

Recommended Technologies - 2020

Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola hosted the Joint Agricultural Research Committee Meeting (JOINT AGRESCO) during October 26-31, 2020 in Online mode. The details of crop varieties and implement released along with specific recommendations on production technology, rainwater management, value addition based on research work are given below.

Release of Variety :

1. Pigeonpea BDN 2013-41 (Godavari)

Pigeon pea genotype BDN-2013-41 recorded 32.12 % , 15.64 % , 32.51 % and 22.14 per cents more yield over checks BDN 711, BDN 716, AKT 8811 and Rajeshwari, respectively. It matures in 160-165 days , resistant to wilt and sterility mosaic diseases and has high protein content. Hence, the Pigeon pea genotype BDN-2013-41 is recommended for *kharif* season in Maharashtra State.

2. Cotton NHH-44 (BG II)

The cotton variety NHH 44 (BG-II) is recommended for Dryland / rainfed region of Maharashtra State.

Implement Released:

1. Solar operated animal/bird scarer cum light insect trap

VNMKV developed Solar operated animal/bird scarer cum light insect trap is recommended for scaring the animals, crop and plant protection and for trapping the insects thus reducing crop infestation and enhancing crop productivity. It has the facility to change the voice at regular time interval thus deterring the animals and birds.

Technologies recommended

1. Post emergence application of Fluazifop-p-butyl 11.1% + Fomesafen 11.1% @ 250 g a.i./ha at 20 to 25 days after sowing or Pre emergence application of Diclosulam 84% @ 26 g a.i./ha & 1 Hoeing 20 to 25 days after sowing is recommended for effective weed control and higher net returns in soybean.
2. Sowing of *Bt* cotton on BBF prepared by tractor along with pre and post emergence application of recommended weedicides and spraying of crop protection chemicals by tractor drawn sprayer is recommended for lower labour requirement, higher yield and net returns.
3. Application of 150:75:75 NPK kg ha⁻¹ is recommended for high density planting of *Bt* cotton (90 x 30 cm; plant density 37,037 ha⁻¹) under rainfed condition to increase seed cotton yield, lint yield and monetary returns.
4. For higher curd yield and net monetary returns of summer cabbage, it is recommended to schedule alternate day drip irrigation and 80 % crop evapo-transpiration through inline lateral laid at the centre of raised bed having 2 rows of cabbage planted at spacing of 50 x 45 cm and drip fertigation of 120:60:60 NPK kg/ha with NP and K in 8 equal splits @ 15 Kg N and 7.5 Kg P and K at an interval of 10 days from transplanting to 80 days after transplanting.

Irrigation Water application schedule

Met week	Week after transplantation for irrigation	Water requirement per plant, lit	Operation time for drip set, min	Weekly temperature, °C	
				Max	Min
2	Transplanting to 1 st week	0.20	9	29.0	9.5
3	2 nd week	0.32	16	30.4	11.4
4	3 rd week	0.33	16	30.3	11.8
5	4 th week	0.41	18	31.1	10.4
6	5 th week	0.67	30	31.4	12.1
7	6 th week	0.84	38	32.5	13.7
8	7 th week	0.95	42	35.6	14.9
9	8 th week	1.00	44	32.4	14.0
10	9 th week	1.12	50	35.8	16.0
11	10 th week	1.26	56	35.5	17.8
12	11 th week	1.30	58	37.9	17.8
13	12 th week	1.39	62	40.9	19.5
14	13 th week	1.48	66	40.5	20.4
15	14 th week	1.54	68	40.6	21.1

Fertilizer application schedule

Duration for fertilizer application	Fertilizer dose (120:60:60 kg/ha, N:P:K)			Soluble fertilizers, kg/ha	
	N	P	K	Urea	19:19:19
10 days after transplanting	15	7.5	7.5	16.3	39.5
20 days after transplanting	15	7.5	7.5	16.3	39.5
30 days after transplanting	15	7.5	7.5	16.3	39.5
40 days after transplanting	15	7.5	7.5	16.3	39.5
50 days after transplanting	15	7.5	7.5	16.3	39.5
60 days after transplanting	15	7.5	7.5	16.3	39.5
70 days after transplanting	15	7.5	7.5	16.3	39.5
80 days after transplanting	15	7.5	7.5	16.3	39.5
Total	120	60	60	130.4	316

- For higher fruit yield and net monetary returns of *rabi* tomato, it is recommended to schedule alternate day drip at 80 % of crop evapo-transpiration through inline lateral laid at the centre of raised bed having top width of 90 cm and two rows of tomato sown at the spacing of 60 x 30 cm and covered by 30 micron silver black polythene mulch or treatment combinations of irrigation at 0.80 ETC and 30 micron black polythene mulch or 0.60 ETC and 30 micron black polythene mulch.

Met. week	Weeks after transplantation for irrigation	Irrigation per plant, lit	Operation time for drip set, min	Weekly Temp. °C	
				Max	Min
47	Transplantation to 1 st week	0.43	13.50	31.5	14.3
48	2 nd week	0.54	17.94	30.6	10.2
49	3 rd week	0.86	28.47	30.5	13.5
50	4 th week	0.83	27.52	30.3	12.9
51	5 th week	0.86	28.42	28.7	8.9
52	6 th week	1.15	38.27	26.6	7.2
1	7 th week	1.57	52.28	29.7	8.6
2	8 th week	1.74	57.78	29.0	9.5
3	9 th week	1.84	61.09	30.4	11.4
4	10 th week	1.99	66.17	30.3	11.8
5	11 th week	1.94	64.47	31.1	10.4
6	12 th week	2.14	71.16	31.4	12.1
7	13 th week	2.27	75.43	32.5	13.7
8	14 th week	2.37	78.56	35.6	14.9
9	15 th week	2.41	73.30	32.4	14.0
10	16 th week	2.83	93.82	35.8	16.0
11	17 th week	2.97	98.44	35.5	17.8
12	18 th week	2.76	91.57	37.9	17.8
13	19 th week	2.32	77.14	40.9	19.5
14	20 th week	2.00	66.52	40.5	20.4

6. In Marathwada region for higher yield, net monetary return and water use efficiency of summer okra, it is recommended to schedule alternate day drip irrigation at 80% of crop evapotranspiration through inline lateral laid at the center of raised bed having top width of 90 cm and two rows of okra sown at the spacing of 60cm x 30 cm and covered by 30 micron silver black polythene mulch

Met. Week	Number of weeks after sowing	Water requirement per plant, lit	Time of operation of drip set	Weekly temp	
				Max.	Min.
9	Sowing to 1 st week	0.45	30	32.4	14.0
10	2 nd week	0.82	55	35.8	16.0
11	3 rd week	0.94	63	35.5	17.8
12	4 th week	1.01	67	37.9	17.8
13	5 th week	1.41	94	40.9	19.5
14	6 th week	1.54	103	40.5	20.4
15	7 th week	1.67	111	40.6	21.1
16	8 th week	1.61	107	40.9	21.7
17	9 th week	1.46	97	41.9	22.5
18	10 th week	1.51	100	41.8	24.9
19	11 th week	1.55	104	42.2	26.2

Variety and Implements Released



Pigeon Pea : BDN 2013-41 (Godavari)



Cotton - NNH - 44 (BG II)



Solar operated animal/bird scarer cum light insect trap

Technologies Recommended



Bt Cotton sown on BBF with weedicide spraying



Summer okra plantation on broad bed with silver black polylining



Sowing of maize at 70 x 30 cm



Plantation of turmeric (Salem variety)

7. For getting higher grain yield and monetary return, the cultivation of *rabi* maize hybrid with plant spacing 75 x 20 cm² (66666 plants / ha) is recommended.
8. It is recommended to undertake the seed treatment of bioagent *Trichoderma harzianum* liquid formulation @ 10ml per kg of seed for effective charcoal rot disease management in *Rabi* sorghum growing area of Maharashtra.
9. It is recommended to undertake spray of the bioagent *Trichoderma harzianum* liquid formulation @ 10ml per liter of water at the time of 80% flowering for effective grain mold disease management in *kharif* sorghum growing area of Maharashtra.
10. It is recommended to undertake the biofertilizer seed treatment of liquid *Acetobacter* and *Azotobacter* @ 10ml each /kg seed before sowing along with application of N, P and K each @ 40 kg/ha to increase grain and stover yield with 50 per cent saving of N in *Kharif* sorghum growing area under dry land conditions of Maharashtra.
11. Estimation of week wise water requirement after planting of *kharif* green chilli, *rabi* tomato and *rabi* cabbage under Parbhani condition VNMKV developed crop coefficients or polynomial equations are recommended.

<i>Kharif</i> green chilli			<i>Rabi</i> tomato			<i>Rabi</i> cabbage		
Met. week	Week after planting	Crop coefficient	Met. week	Week after planting	Crop coefficient	Met. Week	Week after planting	Crop coefficient
34	0	0.60	41	0	0.60	43	0	0.62
35	1	0.60	42	1	0.62	44	1	0.62
36	2	0.61	43	2	0.62	45	2	0.64
37	3	0.61	44	3	0.62	46	3	0.69
38	4	0.76	45	4	0.73	47	4	0.80
39	5	0.82	46	5	0.79	48	5	0.85
40	6	0.90	47	6	0.85	49	6	0.91
41	7	0.96	48	7	0.92	50	7	0.96
42	8	1.02	49	8	0.99	51	8	1.02
43	9	1.07	50	9	1.06	52	9	1.08
44	10	1.12	51	10	1.13	1	10	1.00
45	11	1.14	52	11	1.19	2	11	1.04
46	12	1.15	1	12	1.21	3	12	1.06
47	13	1.16	2	13	1.26	4	13	1.06
48	14	1.15	3	14	1.30	5	14	1.03
49	15	1.15	4	15	1.32	6	15	0.99
50	16	1.13	5	16	1.33			
51	17	1.11	6	17	1.33			
52	18	1.09	7	18	1.31			
1	18	1.04	8	19	1.29			
2	19	1.03	9	20	1.25			
3	20	1.01	10	21	1.19			
4	21	0.99	11	22	1.11			
5	22	0.96	12	22	1.04			
6	23	0.96	13	23	0.96			

12. VNMKV developed process technology is recommended for the production of osmo-convectively dried 5 mm thick orange slices with-peel having shelf life of 150 days, vacuum packed in Coax pouch. as per given optimized process parameters: Temperature of sugar syrup: 50°C
13. For domestic roof water harvesting system (DRWH) soak pit 2 m in diameter and 2 m depth, construction of 0.10 m thick brick wall and filled in three layers, 0.10 m upper layer of fine aggregates, 0.10m middle layer coarse aggregates and 1.80m bottom layer of 1/3 batt bricks is recommended for increasing ground water recharge.
14. Turmeric seedlings prepared through rhizome cuttings having one eye bud raised in cocopeat is recommended for cost effective cultivation of turmeric.
15. On the basis of earliness, yield, curcumin content and maximum monetary return, Selam variety of turmeric was found highest among the rest of varieties of turmeric, hence, the Selam variety is recommended for cultivation under Marathwada condition.
16. It is recommended that good quality of plain and flavoured aonla fruit balls can be prepared by treating with salt (3%), alum (2%), ginger flavor (1%) and blending whole mature aonla fruits to sugar ratio (1:1) for 12 days and drying at 55°C for 5.5 h.
17. It is recommended that the incorporation of 5% guar seed hull in cookies improved dietary fiber.
18. It is recommended that Chocolate flavored milk with addition of 0.4 percent blend of guar and arabic gum improved overall quality attributes be prepared.
19. It is recommended that good quality acceptable probiotic chocolate can be prepared by using 3 per cent bael fruit extract and 10 per cent lactic acid bacteria culture.
20. Amongst investigated varieties PVRSG-101 cultivar of tender sweet sorghum was found suitable for hurda making, considering its sensory and high yielding characteristics. Treatment of balancing with 0.2% MgO for 2.5 min, packed in HDPE at 40°C temperature was found most suitable for storage up to 30 days.
21. It is recommended that a good quality acceptable spice extract incorporated Lime RTS, with maintaining microbial and storage condition can be prepared by adding 10 % lime juice, 0.9 % spice extract, 0.3 % acidity and 120 brix using jaggary.
22. It is recommended that 30% flaxseed can be utilized for good quality, acceptable sesame-flaxseed nutrachikki and 3 months storage at ambient temperature.
23. For the preparation of good quality whole lime- aloe vera spread, the use of lime pulp, lime peel pulp and aloe vera juice in ratio 60:40:40 with 3 g of spices having 680 Brix can be stored up to 3 month at ambient condition is recommended .
24. In Inceptisols of Marathwada region, in order to obtain maximum yields , monetary return from kharif soybean and for the improvement in soil properties application of recommended dose of fertilizer (30: 60:30 kg N,P₂O₅ and K₂O/ha) along with tank silt @ 5 t ha⁻¹ + FYM @ 2.5 t ha⁻¹ or tank silt @ 10t ha⁻¹ with RDF is recommended.
25. It is recommended that 20 per cent horse gram flour can be incorporated for increasing protein, total minerals, fiber, calcium, iron and zinc content of Salty Biscuits and Cookies.
26. VNMKV developed dietary fiber rich (28.74 g/100g) ready to use multigrain mix is recommended to include in daily diet of obese women in the form of Upma, Roti and Dhirde for weight reduction.

27. Light weight, wearable plastic Vishram field stool of 120 mm height is recommended for reducing WMSDs (Work related Musculoskeletal Discomfort) of women farmers while performing repetitive farming tasks in squatting /bending posture such as planting, hand weeding and stubble collection.
28. VNMKV developed low cost technology basket is recommended for drudgery mitigation and to increase the work output in women dominating activities in ginger production system.
29. It is recommended that for avoiding adverse effects on child development, families need to keep their children away from excessive use of television and cell phones and instead of it, encourage them to indulge in constructive recreational activities such as outdoor games, reading, music & dance, household work and family care activities. Similarly they should be given adequate time and necessary facilities for it.
30. VNMKV developed designs of shirt DS2 and pant DP2 are recommended to use by arthritic men as their acceptability index was found higher.
31. For eco-friendly, anti-microbial finish on cotton fabric use of two percent Aonla leaves extract, taken out in 70% ethanol is recommended.
32. VNMKV Parbhani developed stretchable sari blouse for women use diagonal direction of woven fabric has been recommended.
33. VNMKV Parbhani developed featured face mask of double layered poplin lined with muslin single layered cloth is recommended to use for protection from Covid- 19.
34. It is recommended that wide spread trainings for management of Fall Army Worm through community approach be organized by various extension functionaries.
35. It is recommended to create the awareness among the agro input dealers about insecticide label claims and toxicity label through frequently organize the training particularly before kharif season by extension agencies such KVKs, State Dept of Agriculture etc in the Marathwada region.
36. Long term performance analysis of soybean and safflower on area, production and productivity at disaggregate level showed that soybean productivity is continuously decreasing and moderately instable in Nanded, Parbhani and Hingoli district however area and production of safflower is decreasing in all the districts of Marathwada region, therefore it is recommended that pilot project on oilseeds may designed for Marathwada region to transfer the improved production technology package in addition to critical inputs (Seeds, Biofertilizers, Micronutrients, etc.) at farmers level.
37. Due to adoption of improved production technologies developed by VNMKV, Parbhani, pigeon pea farmers have economically benefitted around 40 per cent through yield enhancement with a net benefit of rupees 14065 per hectare. Therefore, it is recommended that the farmers in Marathwada region to adopt the improved production technologies of Pigeon pea developed by VNMKV, Parbhani.

Technologies Recommended



Preparation of Cookies from Guar Gum



Preparation of Chocolate from Bail fruit

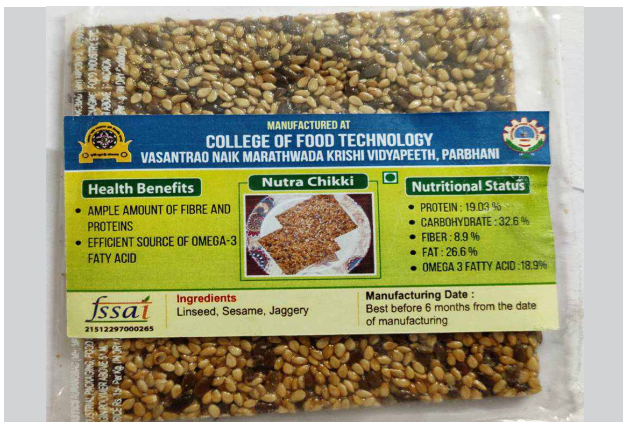


Low expensive basket for Ginger production

Technologies Recommended



Process technology for osmo-convectively dried 5 mm thick orange slices with-peel



Preparation of Chikki from Sesame and Linseed



Preparation of Aonla fruit ball



Preparation of Mask from Poplin Cloth



Hurda Storage Technology