at peak infestation of grey mildew is recommended for the use of extension workers and scientists to intimate farmers in advance.

Maximum severity on cotton

$$(Y) = (-8.42722) + 0.60043 * Z41 + 0.00687 * Z231$$

Age of cotton at Peak Severity

$$(Y) = (-7.16219) + 0.01035 * Z341$$

Where,

Z41 = Weighted weekly evening relative humidity,

Z231 = Weighted weekly interaction of minimum temperature and morning relative humidity and

Z341 = Weighted weekly interaction of morning relative humidity and evening relative humidity

Food Technology

16. It is recommended to prepare good quality multigrain roti with 60 per cent Sorghum and each of 13.33 per cent finger millet, amaranth and soya bean.
17. It is recommended to use VNMKV, Parbhani developed technology for production of *Instant Sorghum Flakes from Parbhani Moti Cultivar*.

Home Science

18. The College of Home Science, VNMKV, Parbhani recommends that effective Crash Courses must be offered to rural male and female youth on Self Care & Life Skills Development, Premarital Counselling for Marital Readiness and on Effective Parenting Practices for preventing / reducing marital problems of rural couples to have happy and empowered families.
19. VNMKV recommends consumption of 60 g of functional *Heartdibocare* snack as a breakfast food for a period of 60 days to reduce the fasting and post prandial blood glucose of diabetic subjects and total cholesterol, triglycerides and LDL cholesterol of hyperlipidemic subjects based on clinical findings.
20. VNMKV developed customized 3 bags and a basket are recommended for collecting loose roses, cut roses, gaillardia and marigold flowers for harvesting task for work efficiency and drudgery reduction of farm workers

21. The VNMKV developed rectangular tray made up of MS Galvanized steel with two handles is recommended for work efficiency and drudgery reduction of worker in filling up grains.
22. It is recommended to use 1% mango kernel starch on cotton fabric and 4% mango kernel starch on silk fabric as a thickening agent for the purpose of block printing.

Agricultural Engineering

23. Plastic punnet packaging (150 gauge, 2% ventilation) is recommended for the storage of peeled garlic cloves up to 22 days (low temperature, 5°C) and 7 days (ambient temperature, 30°C).
24. The drainage coefficient values developed by VasantnaikKrishiVidyapeeth are recommended for the design of surface drainage system for Tahsils of Jalna, Osmanabad, Beed, Latur, Nanded, Aurangabad and Parbhani districts of Marathwada.
25. Rainfall intensity-duration-frequency relationships and nomographs for Nanded, Latur, Jalna and Hingoli, are recommended for determination of rainfall intensity for design of soil and water conservation structures, in Marathwada region.
26. Crop specific dryspell probability nomographs of dominant Dryland crops, are recommended for crop planning, contingency crop planning, crop management, cultural operations and protective irrigation in Marathwada Region.

Long Term fertilizer

27. For Increasing the productivity, profitability, land use efficiency and maintenance of soil fertility the planting on broad bed furrow at 1.5 m in kharif season Maize + Soybean (Bed), Sesbania (Furrow) (2:1:2) - in rabi season Chick pea (Bed) + Wheat (Furrow)(3:2) – in summer season Cowpea (Veg.) (Bed) + Okra (Furrow)(3:2) crop sequences is recommended for Marathwada region.

Horticulture

28. For getting maximum yield and better economic returns of ratoon crop of banana retaining of ¾ pseudostem from base of main crop is recommended for Marathwada region.

Water Management

29. For higher fresh rhizome yield and monetary returns of turmeric planted on 1.5 m wide raised bed with paired row planting (45 x 15 cm), it is recommended to schedule alternate day inline drip irrigation with 80% of cumulative pan evaporation.
Drip fertigation with 80% of recommended dose (160:80:80 N: P: K kg/ha) to turmeric with N in 5 equal splits @28 kg/ha at an interval of 30 days from 30 days after planting (DAP) to 150 DAP while sixth dose of N @20 kg/ha at 180 DAP and P and K in 3 splits of 40, 20 and 20 kg/ha, respectively at planting, 60 DAP and 120 DAP is recommended.
30. For higher fruit yield and net monetary returns of rabibrinjal, it is recommended to schedule inline drip irrigation at 80% of pan evaporation daily with fertigation of 80:40:40 kg/ha of N: P: K; N in 5 equal splits at an interval of 30 days from transplanting to 120 DAP and P and K in three splits of 20, 10 and 10 kg/ha, respectively at planting, 30 DAP and 60 DAP.

The fertigation schedule along with the quantity of soluble fertilizer is given below.

Time of application	Fertilizer dose (80:40:40NPK Kg/ha)			Soluble fertilizers (kg/ha)		
	N	P	K	Urea	0:52:34	0:0:50
At planting	16	20	20	35	38.50	14.0
30 DAP	16	10	10	35	19.25	7.0
60 DAP	16	10	10	35	19.25	7.0
90 DAP	16	-	-	35	-	-
120 DAP	16	-	-	35	-	-

31. For higher yields and net monetary returns of watermelon, inline drip irrigation scheduled at 80% of pan evaporation daily with lateral laid at the centre of broad bed furrow of 90 cm top and crop is sown at 50 cm plant to plant spacing on the bed covered with black polythene mulch of 30 micron is recommended.
32. For higher yield and net monetary returns of summer groundnut, it is recommended to use inline drip irrigation with lateral laid at the centre of broad bed furrow (BBF) having top width of 90 cm and three rows of groundnut planted at 30 cm (30x8 cm) covered by transparent or black polythene mulch and daily irrigation scheduled at 100% of pan evaporation on medium deep soils of Marathwada region.
33. In soybean-chickpea cropping system for higher yield and economic returns from chickpea, it is recommended to apply two irrigations of 60 mm depth at critical growth stages first at flowering and second at pod formation stage through sprinkler irrigation.

Sericulture

34. Double cross hybrid (CSR₂xCSR₂₇) X (CSR₆xCSR₂₆) shown significantly superior weight of 10 mature larvae (40.554g), filament length (983m), filament weight (0.308g) & cocoon yield (17.764kg) per 10,000 larvae brushed over check is recommended for commercial sericulture in Maharashtra.

Agri. Economics

35. To ensure the remunerative prices for turmeric, APMCs should create uniform marketing conditions by setting up real time price information system and marketing infrastructure. It is also recommended that, price stabilization mechanism especially minimum support price should be given to turmeric so as to reduce the price volatility in all major turmeric markets.
36. To improve integration among major markets of soybean and facilitate remunerative prices to farmers, information system should be strengthened.