DIRECTOR OF RESEARCH

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Research Recommendations released during 2011 - 2012

(Approved by Joint Agresco - 2012)

Crop Improvement

Sr. No.	Crop	Variety / Hybrid	Important Features
A) Varieties / Hybrids released			
1	Paddy	**(PKV Kisan) (SKL-22-39-31-25-31-34)**	Drawf, Non- lodging, Duration 130-135 days Medium size grain and good cooking quality, yield40-50 q/ha., Resistant to Leaf blast, bacterial leaf blight
2	Sorghum	**(SPH-1635)**	CMS based hybrid, grain yield 45 q/ha,fodder yield 130 q/ha

New Farm Implement/ Machinery

Sr. No.	Name of farm implement/ Machinery	Important Features
1	PKV BBF planter cum inter-row cultivator	In dry land agriculture simultaneous preparation of broad bed furrow and sowing operation with saving in production cost it is recommended to use tractor drawn PKV BBF planter cum inter-row cultivator.

Production technology

Field Crop

1.**:** Foliar application of 2% DAP at flowering and at capsule formation stage, along with recommended dose of fertilizer (40:25 kg N:P ha^{-1}) is recommended for obtaining higher economic returns in sesame.

2: For getting higher soybean equivalent yield and monetary returns, adoption of BBF method and soybean-safflower or soybean-chickpea crop sequence is recommended under irrigated condition.

3: for minimizing the risk in rainfed agriculture and obtaining higher monetary returns, intercropping of cotton: soybean: pigeon pea: soybean (3:2:2:2) at 45 cm row spacing is recommended

4: For ease in sowing and getting monetary returns comparable to risk minimizing intercropping system 6:1:2:1 (Cotton : Sorghum : Pigeonpea : Sorghum) and to meet the requirement of food, fodder, and fuel of the farmers 3:1:1:1 (Cotton : Sorghum : Pigeonpea : Sorghum) is recommended under Dryland condition.

5: Subsurface tillage at 50-60 cm depth before sowing by subsoiler is recommended for higher soil moisture retention, improving physical properties of soil and harvesting more economic returns from kharif crops.

Soil Science and Agricultural Chemistry

6: The irrigation using untreated sewage effluents leads to accumulation of heavy metals in soils and crops. Therefore, the use of untreated sewage effluents for irrigation to the vegetable and field crops in Maharashtra is not recommended.

7: For obtaining higher yield of soybean and enhancing use efficiency of N and P the seed treatment with Zinc sulphate (9.5 g) + ammonium molybdate (1.8g) + cobalt sulphate (2.5g) per kg seed before sowing is recommended for zinc, molybdate and cobalt deficient soils.

8: In deep black soils (Vertisol) for obtaining higher yield of American improved *hirsutum* seed cotton, net monetary return and improving soil fertility under rainfed condition, application of 25 kg K_2O ha^{-1} along with recommended dose of N and P_2O_5 (50:25:0 NPK kg ha^{-1}) is recommended

9: For obtaining higher seed cotton yield, monetary returns, nutrient use efficiency and improvement in soil fertility, application of 75 % recommended dose of fertilizers (75:37.5:37.5 NPK kg ha^{-1}) along with micronutrients (3 kg Zn ha^{-1} + 3.75 kg Fe ha^{-1}) in the form of water soluble fertilizers through drip in five splits (At sowing, 35, 55, 75 and 95 DAS) is recommended for hybrid cotton in Vertisols.

10: In medium deep black soils (Inceptisols) for obtaining higher yield and improving quality of chickpea as well as soil fertility under rainfed condition the application of 40 kg K_2O ha^{-1} is recommended along with N and P_2O_5 (20:40 kg ha^{-1})

11: In Vertisol the application of 1.5 ton/ha gypsum once in a two year before sowing is recommended for increasing the yield of soybean, moisture use efficiency and improving the physical properties of soil.

12: For obtaining higher yield and good quality of Nagpur Mandarin the soils having less than 6 per cent $CaCO_3$ and less than 2 per cent carbonate clay are recommended for plantation.

13: The economic threshold level of 8.77 per cent bud fly infestation is recommended for the management of linseed bud fly.

14: Two fortnightly sprays of Acetamiprid 20 SP @ 0.004% (0.2 g/lit) or Imidacloprid 17.8 SL @ 0.0045%(0.25 ml/lit) starting from bud initiation is recommended for effective management of linseed bud fly.

15: For management of girdle beetle on soybean and to obtain maximum yield and higher monetary return, two sprays of Lamda cylohathrin 5 CS @ 0.005% (i.e.10ml per 10 lit water) at fortnight interval after initiation the infestation of girdle beetle are recommended".

Horticulture

16: Lime Ready-to-Serve PKV-beverage is recommended for maximum storability (75 Days) under ambient storage conditions.

17: For obtaining higher flower yield and monitory returns from gaillardia, foliar application of cycocel – 200 ppm at 30th and 45th days after transplanting is recommended.

Soil Water Consevation

18: For the higher and sustainable returns the double cropping system of Green gram- Chickpea and Soybean – Chickpea along with contour and across slope cultivation with protective irrigation from farm pond is recommended for the saline tract of Purna river valley.

19: The developed maps for onset of effective monsoon withdrawal of monsoon and occurrence of critical dry spell dates at taluka level in Amaravati division is recommended for crop planning, drought mitigation and other administrative planning in division.

20: The rainfall intensity-duration-frequency (I-D-F) relationship and nomograph developed for Wardha, Bhandara,Buldhana and Yeotmal 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 to design flood control, rainwater harvesting and runoff disposal structures.

For Wardha, $I_W = \frac{5.370\,T^{0.1832}}{(t+0.28)^{0.7356}}$	**For Yeotmal,** $I_Y = \frac{3.148\,T^{0.2074}}{(t+0.12)^{0.5574}}$
For Bhandara, $I_{Bh} = \frac{5.199\,T^{0.1611}}{(t+0.28)^{0.6582}}$	**For Buldhana,** $I_{Bu} = \frac{3.981T^{0.2524}}{(t+0.30)^{0.7564}}$

Where, I = Rainfall intensity, cm/h; T = Return period, year t = Duration, hour

Agril Engineering

21: It is recommended to use drip irrigation system for garlic production as it saves 46% water and gives 20% higher yield over traditional check basin irrigation method.

22: PKV-shadenet house (1000m^2) is recommended for cultivation of vegetable crops

Social Sciences
A) Extension education

23: National Horticultural Mission created moderate impact on its beneficiaries in terms of increased income, man days, and land use. However, it showed a non-significant impact as far as knowledge and use of scientific technology is concerned, hence to increase the overall impact of NHM, it is recommended that pre training should be made mandatory for beneficiaries on scientific package of practices before availing the benefits under NHM.

24: The Rural Livelihood Sustainability Index (RLSI)) was found to be low in 83.33 per cent of the suicidal victim families in Vidarbha due to low physical, natural, social, and financial capital availability with them, although human capital is on encouraging/ supporting.

It is therefore recommend that the physical, natural, social, and financial capital availability with families of suicidal farmers in Vidarbha should be increased and need attention for increasing the income of the families.

25: In the *Purna Valley* tract of Vidarbha, 50 per cent of the farmers have no knowledge about the application of Gypsum and FYM recommended for improvement of saline-sodic soils. Unavailability of gypsum is a very severe constraint faced by the farmers and hence, 84 per cent farmers have not adopted this technique. Therefore, it is, recommended that government should enhance the availability of Gypsum at proper time and organise the trainings on land care techniques in the *Purna Valley* tract.

Economics& Statistics

26: High technology adopter farmers have received more incremental returns at reduced per quintal cost of production over low technology adopter farmers. Hence, it is recommended that, for higher incremental benefits and net returns at reduced per quintal production cost of soybean, farmers should adopt all the recommended technologies developed by university.

27: Agricultural development and mechanization have significant positive impact on agricultural productivity. It is recommended that more emphasis may be given in future on mechanization in Vidarbha agriculture.