

**DIRECTORATE OF RESEARCH**  
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**Research recommendations released during 2009 – 2010**  
**(Approved by Jt. Agresco -2010)**

**I. Crop Improvement**

Sr. No.	Crop	Variety/Hybrid	Important Features
<b>A) Varieties released</b>			
i.	Bajra	<b>BBH-3 (PDKV Raj)</b>	<ul style="list-style-type: none"> <li>❖ Higher grain (29.03 q ha<sup>-1</sup>) and fodder yield (52.74 q ha<sup>-1</sup>) potential</li> <li>❖ Resistant to downy mildew</li> <li>❖ Bold grain size with good grain colour</li> <li>❖ Compared with required check</li> </ul>
ii.	Wheat	<b>WSM -1472</b>	<ul style="list-style-type: none"> <li>❖ Good yield potential under rainfed (21.34 q ha<sup>-1</sup>) and restricted irrigation (39.00 q ha<sup>-1</sup>) condition.</li> <li>❖ Heat and drought tolerant variety</li> <li>❖ Superior grain appearance and chapatti making qualities</li> <li>❖ Fetches high market value</li> <li>❖ Multiple disease resistance to rust, kernel blunt and leaf blight</li> <li>❖ Good storability and export potential</li> </ul>
iii.	Chickpea	<b>AKG-9303-12 (PDKV Harita)</b>	<ul style="list-style-type: none"> <li>❖ Green seed coat type</li> <li>❖ Medium bold seeded (100 seed weight 21.1 g)</li> <li>❖ High yielding over AKGS-1</li> <li>❖ Drought tolerant</li> <li>❖ Resistant to wilt</li> <li>❖ Useful for culinary purpose</li> <li>❖ Alternative green seed coat variety to AKGS-1</li> </ul>
<b>B) Pre-release</b>			
i.	Paddy	<b>SYE 35-4-16-63</b>	<ul style="list-style-type: none"> <li>❖ Mid-tall stature and non-lodging</li> <li>❖ 135 days of maturity</li> <li>❖ Fine grain quality with a test wt 15.0 g.</li> <li>❖ Higher grain yield (23.5%) than PKV HMT in EVZ</li> <li>❖ Good cooking quality</li> <li>❖ Moderate reaction to diseases and pests</li> </ul>

ii.	Paddy	<b>SKL-22-39-31-34</b>	<ul style="list-style-type: none"> <li>❖ Dwarf stature and non-lodging</li> <li>❖ 130-135 days of maturity</li> <li>❖ Medium slender grain type</li> <li>❖ Higher grain yield over the popular check varieties</li> <li>❖ Good cooking quality</li> <li>❖ Moderate reaction to diseases and pests</li> </ul>
iii.	Sorghum	<b>SPH-1635</b>	<ul style="list-style-type: none"> <li>❖ Higher grain and fodder yield over popular state and national check varieties</li> <li>❖ Medium maturity (110-115 days)</li> <li>❖ Non-lodging and non-shattering type</li> <li>❖ Easy threshability and better grain quality</li> <li>❖ Better fodder quality that stay green at physiological maturity</li> </ul>
iv.	Wheat	<b>AKDW -4021</b>	<ul style="list-style-type: none"> <li>❖ Good yield potential (35.0 q ha<sup>-1</sup>)</li> <li>❖ Medium maturity duration (116 days)</li> <li>❖ Medium plant height (82 cm)</li> <li>❖ Non-lodging and non-shattering</li> <li>❖ Strong waxy peduncle and earhead</li> <li>❖ Amber coloured medium long quality grains</li> <li>❖ Better kneading, rolling, puffing quality and aroma</li> <li>❖ Better resistance to rust as well as leaf blight</li> </ul>
v.	Safflower	<b>AKS- 311</b>	<ul style="list-style-type: none"> <li>❖ Higher yield (13.7 %) over best check AKS-207</li> <li>❖ High oil content (32.8%)</li> <li>❖ Resistant to wilt</li> <li>❖ Distinctness in petal colour (pink)</li> </ul>
vi.	Soybean	<b>AMS-99-33</b>	<ul style="list-style-type: none"> <li>❖ Relatively good germ inabity than JS-335</li> <li>❖ Determinant growth habit</li> <li>❖ Medium maturity period (99 days)</li> <li>❖ Delayed pod shattering after final maturity</li> <li>❖ Wider adaptability across different zones of the country</li> <li>❖ Relatively more tolerant to leaf defoliators, stem fly and girdle beetle</li> <li>❖ Optimum yield potential (36.0 q ha<sup>-1</sup>) in favourable season and relatively better yielding in moisture stress condition than JS-335</li> <li>❖ Higher oil and protein content than JS-335</li> </ul>

## I. PRODUCTION TECHNOLOGIES

### Field Crops

1. Based on the soil site suitability evaluation for grape in Buldana district, it is recommended that the Inceptisols having less than 10 per cent calcium carbonate are most suitable for grape cultivation.
2. For obtaining sustainable cotton productivity, monetary returns and for improving soil quality under rainfed conditions in Vertisol, application of 15 t FYM ha<sup>-1</sup> along with 50 % RDF i.e. 25:12.5:00 NPK kg ha<sup>-1</sup> is recommended.
3. In eastern Vidarbha region, Under SRI method of paddy cultivation for higher grain yield, net monetary returns and B:C ratio transplanting of early varieties at 20 X 20cm spacing and mid late and late varieties at 25 X 25 cm spacing and application of urea DAP briquettes (56:29:0 kg NPK/ha) is recommended.
4. Under rainfed condition for higher seed cotton yield and monetary returns of Bt cotton, foliar spray of Urea 2% at flowering and DAP 2% at boll development stages are recommended.
5. It is recommended to adopt PDKV module 2 i.e. seed treatment with Thiram + Imidacloprid 70 ws + RDF 50+ 25+ 0 NPK kg ha<sup>-1</sup> + foliar spray of 2 % urea at flowering and 2 % DAP at boll development stage with recommended plant protection schedule for higher seed cotton yield and monetary returns of hirsutum variety.
6. For higher grain yield and monetary returns of pigeonpea, seed treatment with Rhizobium+PSB+PGPR (Bacillus megaterium, Pseudomonas fluorescense, Pseudomonas spp.) and application of 18:46:20 kg/ha N:P:K and 20 kg sulphur in S deficient soils is recommended.
7. For obtaining higher monetary returns, application of 2.5 t FYM/ha to green gram is recommended as an alternative to recommended chemical fertilizer.
8. In Vertisols, for harvesting maximum yield and monetary returns under irrigated condition, sowing of safflower during 40<sup>th</sup> MW (1st week of October) is recommended but not beyond 44<sup>th</sup> MW (1st week of November) with two irrigations, first during vegetative stage (30 DAS) and second at grain development stage (80 DAS).

### Medicinal and Aromatic plants

9. Application of FYM @ 5 t/ha in combination with seed treatment of Rhizobium + PSB to the Kawach beej (Mucuna pruriens) is recommended for obtaining higher seed yield with quality.

### Horticulture (Floriculture)

10. For reducing dose of nitrogenous fertilizer in gladiolus, it is recommended to treat the gladiolus corms with biofertilizers of Azotobacter + Azospirillum.

## PLANT PROTECTION

### A) Plant Pathology

11. For better growth of vine and management of root rot complex in Piper longum and Piper betel and, the following IDM module is recommended.
1. Soil application of neem cake 20 q / ha +Trichoderma 10 kg/ha (two split doses i.e. June & December)
  2. Soil application of FYM (5t/ha) + Alluvial Soil (5t/ha) + PSB (10 kg/ha) + Sheep manure (2 t/ha)
  3. Planting of Marigold seedlings in alternate line of Piper longum and Piper betle (July)
  4. Spraying of neem based commercial product (Azadirachtin 1500 ppm) 0.5 per cent every month from July to October.

### B) Entomology

12. In rabi sorghum, for the effective management of sorghum shoot fly and to obtain higher grain yield, application of carbofuron 3G, 15kg/ha in soil at sowing is recommended.
13. For management of mealy bug on sunflower, two sprayings of dichlorvos 76 % WSC 20 ml or methomyl 40 SP 10 g + 20 g soap powder per 10 lit of water at an interval of 10 days as soon as the incidence occurs is recommended.
14. The recommendation for integrated post management on Bt. Cotton are as follows:
- i) Deep ploughing in March/April.
  - ii) One line of Trap crop viz. Maize, chawali, marigold, and castar around the Bt. Cotton crop.
  - iii) 5% spray of NSKE 105 days after germination.
  - iv) Release of 1.5 lakh eggs of Tricograma Tidiya bactri 114 DAG.
  - v) Use of 10-12 yellow sticky trap/ha 125 DAG.
  - vi) Spray of Thiodicarb 75% (1kg in 500 lit. water) DAG.
  - vii) Distraction of larvey and infested plant part.
  - viii) Use of recommended insecticide at ETL

## SOIL AND WATER CONSERVATION

15. The rainfall intensity-duration-frequency (I-D-F) relationship and monograph developed for Akola station is recommended for determination of design rainfall intensity for any duration up to 24 hour and a return period from 10 to 100 years.

$$I = \frac{6.165T^{0.1985}}{(t + 0.5)^{0.8591}}$$

Where,

I = Rainfall intensity for Akola, cm/h

T = Return period, year

t = Duration, hour

16. For harnessing maximum runoff for higher recharge it is recommended to construct the CNB in series in such a fashion that the full supply level (FSL) of the downside CNB is atleast equal to or less than the bottom level of the upper CNB.

#### **Weed Science**

17. An application of post emergence herbicide Imazethapyr @ 75 g a.i. ha<sup>-1</sup> (ten days after sowing) followed by one hoeing 25 days after sowing is recommended for higher seed yield and economic returns of soybean.

#### **ANIMAL HUSBANDRY AND DAIRYING**

18. The PDKV Berar burfee prepared from goat milk khoa with blending of mango pulp and sugar is recommended.

#### **AGRIL. ENGINEERING & TECHNOLOGY**

19. The process for preparation of ready-to-cook mung nuggets from cold extrudate prepared, using mini pasta machine, from blend of mung and wheat flour adding proportionate moisture followed by steaming and drying is recommended.
20. PDKV designed 100 Sqm shade net house is recommended for cultivation of vegetable crops.
- 21.. It is recommended to use 40-40-60 cms planting technique on 140 cm BBF without track width adjustment and 45-45-45-60 cms planting technique on 192 cm BBF with track width adjustment for mechanization of various crops.

#### **SOCIAL SCIENCES**

##### **A) Extension Education**

22. Regular training is imparted to women Gram Panchayat members to enhance their role in agricultural and rural development and seating allowance for attending Gram Panchayat meeting be considered for active participation.
23. Farmers' suicide in Vidarbha are results of multifactor complex inclusive of indebtedness, consistent crop failure, health problem, introvertness, impulsiveness, alcoholic disorder and domestic disputes, therefore, it is recommended to the Government to provide social security, subsidiary occupation, crop/animal/weather insurance, health insurance and counselling.
24. To reduce high level of adoption gap in respect of cultivation technologies of paddy particularly in Gadchiroli district, it is recommended to provide technical know-how and develop skill of paddy grower by implementing suitable extension programmes.
25. The survey in Buldana district indicated that there is knowledge gap in use of bio-fertilizers, intercropping and use of fungicides, hence it is recommended that seeds corporations and other companies should provide biofertilizers along with soybean seeds to farmers so that knowledge of farmers about biofertilizer will be increased along with its adoption.

##### **B) Agril. Economics.**

26. Based on the constant prices, the growth rate of production of jowar is 7.32 % as against the growth rate of MSP 5.88%. Similarly cost of production of paddy is 5.12% as against the growth rate of MSP 4.96% thus indicating the disparity between MSP and cost of production. Therefore, it is recommended that MSP of jowar and paddy must be brought to appropriate level for profitable production by the farmers.