



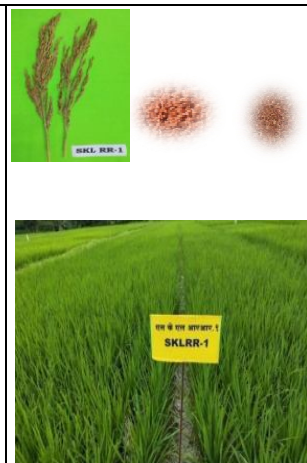
Directorate of Research
Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola
 (Research Recommendations released during the year 2019-2020)

Research Recommendations approved by Joint Agresco-2020

The details of research recommendations of Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola viz. developed crop varieties, farm implements and crop production technologies approved in Maharashtra State Agriculture Universities 48th meeting of Joint Agricultural Research and Development Committee (Joint Agresco-2020) organized by Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola during 27 to 31 October, 2020 are given below. In addition to this release of three cotton crop varieties at National was also noted by the house during Joint Agresco-2020.



1. Released Crop Varieties:

Sl. No.	Crop	Variety	Salient features
1	Rice	PDKV RED RICE 1	<ul style="list-style-type: none"> It is red rice variety Yield : 40-45 q/ha in Vidarbha region Duration Midlate : 137 days (130 to 141 days) Dwarf (97 cm) and non- lodging Short slender grain with 1000 seed weight : 14.9 g Good cooking quality , high milling recovery (69.96%), Intermediate AC (24.06%), Soft GC (86 mm) with protein content 7.79% Additionally it also content iron 15.97 µg/g and Zinc 23.19 µg/g grain dry weight of unpolished rice Moderately resistant to leaf blast, leaf scalds and stem borer
2	Ground nut	TAG 73	<ul style="list-style-type: none"> Yield: 24-28 q/ha. Shelling outturn: 72-74 % Duration: 110 to 115 days More number of 3 seeded smooth pods Moderate resistance to major pests and diseases Recommended for summer season and seed production in kharif season also



3	Cowpea	PDKV Rutuja	<ul style="list-style-type: none"> • Yield of green pods: 80-85 q/ha. • Pod length: 15-18 cm • Short duration: 50-55 days (First picking) • Pod colour: Green shining • Fleshy pericarp • Green pod protein percentage: 4.77 per cent • Recommended for kharif and summer season 	   
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2. Released Farm Implements/Machinery:

Sl. No.	Name	Particulars	Salient features	
1	Lathyrus dal mill Plant	For milling of lathyrus in one pass PDKV Lathyrus dal mill plant is recommended for release.	<ul style="list-style-type: none"> • Lathyrus dal obtained in one pass • The capacity of the machine is 150- 200 kg/h and efficiency is 78 %. • The machine can separate Dal, Gota, powder, broken, husk by mechanical means. • Machine is easy for handling 	
2	Biomass hot air rotary dryer	It is recommended to use PDKV Biomass air heating system for drying of agricultural produce.	<ul style="list-style-type: none"> • The capacity is 2 quintal for indoor grain drying. • It has provision of automatic control on temperature during drying. • It has a facility to change air flow rates in the range of 1.5 m/s to 3.5 m/s. • Uniform drying maintain product quality. • It is also useful for drying of medicinal crops, leafy vegetables, fruits etc. • The capacity of drying for medicinal and fruit crops is 0.8 to 1 quintal. • Highly efficient furnace to achieve more efficiency. • Minimizes losses of thermal energy from 	

			combustor to drying bin. <ul style="list-style-type: none"> • Clean combustion based system introduced to tap flue gas and emission. • It is useful for small scale agro based industry, grain storing warehouses, farmer's groups, self-help group etc. • The cost of this system is Rs. 370500/- (approx.). • Overall Dimension are 1500 x 800 x 1000 (L x B x H), mm 	
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3. Natural Resource Management

a. Agronomy:

- 1 Application of enriched FYM (50 kg FYM ha⁻¹ with 11.25 kg ha⁻¹ each zinc sulfate and ferrous sulfate incubation for 15 days) along with RDF (80:40:40 kg NPK ha⁻¹) is recommended for getting higher grain, fodder yield and quality and economic returns in rainfed sorghum.
- 2 In soybean-maize crop sequence, for obtaining higher system productivity and economic returns, it is recommended to apply 50 per cent RDN (15 kg N/ha) through vermicompost (1.15 t/ha) or compost (1.87 t/ha) and 50 per cent RDN (15 kg/ha) through urea (and 75:30 kg/ha of P:K) to soybean at the time of sowing and supplementation of ZnSO₄ (@ 20 kg ha⁻¹) and FeSO₄ (@ 30 kg ha⁻¹) along with RDF (120:60:30 N:P:K kg/ha) to maize.
- 3 Under rainfed based mechanized strip intercropping system, for obtaining higher productivity and monetary returns, it is recommended to adopt high density (45 x 15 cm) planting of *deshi* cotton (AKA-7) + soybean (6:6) supplied with 40:50:25 NPK kg ha⁻¹ or American cotton (AKH-081) + soybean (6:6) supplied with 50:55:30 NPK kg (50% N + 100% P₂O₅ & K₂O for both the crops at the time of sowing and remaining 50% N at 30 DAS to cotton crop) and soybean strip sequenced with mustard at 45 x 15 cm spacing with a fertilizer dose of 20:10:10 NPK kg ha⁻¹ with two protective irrigations through sprinkler.
- 4 In *deshi* chickpea for achieving optimum germination, higher grain yield and economic returns, seed priming for 4 hours with 0.5% Potassium Nitrate (5g potassium nitrate/ liter water) followed by one hour shed drying and then sowing is recommended.
- 5 In BBF planted drip irrigated Bt cotton for higher seed cotton yield, water use efficiency, water productivity, monetary returns and soil health improvement, in-situ biomulching of sunhemp in between two rows of cotton at 35 days after emergence with RDF (120:60:60NPK kg/ha) is recommended.
- 6 For effective weed management in sole soybean, post emergence application of Propaquizafop @ 0.050 kg a.i. + Imazethapyr @ 0.075 kg a.i./ha at 21 DAS (2.0 L/ha ready mix commercial formulation in 500L water) or pre emergence application of Diclosulam 84% WDG @ 0.026 kg a.i./ ha (30 g/ha commercial formulation in 500L water) is recommended for higher seed yield and economic returns.

- 7 In drip irrigated cotton for increasing productivity, effective weed management and economic returns it is recommended to apply 125 per cent recommended dose of N and K in five splits through drip and P as basal through soil application along with directed spray (by using protective shield) of herbicide Paraquat 24% SL @ 0.3 kg a.i/ha at 30 DAS fb 1 HW 15 days after spraying and repeat spray of Paraquat @ 0.6 kg a.i/ha 60 DAS fb 1 HW 15 days after spraying, as per following schedule

Fertigation Schedule								Herbicide Schedule			
Splits of N & K (%)	Stage of crop	Quantity of N and K (kg/ha)			Quantity of fertilizers(kg/ha)			Herbicide	Stage of crop	Active ingredient (kg/ha)	Quantity of herbicide (kg/ha)
		N	K	P	Urea	MOP	SSP				
10 %	Basal	15.00	7.50	75Kg P ₂ O ₅ At the time of sowing	32.55	12.45	470 Kg SSP At the time of sowing	Paraquat 24% SL	30 DAS	0.300	1.25
20%	20DAS	30.00	15.00		65.10	24.90					
25%	40DAS	37.50	18.75		81.38	31.12		Paraquat 24% SL	60 DAS	0.600	2.50
25%	60DAS	37.50	18.75		81.38	31.12					
20%	80DAS	30.00	15.00		65.10	24.90					
Total		150	75	75	325.51	124.49	470				3.75

- 8 Spraying of Salicylic acid @ 200 ppm (2 g in 10 liter of water) at flowering and siliqua formation stage is recommended for higher yield of mustard and economic returns.
- 9 For getting higher yield and monetary returns from soybean, spraying of Nitrobenzene 20% @ 500 ppm (2.5ml/L of water) at flower initiation stage is recommended

b. Soil Science and Agricultural Chemistry:

- 10 For obtaining higher yield, monetary returns of soybean and improvement in soil physical chemical and biological health of the soil in Vertisols, the application of 50% P through NPS and remaining through chemical fertilizer or application of 100 % P through Nitro-phospho-sulpho compost is recommended.

4. Horticulture:

- 11 For obtaining better quality and fruit yield of 'Grand Naine' variety of banana, mulching of black polyethylene sheet (50 Micron) or dry grass 5 kg/plant is recommended.
- 12 For utilization of failure khirni rootstock seedlings for regrafting, it is recommended to decap the failure khirni rootstock at 15 cm height from ground level and regrafted in next year in the month of September and keep in polythene tunnel.
- 13 For seed production of Kasuri methi, sowing in second fortnight of October with application of 40:50:25 kg NPK per hectare is recommended for the higher seed yield and monetary returns.
- 14 Nagpur mandarin fruits coated with GSNp Tulsi (0.06 mg GSNp + 15 g guar gum per liter of water) is recommended to extend the storability of fruits for 60 days in mrig bahar and 45 days in ambia bahar under cold storage conditions (90-95 % humidity and 4-5°C temperature).

- 15 For storage of custard apple pulp and Atemoya pulp for eight and ten months respectively, it is recommended to store in air tight boxes by adding 0.1 per cent Potassium Metabisulphide at -20°C in deep freezer.
- 16 In organic production of rabi onion, for obtaining economically higher bulb yield with better quality and storability, it is recommended to apply 4.4 tons FYM + 3.0 tons Vermicompost + 5 Kg. Azotobacter + 5 Kg. PSB per hectare.

Social Forestry

- 17 For higher biomass production and higher monetary returns from bamboo plantation cultivation of *Bamboosa balcooa* (Bhima), *Dendrocalmus stocksii* (Manga) and *Bamboosa bambose* (Katang) species are recommended.

5. Plant Protection:

- 18 Foliar application of combi product of fungicides Metiram 55% + Pyraclostrobin 5% WG (0.3%) is applied at disease initiation and 2nd application at 15 days after 1st application is recommended for management of *Cercospora* leaf spot of Mungbean.
- 19 Application of Bordeaux paste (1:1:10) on tree trunk as pre and post monsoon with foliar spray (two sprays- pre and post monsoon) of Potassium Phosphonate (3 ml/liter water) is recommended for management of *Phytophthora* root rot/gummosis of mandarin.
- 20 For effective management of foliage feeder pests on soybean and for getting increased seed yield with maximum net return four sprays of Neem Seed extract @ 5% **OR** Marigold leaf extract @ 5% starting at 20 days of crop emergence with subsequent sprays at 10 days interval is recommended.
- 21 For getting higher paddy yield and effective management of stem borer application Carbofuran 3 % CG @ 25 kg/ha (Carbofuran 3 % CG @ 250 g for 100 m² nursery), 5 days before pulling seedlings from nursery for transplanting and for management of stem borer and leaf folder spraying of Cartap hydrochloride 50 % SP @ 12 g in 10 litres of water if incidence of stem borer (10 % dead heart) or leaf folder (2 damaged leaves per hill with a live larva) is above economic threshold level at 60 to 90 days after transplanting is recommended.
- 22 For effective management of paddy stem borer six inundative releases of *Trichogramma japonicum* @ 1,60,000 eggs per ha (8 cards) starting from 30 days after transplanting (DAT) with subsequent releases at an interval of one week is recommended.

6. Agricultural Engineering & Technology:

- 23 For transferring harvested rainwater towards low yield wells for increasing their irrigation potential or for increasing groundwater table through recharging by laying water conveying pipes at 0.4 per cent gradient with inlet end 0.75 m below ground surface with filtering unit consisting of stones (40%), bricks pieces (20%), coal (10%) and sand (30%) is recommended.
- 24 The changes in emery roller 18:24 (1:1), roller speed 850 rpm and feed rate 200 kg/h of PKV Mini Dal Mill is recommended for milling of lathyrus in three pass. Similarly, the changes in emery roller 16:18 (1:1), roller speed 900 rpm and feed rate 200 kg/h of integrated PKV mini dal mill is recommended for milling of lathyrus in two pass.
- 25 The shaft speed 36 rpm, screw length 50.8 mm and screw pitch 76 mm of existing mini oil mill is recommended for more oil recovery of safflower seed.
- 26 It is recommended to cultivate tomato in 50 percent white shednet house with 50 micron plastic mulching for higher fruit yield.
- 27 It is recommended to use reddish purple Light Emitting Diodes (LEDs) during

night time for 12 hours with light intensity of 930 lux for enhancing plant growth and nutritive value during green fodder production of wheat and maize in PDKV pipe framed hydroponic structure.

- 28 Low cost PDKV-Koushalya Vermi compost Unit made up of locally available bamboo and 50% shednet is recommended for Vermicomposting in 4 rotations in a year.
- 29 It is recommended to establish 50m³ fixed dome biogas for institutional dairy for 6 kW power generation
- 30 It is recommended to use polyethylene mulch with drip irrigation at 80 per cent replenishment of evapotranspiration and 80 per cent RDF (80:40:40 NPK Kg/ha) for higher growth and yield of Okra crop with highest B:C ratio.
- 31 For higher onion bulb yield and economic returns it is recommended to apply 120 per cent of RDF (120:60:60 NPK, kg/ha) with crop spacing of 10 x 7.5 cm, under drip fertigation.

7. Social Science:

A) Extension Education:

- 32 Fifty per cent of the forest dwellers in Chandrapur, Gondia and Gadchiroli district of Eastern Vidarbha did not receive any specialized trainings regarding livelihood activities and it was noticed that 53.13 per cent forest dwellers had low livelihood knowledge. It is therefore recommended that the extension agencies, in collaboration with forest department should arrange skill based trainings, certificate courses on forestry and explore different livelihood options for forest dwellers.

B) Agricultural Economics:

- 33 The farmers in Maharashtra earned gross economic benefit of Rs. 7271.18 Crores from Dr. PDKV, Akola release of JAKI-9218 variety of chickpea from the release year 2008. Therefore, it is recommended that government should provide substantial funds to the University for further research and extension of improved varieties for the benefit of farming community.

Release of Cotton crop varieties at National Level

1. Cotton : ICAR-CICR-PDKV 081 BT : Dr. PDKV, Akola

Dr. PDKV, Akola developed and popular cotton crop variety PKV 081 converted to BT in collaboration of ICAR-CICR, Nagpur was accepted at National Level for planting under rainfed condition in Maharashtra State. The presentation about this has been done and note was taken by House during Joint Agresco-2020

2. Cotton : ICAR-CICR-Rajat BT : Dr. PDKV, Akola

Dr. PDKV, Akola developed and popular cotton crop variety Rajat converted into BT in collaboration of ICAR-CICR, Nagpur was accepted at National Level for planting under rainfed condition in Maharashtra State. The presentation about this has been done and note was taken by House during Joint Agresco-2020

3. Cotton : -PDK Hybrid-2 BG-2 : Dr. PDKV, Akola

Dr. PDKV, Akola developed and popular cotton crop variety PDK Hybrid-2 is converted Bg-2 in collaboration of MAHABEEJ, Akola was accepted at National Level for planting under rainfed condition in Maharashtra State. The presentation about this has been done and note was taken by House during Joint Agresco-2020.
