

CONCEPT NOTE

on

Diversification of Crops in Madhya Pradesh



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1. Background / Introduction

State of Madhya Pradesh is well diversified state in terms of climate and soil types. Thereby state is divided into eleven agro-climatic zones.

- The state is cultivating 14 major Kharif crops in 139 lakh hectare and ten major Rabi crops in 122 lakh hectares. Soybean & Rice in Kharif and Wheat and Chickpea in Rabi constitutes 68-70 percent of the gross cropped area.
- The rest of the Kharif and Rabi crops area is negligible.
- This urgently requires crop diversification by reallocating the area under Rice and Wheat particularly in the region where productivity is low.
- This will further reduce the pressure on limited storage facilities.
- In the state, 50 per cent area is under rainfed condition.

Table 1. Division wise major crops and their contribution to gross cropped area in Madhya Pradesh for 2018-19

State/Division	Major Crops					Total (%)
Madhya Pradesh	Wheat (28)	Soybean (21)	Chickpea (11)	Rice (10)	Urd bean (8)	78
Narmadapuram	Wheat (35)	Soybean (26)	Maize (11)	Rice (10)	Chickpea (8)	90
Gwalior	Wheat (33)	Soybean (19)	Urd bean (14)	Chickpea (11)	Rapeseed and Mustard (4)	81
Chambal	Rapeseed and Mustard (33)	Wheat (27)	Pearl Millet (20)	Rice (6)	Urd bean (3)	89
Ujjain	Soybean (46)	Wheat (21)	Chickpea (16)	Maize (2)	Garlic (2)	87
Indore	Soybean (28)	Wheat (25)	Cotton (14)	Chickpea (11)	Maize (9)	87
Bhopal	Soybean (33)	Wheat (30)	Chickpea (15)	Urd bean (6)	Rice (6)	90
Shahdol	Rice (48)	Wheat (16)	Kodo Kutki (6)	Lentil (5)	Maize (5)	80
Rewa	Wheat (33)	Rice (28)	Chickpea (9)	Urd bean (6)	Arhar/Tur (4)	80
Sagar	Wheat (30)	Urd bean (27)	Chickpea (15)	Soybean (10)	Rice (5)	87
Jabalpur	Rice (28)	Wheat (27)	Maize (15)	Chickpea (7)	Urd bean (5)	82

Note: The figures within parenthesis indicates percentage to gross cropped area

The agricultural sector in Madhya Pradesh, being dominated by marginal and small farmers, faces the problem of low productivity, low availability of food grains, and low income, leading to a high level of poverty, particularly in areas with extremely underdeveloped infrastructure and irrigation systems. The indiscriminate and untimely use of agro-chemicals leads to degradation of soil health and environment. Water-intensive cropping pattern leads to depletion of water resources. Diversification based on area under crops, value generation and income sources are important drivers for growth. It is the need of the hour as it favours sustainable farm productivity, profitability, maintenance of healthy soil ecosystem and efficient utilization of natural resources.

The crop diversification must be demand driven looking into market opportunities, consumer expectations, post-harvest technology, food processing infrastructure, and marketing strategy. The crop diversification will be successful when it creates a sizeable marketable surplus for trade. It must be accompanied by market led extension rather than production led extension. Promotion of FPOs may play a key role for facilitating the marketing of the produce and developing a strong value chain.

2. Government of India Policy Framework

Tremendous growth in production and productivity of crops in Indian agriculture has been achieved after independence. Between 1950-51 and 2020-21, production of food grains and oilseeds increased from 51 to 305.43 and 5.16 to 36.56 million tonnes, respectively. Similar growth has also been achieved in other crops. Farmers' suicides, indebtedness, crop failures, non-remunerative prices for crops and poor returns over cost of cultivation are the prominent features of India's agriculture today due to decline in public investment and farm income sector, trade liberalization, withdrawal of subsidies, poor extension services, risk taking, natural calamities, lop sided flow of institutional credits, growing informal credit, rising costs, adulterated and spurious inputs, psychological and socio economic causes (illness, gambling, and break up of joint families, etc.). Agriculture constitutes a significant part of the unorganised sector, rise of small and marginal farmers (85%) which despite an acute crisis of viability, continues to grow in number and marred by a long silent crisis, manifesting itself in the form of farmers' suicides. The aforesaid factors including slow diffusion of modern technologies non-remunerative prices and distress sale of farm products are causing agrarian crisis. This is also a result of a range of historical, political and economic factors that have shaped the trajectory of agricultural development process in the country.

The efforts of the Government of India are to supplement the efforts of the State Governments through various schemes/ programmes and initiatives. These schemes/ programmes of the Government of India are meant for the welfare of farmers by increasing production, remunerative returns and augmentation of farmers' income. The Government has adopted several developmental programmes, schemes, reforms and policies that focus on crop diversification and higher incomes for farmers. All these policies & programmes are being supported by higher budgetary allocations (from Rs. 52,655.00 crore during BE 2017-18 to Rs. 1,34,399.77 crore during BE 2020-21), non-budgetary financial resources by way of creating Corpus Funds and supplementary income transfers under PM-KISAN. The government adopted and implemented policies and programmes are here as follows.

MSP - MSP is being fixed at a predetermined principle to keep it at the level of one and half times of the cost of production. Government has increased MSPs for all mandated Kharif, Rabi and other Commercial crops with a return of at least 50 per cent over all India weighted average cost of production for the season 2018-19, 2019- 20 and also recently for the 2020-21 season.

Atma Nirbhar Bharat – It is the latest major intervention which includes comprehensive market reforms and creation of 'Agricultural Infrastructure Fund (AIF)' worth Rs. 1 lakh crores including Rs 500 crores for the Bee-Keeping initiative. The component of Atma Nirbhar Bharat Abhiyan

- a. **Agriculture Infrastructure Fund (AIF)** - Central Sector Scheme of financing facility under Agri Infrastructure Fund is operational from the year 2020-21 to 2029-30. The aim is creation of infrastructure at the farm gate. The scheme shall provide a medium - long term debt financing facility for investment in viable projects for postharvest management Infrastructure and community farming assets through interest subvention and financial support.
- b. **The National Beekeeping and Honey Mission (NBHM)** - Rs.500 crore from 2020-2021 to 2022-2023 is allocated for the sector. The scheme (NBHM) has following three Mini Missions under which main thrust will be given for setting up of infrastructural facilities, etc. for overall promotion and development of scientific beekeeping in the country

Major Market Reforms

- Establishment of 22,000 number of Gramin Agriculture Markets (GrAMs) as aggregation platforms
- Promotion of 10,000 FPOs by 2024.
- The Government also created Corpus Funds for the benefit of farmers such as
 - Micro Irrigation Fund – Rs. 5,000 crores
 - Agri-Marketing Fund to strengthen e-NAM and GrAMs – Rs. 2,000 crores

Kisan Credit Card (KCC): The vision is to provide easy concessional institutional agri-credit to all the farmers for meeting the immediate requirements like buying of seeds and fertilizers, raising and marketing of crops, working capital and production needs through Kisan Credit Card (KCC)

PM Kisan: PM Kisan is a Central Sector scheme with 100per cent funding from Government of India. It has become operational from 1.12.2018. Under the scheme an income support of 6,000/- per year in three equal instalments will be provided to small and marginal farmer families having combined land holding/ ownership of up to 2 hectares.

Farmer Producer Organization (FPO): To provide holistic and broad-based supportive ecosystem to form new 10,000 FPOs to facilitate development of vibrant and sustainable income-oriented farming and for overall socio-economic development and well-being of agrarian communities.

Crop Forecasting Coordination Centre: CFCC division is coordinating and holding the weekly Crop Weather Watch Group (CWWG) meeting every Friday and prepares minutes based on the data received at weekly CWWG meetings. The CWWG data (IMD, CWC and Crops) and Minutes of CWWG meeting are uploaded on the Directorate's website every week. Preparation of Crop Statement on weekly basis is done. The same is forwarded to different Ministries/ Departments.

Mission for Integrated Development of Horticulture (MIDH): Mission for Integrated Development of Horticulture (MIDH) is a Centrally Sponsored Scheme for the holistic growth of the horticulture sector covering fruits, vegetables, root & tuber crops, mushrooms, spices, flowers, aromatic plants, coconut, cashew and cocoa. MIDH consists of 5 schemes on Horticulture viz. (i) National Horticulture Mission (NHM), (ii) Horticulture Mission for North East and Himalayan States (HMNEH), (iii) National Horticulture Board (NHB), (iv) Coconut Development Board (CDB), (v) Central Institute of Horticulture (CIH), Nagaland.

National Food Security Mission: National Food Security Mission was launched in 2007-08 to increase the production of rice, wheat and pulses by 10, 8 and 2 million tonnes respectively by the end of the 11th Plan through area expansion and productivity enhancement; restoring soil fertility and productivity; creating employment opportunities and enhancing the farm level economy.

Special Action Plan for better production of Nutri Cereals (Millets): Special Action Plan for increasing the production and productivity of Nutri Cereals (Millets) is under implementation during Rabi / summer season of 2020-21 in the country.

Special action plan for Targeting Rice Fallow Areas (TRFA): The TRFA is a sub-scheme of the National Food Security Mission (NFSM) programme which gives emphasis on land that remains underutilized after harvesting of Kharif paddy crops. The aim is to bring a change in the cropping pattern during the Rabi season by introducing appropriate varieties of pulses that can be cultivated by using available moisture. It is being implemented through a combination of innovative technological interventions and provision of essential agri-inputs including extension services in 11 TRFA implementing States of the country.

National Food Security Mission (Oilseeds & Oil Palm) – NFSM (OS&OP): With effect from 2018-19, the NFSM (OS&OP) is a part of NFSM. This scheme comprises of three sub-missions namely, NFSM-Oilseeds, NFSM-Oil Palm and NFSMTBOs. The scheme is being implemented through the State Department of Agriculture/ Horticulture in 28 States. Assistance under the

various interventions of the scheme is focused to benefit the farmers and has direct impact on increasing farmers income involved in oilseed and oil palm cultivation. Under this Mission, financial assistance is being provided for Seed Components (production & distribution of certified seeds, seed hubs and mini kits); Inputs (Plant Protection Equipment, bio-pesticides, distribution of micro-nutrients, bio-fertilizers, improved farm implements, pipes, sprinklers, seed storage bins, seed treatment drums) and Transfer of Technology through Block Demonstrations, Frontline Demonstrations (FLDs), Cluster Frontline Demonstrations (CFLDs), farmers and extension workers training etc. The scheme is being implemented through State Department of Agriculture. NFSM-Oilseed is also supporting ICAR institutes for undertaking FLDs on oilseeds crops and ICAR-KVKs for organizing cluster demonstration on oilseeds.

National Mission for Sustainable Agriculture (NMSA): NMSA aims at promoting Sustainable Agriculture through climate change adaptation measures. The major thrust is enhancing agriculture productivity especially in rainfed areas focusing on integrated farming, soil health management and synergizing resource conservation. From the year 2018-19, NMSA is being implemented as a sub-mission/sub-umbrella scheme under the Umbrella Scheme of 'Green Revolution Krishonnati Yojana'. The Centrally Sponsored and Central Sector Schemes of NMSA are as under

- a) **Centrally Sponsored Schemes:** Rainfed Area Development (RAD) • Sub Mission on Agro Forestry (SMAF) • National Bamboo Mission (NBM) • Soil Health Management (SHM) • Paramparagat Krishi Vikas Yojana (PKVY)
- b) **Central Sector Schemes:** Soil and Land Use Survey of India (SLUSI) • National Rainfed Area Authority (NRAA) • Mission Organic Value Chain Development in North Eastern Region (MOVCDNER) • National Centre of Organic Farming (NCOF) • Central Fertilizer Quality Control and Training Institute (CFQC&TI)

Per Drop More Crop Component of Pradhan Mantri Krishi Sinchayee Yojana (PMKSY-PDMC): Department of Agriculture, Cooperation & Farmers' Welfare is implementing the Per Drop More Crop component of the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY-PDMC), which is operational from 2015-16 in the country. The PMKSY- PDMC focuses on enhancing water use efficiency at farm level through Micro Irrigation viz. Drip and Sprinkler Irrigation System. Besides promoting micro irrigation, this component also supports micro level water storage or water conservation/management activities as Other Interventions to supplement Micro Irrigation.

INM & Organic Farming: Ministry of Agriculture, Cooperation and Farmers Welfare, Department of Agriculture, Cooperation & Farmers Welfare is implementing the INM & organic farming component under the National Mission for Sustainable Agriculture. Financial assistance on various components as below is provided:

- Setting up of mechanized fruit/ vegetable market waste/ agro-waste compost production units.
- Setting up of state-of-the-art liquid/ carrier.
- Setting up of bio-fertilizer and organic fertilizer testing laboratory or strengthening of existing laboratory under FCO.
- Promotion of organic inputs on the farmer's field.
 - Support to research for development of organic package of practices specific to the State and cropping system.
 - Setting up of separate Organic Agriculture Research and Teaching Institute (against specific proposal).

Pradhan Mantri Fasal Bima Yojana (PMFBY): Keeping in view the risks involved in agriculture and to insure the farming community against various risks, the Ministry of Agriculture & Farmers Welfare introduced a crop insurance scheme in 1985 and thereafter brought improvements in the erstwhile scheme(s) from time to time based on the experience gained and views of the stakeholders, States, farming community etc. The insurance schemes currently under implementation are the Pradhan Mantri Fasal Bima Yojana (PMFBY) and the Restructured Weather Based Crop Insurance Scheme (RWBCIS).

3. State Govt of India Policy Frameworks

Madhya Pradesh endowed geographically landlocked state with varied agro-climatic conditions favourable for production of varied crops, spices, medicinal and aromatic plants along with many NTFP and agri-allied enterprises. State ranked first in production of 12 commodities viz., Pulses (27%), Oilseeds (31%), Chickpea (40%), Soybean (44%), Linseed (37%), Garlic (63%), Small millet (20%), Urd bean (25%), Spices (32%), Coriander (42%), Ginger (24%), and Fenugreek (42%); second in Wheat (18%), Maize (14%), Moong (10%), Lentil (27%), Sesame (19%) and Onion (16%); and third in Mustard (11%), Milk (09%), Vegetables (10%), Aromatic & Medicinal plants (12%), Loose Flower (16%) and Chilli (11%). The state has the highest percentage of area under organic farming at national level. But, merely two per cent of the total agri-products produced in the state i.e., soybean, cotton and pulses and their products are exported from the country. On Export Preparedness Index,

the overall rank of the state is 12th whereas, 6th among the landlocked states. The five main factors that have contributed significantly to outstanding expansion in area and production that reflect in double digit agricultural growth in the state are (a) expanded irrigation through tube wells and canals, (b) increased regular electric power supplies to agriculture, (c) development and adoption of improved crop production technologies, (d) assured and remunerative prices (including bonus over MSP) along with strengthening the procurement system at cluster of villages, (e) expansion of all-weather roads through public investment and (f) suitable incentives and signals for the private sector to increase the level of investments to reap the benefits of agricultural infrastructure and improved services. For diversification of crops the supporting agri-growth centers along with promotional policies for trade in domestic and international market. At present the major policy initiative can be summed up as follows.

- Expanded ground-water and surface water irrigation through assured power supplies to rural areas through power feeder separation help in increase in area under irrigation and ultimately area under diversified crops and production enhancement in many crops.
- Establishment of strong procurement systems for major crops help the farmers to reap the benefit of the government minimum support price scheme.
- Investment in all-weather surfaced roads helps in efficient movement of products and inputs to and from rural areas and which link farmers to markets, processing units and consumers brought favourable changes in area under horticultural crops.
- Public investments in key infrastructure such as improved power supply and better road connectivity attract private investment at the farm level in the form of increased investment in tube wells, expansion of area under horticulture, especially the adoption of high-value crops such as seasonal vegetables, spices, and setting up of dairy/poultry units.
- Favourable policy formulation for organic farming attracts the farmers to grow organic food crops and horticultural crops.
- Natural farming in the state is promoted through dedicated scheme of Bharatiya Prakritik Krishi Paddhati program (BPKP) under this scheme incentives are provided to farmers on cluster formation, capacity building and continues handholding.
- A large number of farmer producer organisations (FPOs) have emerged in the state in the past decade due to progressive policies to encourage their growth. Some of these FPOs are now doing impressive work in agricultural production, marketing and value addition. The state has put in place a set of incentives to strengthen these farmer-owned

organisations through financial support, infrastructure building and relaxation of the provisions of the APMC Act.

- One District One Product cluster will help to promote specialization and better processing, marketing, branding & export through development of FPOs, wherein agricultural and horticultural produces are grown/cultivated for leveraging economies of scale and improving market access for members.
- Formation of FPOs with the help of NABARD, SFAC, NCDC, and other organizations specially under ODOP scheme from the funds allocated by central government under Central Sector Scheme “Formation and Promotion of 10,000 new Farmer Producer Organizations (FPOs)” of Rs. 6865 crore is favourable initiative in this direction.
- Incentives to create storage facilities both at the farm level as well as organised cold storages based on solar power will significantly enhance the capacity of the farmers to benefit from price differentials during lean period specially for horticultural crops like onion, potato etc.
- State pioneered the *e-chaupal* initiative over a two decade back and worked with a private sector partner (ITC) and saw improved price realisation for soybean farmers. This type of initiative is also needed for horticultural crops.
- State passed legislation to legalise agricultural tenancies. This is a major reform measure in a state that hitherto did not permit legal leasing of land. The land leasing law could help increase investments in better technology and irrigation, as stable tenures and fair rents will encourage tenants to invest in diversified and productivity-enhancing measures.
- Model APMC (Agricultural Produce Market Committee) Act, 2003 provides specific provisions for contract farming, like compulsory registration of contract farming sponsors and dispute settlement, this help the farmers to increase their income by growing crops which are required by the processing industries and for export purpose.

4. Constraints & Suggestions in the existing policy frameworks

- There is a gap between irrigation potential created (IPC) as a percentage of ultimate irrigation potential (UIP) in micro, medium and major irrigation projects, this gap needs to be bridge for further expansion of area under irrigation up to 60-65per cent from present level of 50per cent. This is likely to result in an expansion in assured irrigation and promote both productivity growth in existing crops and diversification into horticultural crops.
- With the increasing importance of the horticultural sector, there is a need to expand and strengthen infrastructure such as cold storage,

warehouses, processing units and organized retail for value chain development specially in the areas where APMCs are designated for trade of horticultural crops.

- State has emerged as the second-largest producer of onions after Maharashtra in recent years but has been unable to fully leverage its proximity to the major consuming markets of northern India due to inadequate storage capacity.
- Policy incentives to attract private market yards offering electronic and sample-based trading will bring bulk buyers, processors, exporters, etc., to procure fresh produce and provide greater marketing choice to farmers.
- At present, state is a net exporting state for fruits and vegetables, given its low urban population and favourable location, enabling quick access to both major northern and western urban markets, could be leveraged successfully with appropriate supporting policy incentives for development of related logistic support.
- Given the wide range of crops grown in the state and its location benefit, accelerated expansion of the e-NAM platform could benefit farmers in due course in terms of increased selling choices after due assaying, grading of produce and setting up of an effective dispute settle mechanism between buyers and sellers.
- The role played by public procurement system in the state for wheat in incentivizing area expansion, higher returns to farmers and other spin-off benefits has already be appreciated at national level. There is need to replicate the model in the case of pulses (lentil, pigeonpea, and other minor pulses of economic importance) and other oilseeds (sesame, niger and linseed) , which is of critical importance to the rain-fed regions of the state, especially in the agro-climatic zones of Bundelkhand, Satpura plateau and part of Kaymore plateau and Satpura hills.
- Large chunk of small & marginal farms with high fragmentation needs to be address through collective farming by formation of specialized clusters through intervention of contract farming/contract marketing.
- Integrated Farming System needs to be promoted through planning for fodder production and feed production.
- For promotion of organic farming in the state, the supply of quality input needs to be ensured along with incentive price and designated APMCs.
- Looking to high export potential and climate resilience of minor millets, there is a need for promotion of these crops in non-traditional areas through appropriate policies for value chain management.

5. Conference Deliberations

The one-day Regional Thematic workshop on Diversification of Crops in Madhya Pradesh, Uttar Pradesh and Rajasthan are stratified into five themes viz., Need of diversification of crops, Intervention of farm mechanization in diversification of crops, Role of horticulture in diversification of crops, Role of animal husbandry in diversification of crops and Role of FPOs, Farmers Cooperatives, MSP, and Agro-industries in diversification of crops in Madhya Pradesh.

The theme-wise recommendations of the workshop pertaining to Madhya Pradesh are summarized as follows:

A. Need of Diversification of crops

- Sesame (oilseed crops) as a substitute for upland Rice in Hoshangabad, Rewa and Jabalpur division.
- Promotion of Sesame, Kodo, Kutki millet as intercropping with Arhar /Tur in Mandla, Dindori, Narsinghpur, Umaria, Shahdol, Harda, Hoshangabad, Tikamgarh, Panna, and Katni.
- Area of expansion of Millets (Kodo, Kutki, Ragi) from 0.70 lakh hectare to 2.1 lakh hectare area in Dindori, Mandla, Shahdol and Anuppur districts.
- Promotion of chickpea (pulse) as a replacement of wheat crop in the districts like Hoshangabad (35 % wheat), Gwalior (33 % wheat), Bhopal division (30 % wheat), Rewa division (34 % wheat), Indore (25 % wheat), where the gross cropped area of Wheat is more than 30 per cent of the total gross cropped area.
- Promotion of Mustard (oilseed) in Gwalior Division (33 % Wheat), Hoshangabad division (35 % Wheat), Bhopal division (30 % Wheat), Rewa division (34 % Wheat), and Indore (25 % Wheat) in district with more gross cropped area of wheat between 20-30 per cent.
- Area expansion of Niger (oilseeds) from 7,000 hectares to 63,000 hectares in tribal districts viz., Anuppur, Dindori, Umaria, Chhindwara and Mandla (light skeleton soils) as well as in non-traditional areas of Harda and Hoshangabad.
- Promotion of short duration Rice hybrids and varieties JR 206, JR81, JRH19 in rainfed rice fallow areas (5.5 lakh ha) followed by inter-cultivation of Chickpea, Linseed and Lentil in the district of Balaghat, Mandla, Anuppur, Shahdol and Umaria.
- Promotion of trait specific Rice varieties (Scented rice, Poha making quality, Par-boiled rice) in the area like Balaghat, Seoni and Jabalpur where it is difficult to replace rice.

- Jawahar model for doubling income of resource constraint marginal and small farmers may be promoted in backyard among farm women for household nutrient income security. This half acre model harvests more than 30 produce. It is promoted by NABARD in Madhya Pradesh.
- Promotion of short duration summer Moongbean and Urd bean after Wheat as catch crop for increasing cropping intensity and income under assured irrigation.
- Intercropping of suitable and profitable crops with Sugarcane, Arhar/Tur and Wheat for maintaining soil health, additional yield and diversification of crop and income of farmers.
- Integration of livestock and poultry as well as horticultural crops(vegetables and fruits)is suitable for diversifying existing farming system.
- Promotion of bee keeping in suitable cropping system where Mustard and Niger are major crops.
- Promotion of fodder crops /grasses to meet out the need of the feed and fodder for livestock.
- Agro-forestry system with the bamboo needs to be promoted to conserve soil and water.
- Promotion of Quinoa as an alternative remunerative crop in water deficit areas.

B. Intervention of farm mechanization in diversification of crops

- Post-harvest processing facilities for fruits (Mango, Guava, Aonla, Potato, Bael) and vegetables (Green Chilli Powder, Instant soup of Moringa, Bitter Guard chips) may be established.
- Promotion of custom hiring centres may help in mechanization and entrepreneurship development. Identification of machinery for region specific crops to promote custom hiring.
- Custom agro-processing centres should be promoted through FPO.
- Promotion of drone application in agriculture.
- Community based processing centres for small millets and vegetables needs to be promoted in tribal areas.

C. Role of horticulture in diversification of crops

- Custard apple, Ber, Jamun, Aonlaand tamarind has huge potential in rainfed areas of Madhya Pradesh.

- Promotion of Grapes, Papaya, Pomegranate and Orange in non-traditional areas of Madhya Pradesh along with value addition facilities.
- Further, inclusion of above-mentioned crops as a One District One Product (ODOP) component along with upscaling the value-added products might improve the diversity of fruit crops.
- Establishment of mother block of fruit crops for availability of quality planting material at district level.
- Promotion of varieties for processing purpose (Potato, Pea, Tomato, Mango, Guava, Coriander).
- Promotion of river bed organic horticulture-based cropping system by inclusion of Melons and Cucurbit, Potato, Tomato and Garlic.
- Promote organic vegetable production for niche markets.
- Establishment of pesticide residue testing laboratories should be strengthened.
- Up scaling of seed production programs of vegetables and seed spices should be promoted in PPP mode.

D. Role of animal husbandry in diversification of crops

- Strategic developmental plan needs to be prepared for fodder production and efficient use of crop by-products for animal feeds.
- Belling machine in Rice and Wheat production system should be encouraged on community basis.
- Promotion of agri-silvi-pasture system for fodder production.
- Promotion of cultivation of medicinal plants like Chandrashur and Ashwagandha for increasing milk productivity.
- Strengthening of artificial insemination centres for improvement of non-descript breeds in tribal areas.
- Promotion of backyard poultry including Kadaknath and Narmada Nidhi breed in tribal areas.
- Strengthen veterinary service centre at block level.

E. Role of FPOs, Farmers Cooperatives, MSP, Agro-industries in diversification of crops in Madhya Pradesh

- Urgent need to rationalize the procurement of Rice and Wheat as heavy procurement of these crops stalled incentives for diversification due to assured market for these crops.
- Need to promote market intelligence for broader coverage of crops and trait specific agri-commodities.
- Identification and promotion of premium land races and make brand value in the market through GI tagging.

- Need to promote direct marketing, contract farming and Agri-Startups for crop diversification.
- Awareness on Fair Average Quality (FAQ) of crops needs to be promoted.
- Market development for Quinoa together with its processing facilities needs urgent focus.
- Inclusion of Moringa powder, Minor millets and Quinoa in nutritional security programme of Government.
- Creating linkage to international market require maintenance of quality processed food.
- The trait specific one district one product to be identified and promoted for processing and export purpose.
- Support for cluster-based farming through FPO is needed to ensure success of crop diversification and inclusive growth.

6. Best Practices

Adoption of Integrated farming system models for crop diversification for increasing income

The IFS model for small farmers of Kymore plateau and Satpura hills zone of Madhya Pradesh comprising of different cropping sequences: Rice-Wheat in 0.256 hectare, Maize-Chickpea, Sorghum-Berseem And Soybean-Oat each in 0.0960 hectare, Okra-Tomato in 0.960 hectare, fruit plants in 0.050 hectare, three cows, kitchen garden, vermin composting, boundary plantation, fishery (0.060 hectare) resulted in gross and net monetary returns of Rs. 419452 and 224002 per hectare, respectively, which is more than twice of the income from simple cropping system (Rs 60,000). Such type of small and marginal farmers/farms can efficiently lead to the crop diversification in the whole state

Promotion of oilseeds crop in cropping system under rainfed condition

- **Sesame:** Promotion of Sesame as a substitute of upland Rice in the districts of Hoshangabad, Bhopal, Rewa and Jabalpur divisions.
- **Mustard:** Mustard can be promoted in Gwalior (33 %Wheat), Hoshangabad (35 %Wheat) Bhopal (30 %Wheat), Rewa (34 % wheat), Indore (25 %Wheat) division where Wheat is cropped in more than 20 per cent of gross cropped area under rainfed or partially irrigated condition.
- **Niger:** Area expansion of Niger (oilseeds) in tribal districts from 7,000 - 63,000 hectares. Presently, it is grown in 7,000 hectares area in tribal districts viz., Anuppur, Dindori, Umaria, Chhindwara and Mandla (light

skeleton soils) as well as in non-traditional areas of Harda and Hoshangabad. Targeted districts are Anuppur, Dindori, Umaria, Chhindwara, and Mandla (light skeleton soils). Non-traditional areas include Harda and Hoshangabad.

- **Linseed:** Promotion of linseed in partially irrigated and rainfed conditions during Rabi season in low productive areas of Wheat.

Promotion of minor millets under rainfed condition in the undulated topography

Increasing the area of minor millets like Kodo, Kutki & Ragi as a substitute for upland Rice in the undulated topography of districts of Dindori, Mandla, Shahdol and Anuppur districts

Promotion of Pulses in the cropping system

Promotion of Chickpea as a replacement of Wheat crop in the districts, where the gross cropped area of wheat is more than 30 per cent of the total gross cropped area under limited irrigation condition in Hoshangabad (35% Wheat), Gwalior (33 %Wheat), Bhopal division (30 %Wheat), Rewa division (34% Wheat), Indore division (25% Wheat).

Promotion of Early duration rice hybrids/ varieties in rainfed areas to utilize residual moisture for sowing of chickpea, linseed, and lentils in rainfed rice fallow area.

Promotion of short duration Rice hybrids/varieties JR 206, JR81, JRH19 in rainfed rice fallow areas (5.5 lakh hectare) followed by inter-cultivation of chickpea, linseed and lentils in the district of Balaghat, Mandla, Anuppur, Shahdol and Umaria.

Promotion of trait specific rice varieties

Promotion of trait-specific Rice varieties like scented type, poha-making quality, par-boiled, etc., having industrial demand in the highly productive areas where it is difficult to replace rice. Trait-specific rice variety is to be promoted in Balaghat, Seoni, Jabalpur areas, where it is difficult to replace rice.

Promotion of trait specific wheat varieties

Promotion of trait specific wheat varieties viz., chapati making quality like sharbati type and durum varieties with pasta making quality in the district with high productivity where it is difficult to replace wheat.

Promotion of Vegetables in the farmers having small and marginal land-holding (Like Badiis)

Jawahar model for doubling income of resource constraint marginal farmers may be promoted in backyard among farm women for household nutrient income security.

Promotion of horticulture-based cropping system in place of traditional cropping system

Promotion of river bed organic horticulture-based cropping system by inclusion of Melons and Cucurbit, Potato, Tomato and Garlic.

Promotion of short duration summer mungbean as a potential crop in assured irrigated areas in Rice -Wheat cropping system enhancing cropping intensity

Promotion of short duration summer Mungbean after wheat as catch crop for increasing cropping intensity and income, as well as employment generation around the year.

Value addition of minor fruit crops

Value addition of fruit crops both major and minor may be on high priority.

Promotion of Fruit crops as one district one product

Promotion of fruit crops as one district one product (ODOP) component.

Development of medium-term cold-storage facilities for post-harvest storage of vegetables

Since vegetables are perishable, therefore, post-harvest handling storage and transportation need to be better so that storage and transporting them at remote areas may become possible.

Increased vegetable and seed spice seed production for its incorporation in crop diversification

Emphasis needs to be given on organic vegetable production, export-based vegetable production and seed production of vegetable crops in PPP mode to increase the share in the domestic and global market.

Identification and promotion of premium land races through Geographical indication tag.

Promotion of food products through GI tag will provide brand value and develop the market at the national and international level.

7. Recommendation and way forward on thematic area

A. Area Expansion and Production enhancement

Table 2 provides the changes in state's gross cropped area, gross irrigated area and diversity of crops. The state of Madhya Pradesh in 2013-14 had 24,150 thousand hectare of land which increased to 26,115 during 2018-19, i.e., 8.14 percent increase over 2013-14. In the same pattern, gross irrigated area too increased from 9,919 thousand hectares to 12,686 hectares, i.e., 27.89 percent increase over 2013-14. In the same period, number of crops cultivated in the state decreased from 96 to 94. Herfindahl index value decreased in the same period from 0.161 to 0.153 signifying increase in diversification in the state. Among the division of the state, Ujjain division witnessed the largest absolute change in both gross cropped and gross irrigated area. Thus, in total, **increase in gross irrigated area (28%) helped increase crop diversity (5%) in the state.**

Table 2. Division wise changes in gross cropped area (GCA), herfindahl index (HI), no. of crops and gross irrigated area (GIA) between 2013-14 and 2018-19
[Unit: GCA and GIA in 000' ha]

S. No.	District/Division	2013-14				2018-19				Percentage Change over 2013-14			
		GCA	HI	No. of Crops	GIA	GCA	HI	No. of Crops	GIA	GCA	HI	Crops	GIA
1.	Jabalpur	3,175	0.137	83	1,224	3,337	0.185	78	1,620	5.11	35.29	-6.02	32.39
2.	Sagar	2,952	0.163	73	1,192	3,247	0.193	64	1,457	9.99	18.87	-12.33	22.27
3.	Rewa	1,494	0.148	62	387	1,609	0.204	62	677	7.74	37.77	0	75.08
4.	Shahdol	912	0.177	62	75	837	0.266	59	122	-8.29	50.15	-4.84	61.45
5.	Bhopal	3,431	0.259	64	1,599	3,686	0.224	66	1,917	7.44	-13.69	3.13	19.9
6.	Indore	3,164	0.169	83	1,407	3,528	0.181	77	1,836	11.5	7.48	-7.23	30.45
7.	Ujjain	3,980	0.285	75	1,606	4,299	0.289	79	1,954	8.02	1.12	5.33	21.64
8.	Chambal	1,040	0.235	53	544	1,163	0.227	54	719	11.86	-3.39	1.89	32.29
9.	Gwalior	2,297	0.192	63	1,122	2,720	0.181	69	1,435	18.41	-5.44	9.52	27.91
10.	Narmadapuram	1,602	0.277	64	763	1,688	0.198	67	948	5.37	-28.4	4.69	24.26
	Madhya Pradesh	24,150	0.161	96	9,919	26,115	0.153	94	12,686	8.14	-4.99	-2.08	27.89

Initially the districts were categorized into four types as high area- high yield, high area-low yield, low area – high yield and low area – low yield. This data was obtained from The Agriculture Atlas of Madhya Pradesh published by JNKVV, Jabalpur. The districts with high area-low yield were chosen for reduction in area of two principal crops of Madhya Pradesh namely, Wheat and Soybean. The districts namely Katni, Seoni, Mandla, Sagar, Damoh, Tikamgarh, Panna, Newari, Chhatarpur, Rewa, Sidhi, Singrauli, Shahdol, Umari, Dindori, Raisen, Ashoknagar, Ratlam, Ujjain, Burhanpur, Khandwa, Jhabua, Rajgarh, Vidisha, and Betul were selected to reduce area under wheat. For soybean crop, the districts with high area-low yield were selected as Rajgarh, Sehore, Indore, Khandwa, and Harda. For reducing the excess area of paddy, districts identified were Balaghat, Seoni, Annuppur, Shahdol, Umaria, Dindori, Mandla, and Katni. For Wheat, 13,41,059 hectares, for Soybean, 4,28,816 hectare and 2,11,882 hectare of area was identified for area reduction in Paddy. To compensate for the loss of gross cropped area, following crops were identified and area expansion in major crops is proposed as presented in table 3.

Table 3. Proposed area expansion (Long term) in major crops for Madhya Pradesh (Base year: 2018-19)

Crop	Area expansion (ha)
Chickpea	6,23,768
Linseed	2,25,158
Mustard	2,21,058
Lentil	1,96,434
Field pea	92,448
Kodo millet	76,394
Sesame	61,246
Rapeseed	46,306
Groundnut	45,557
Arhar/Tur	42,556
Urd bean	33,769
Barley	32,204
Green pea	29,871
Kutki Millet	25,700
Potato	20,234
Maize	19,063
Moong bean	15,754
Other fodder	15,734
Onion	14,678
Other vegetables	12,320
Other	11,857
Garlic	11,023

The major effect of these changes in cropping pattern would be to enable the state to produce more crops while increasing production of millets, pulses and oilseeds. The other beneficiaries of such change were horticultural crops including spices and flower crops. The substantial increase in area under fodder crops is proposed to enable the state to meet its animal feed requirement. Major category wise proposed area expansion is presented below:

Table 4. Proposed area expansion (Long term) in Madhya Pradesh by major categories of crops

Crop categories	Sum of change in area (hectares)
Pulse	1,010,229
Oilseed	171,620
Millet	103,071
Vegetable	73,585
Spice	41,250
Fodder	36,545
Fruits	25,786
Fiber	16,144
Others	11,857
Flower	2,877
Medicinal	2,110
Cereals	-1,495,074
Grand Total	0

From the table 4, it is evident that cereals were the major category where reduction in area took place while pulses were the largest category of crops which gained from these proposed changes in cropping pattern. The pulses were followed by oilseeds, millets, vegetables, spices and fodder crops. The total of all proposed changes is zero because the proposed changes does not require increase in net as well as gross cropped area of the state. Table 5 provides the extent of diversification based on Herfindahl index before and after proposed changes to cropping pattern at base year 2018-19.

Table 5. Extent of diversification before and after proposed changes to cropping pattern [Base year 2018-19]

Districts	Extent of diversification (%)		Percent point change
	Before	After	
Annuppur	65.0	80.7	15.7
Ashoknagar	77.3	80.5	3.2
Balaghat	39.5	66.7	27.2
Betul	78.6	80.0	1.4
Burhanpur	86.5	86.5	0

	Extent of diversification (%)		
Districts	Before	After	Percent point change
Chhatarpur	76.5	78.3	1.8
Damoh	78.6	80.3	1.7
Dindori	82.1	84.2	2.1
Harda	69.3	76.8	7.5
Hoshangabad	76.7	77.3	0.6
Indore	70.1	72.8	2.7
Jhabua	79.9	81.0	1.1
Katni	61.7	84.0	22.3
Khandwa	71.8	79.7	7.9
Mandla	75.6	83.7	8.1
Newari	71.1	76.0	4.9
Panna	82.1	83.8	1.7
Raisen	79.8	82.1	2.3
Rajgarh	72.7	82.0	9.3
Ratlam	73.3	76.5	3.2
Rewa	77.8	82.4	4.6
Sagar	79.7	82.9	3.2
Sehore	70.9	79.5	8.6
Seoni	76.8	83.5	6.7
Shahdol	59.6	80.8	21.2
Sidhi	80.5	86.3	5.8
Singrauli	87.7	89.6	1.9
Tikmgarh	66.7	79.0	12.3
Ujjain	65.8	67.1	1.3
Umaria	75.8	82.9	7.1
Vidisha	77.8	78.1	0.3
Madhya Pradesh	84.7	87.4	2.7

Important: The above proposed strategy is a long-term strategy for bringing diversification to the state and the state is supposed to bring only 5% area changes each year for the proposed addition and reduction in different crops.

- The government should provide incentives to pulse and oilseed growing farmers.
- Extension and promotion of improved varieties through FLDs, OFTs and training through KVKs.

B. Productivity

- To identify districts with high area and low yield for each crop to focus on yield enhancement.
- Enhancing bio-fertilizer and bio-pesticide application to improve soil health.
- Strengthening of quality seed production, processing and storage facilities for establishing strong and viable seed chain system specially for enhancing quality seed availability.
- Creation of seed bank for supply quality seeds of oilseeds, pulses and millets at block level at door steps of farmers along with good production practices and other essential inputs.
- Involving farm women in quality seed production programme at community level to enhance employment opportunities and social responsibilities by imparting skill, knowledge and other essential resources.
- Precision farming and protected cultivation need to be promoted to increase the productivity of the horticultural crops.

C. Procurement

- More crops should be covered under procurement system with linkage to agro-industries so that the economic cost of the procurement and distribution can be minimized.
- Finding avenues for giving support prices to farmers through futures market.
- Provision for marketing and procurement of trait specific agri-produce.

D. Research & Development, Innovation and technology

- Sufficient budget provision should be made for strengthening of Research and Development (R&D) programmes to SAUs on emerging issues.
- Research on development of trait specific varieties of Rice like high aroma scented rice, High Zinc and Iron, high Vitamin etc. and promotion of this bio-fortified variety in place of conventional one.
- Research on development of early duration varieties suitable for crop diversification under rainfed condition.
- Research on development of high input responsive varieties viz., high water use efficiency, Nutrient Use efficiency.
- Research on development of climate resilient varieties viz., suitable for late sowing, Photo-thermo insensitive varieties, high temperature tolerant

varieties, frost and chilling tolerant varieties and drought and water logging tolerant varieties.

- Research on development of varieties with traits of export and industrial importance.
- Research on standardization of Integrated nutrient management for enhanced crop yield.
- Development of organic input response varieties and package of practices for organic production of different horticultural and field crops.
- Development of machinery for post-harvest processing of Quinoa.
- Development and dissemination of IFS models for enhanced income and livelihood security in every district of Madhya Pradesh.
- Market intelligence services covering major crops of the state for realization of remunerative prices.
- Identification of agri-growth centres at microlevel (block-level) for promotion of export of agri-product from the state for geographical generic products.

Details of Sessions

Annexure 1

Details of sessions attached as annexures

Names of participants

Annexure 2

Names of participants attached as annexure

Annexure I

Regional Thematic Workshop

on

Diversification of Crops

Madhya Pradesh, Uttar Pradesh and Rajasthan

Inaugural Session

Date	:	25 th January, 2022	
Time	:	10:00 – 11:00 am	
Kulgeet	:		10:00 to 10:05 am
Welcome Address	:	Dr. G.K. Koutu Director Research Services, JNKVV, Jabalpur	10:05 to 10:10 am
Opening Remarks	:	Shri Ajit Kesari, IAS Additional Chief Secretary Deptt. of Farmer Welfare & Agri. Dev. GoMP	10:10 to 10:20 am
	:	Shri J.N. Kansotiya, IAS Additional Chief Secretary Deptt. of Animal Husbandry, Horti. & Food Processing, GoMP	10:20 to 10:35 am
Address of Chief Guest	:	Shri Shailendra Singh, IAS Agriculture Production Commissioner, GoMP	10:35 to 10:50 am
Vote of Thanks	:	Dr. Sanjay Sharma Director Research Services, RVSKVV, Gwalior	10:50 to 11:00 am

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Theme Area I: Need of diversification of crops (11:00 am to 12:15 pm)

Role	Name	Designation	E-mail	Contact number
Chairperson	Dr. S. K. Rao	Vice-Chancellor, RVSKVV, Gwalior, M.P.	pstovc@rvskvv.net	09752580170
Moderators	Dr. Dharendra Khare	Dean Faculty of Agri., JNKVV, Jabalpur, M.P.	dfa.jnkvv@gmail.com	09893276471
	Dr. J. S. Mishra	Director, ICAR-DWR, Jabalpur, M.P.	dirdwsr@icar.orgin	09494240904
	Dr. P B Sharma	Prof. & Head, Agronomy, JNKVV, Jabalpur, M.P.	pbsharma5159@gmail.com	09893211994
Speakers	Dr. G. K. Koutu	DRS, JNKVV, Jabalpur, M.P.	drs.jnkvv@gmail.com	09424676726
	Dr. A. R. Sharma	DRS, RLBCAU, Jhansi, U.P.	directorresearch.rlbcau@gmail.com	09425807290
	Dr. J. P. Tetarwal	Assoc. Prof., AU, Kota, Rajasthan	jptetarwal@gmail.com	09530091236
Panelists	Dr. Akhilesh Tiwari	Director, ICAR-Regional Centre IIPR, Bhopal, M.P.	tiwariagri@gmail.com	09425010489
	Prof. Ishwar Singh	DEE, AU, Jodhpur, Rajasthan	deeaujodhpur@gmail.com	09414477091
	Dr. Sanjay Sharma	DRS, RVSKVV, Gwalior, M.P.	drs@rvskvv.net	06264482912
	Sri. K. S. Netam	Joint Director Agriculture, Jabalpur, M.P.	jdagrijab@mp.gov.in	09425163967
	Dr. R. G. Sharma	Joint Director Agriculture, Rajasthan	jdagr_input1@rediffmail.com	09057583848
	Dr. Sujeet Kumar	Scientific Officer, UPCAR, Lucknow, UP	sujitso2021@gmail.com	09140463229
Rapporteurs	Dr. S. B. Agrawal	Assoc. Prof., Agronomy, CoA, Jabalpur, M.P.	sureshagrawal14@gmail.com	09425861048
	Dr. Manish Bhan	Asstt. Prof., Agronomy, CoA, Jabalpur, M.P.	bhan.manish@gmail.com	09630112914

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Theme Area II : Intervention of farm mechanization in diversification of crops (12:15 pm to 01:00 pm)

Role	Name	Designation	E-mail	Contact number
Chairperson	Er. Rajeev Chaudhary	Director, Deptt. of Agril Eng., Bhopal, GoMP	dagebho@mp.gov.in	09425152693
	Dr. Atul Shrivastava	Dean Faculty, Agril. Eng., JNKVV, Jabalpur, M.P.	atul_jnkvv@yahoo.com	09424308109
Moderators	Dr. Abhishek Shukla	Director Instructions, JNKVV, Jabalpur, M.P.	di_jnkvv@rediffmail.com	09827607257
	Dr. R. K. Nema	Professor, CoAE, JNKVV, Jabalpur, M.P.	rajendraknema@rediffmail.com	09407001170
Speaker	Dr. C. R. Mehta/ Dr. P. S. Tiwari	Director, CIAE, Bhopal, M.P.	director@ciae.res.in	09522554797 07999382367
Panelists	Dr. S. M. Mathur	Emeritus Prof., MPUAT, Udaipur, Rajasthan	shiloo2009@gmail.com	09460028535
	Dr. Piyush Pradhan	Asstt. Prof., CoA, Jodhpur, Rajasthan	piyush.pradhan202@gmail.com	07999847411
Rapporteurs	Dr. Alok Bajpai	Prof., Soil Water Engineering, CoAE, Jabalpur, M.P.	akbajpai33@gmail.com	09977285330

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Theme Area III : Role of horticulture in diversification of crops (01:00 pm to 2:00 pm)

Role	Name	Designation	E-mail	Contact number
Chairperson	Dr. T. K. Behera	Director, ICAR-IIVR, Varanasi, U.P.	directoriiivr@gmail.com	09868342628
Moderators	Dr. D. P. Sharma	DES, JNKVV, Jabalpur, M.P.	desjnau@rediffmail.com	09425156657
	Dr. K. K. Pandey	Pri. Scientist, ICAR-IIVR, Varanasi, U.P.	kkpiivr@gmail.com	09868342628
Speakers	Dr. K. K. Pandey	Pri. Scientist, ICAR-IIVR, Varanasi, U.P.	kkpiivr@gmail.com	09868342628
	Dr. Prakash Patil	PC, AICRP on Fruits, ICAR-IIHR, Bengaluru, Karnataka	pcfruits@gmail.com	09449065722
Panelists	Dr. A. K. Pandey	Dean, CoHF, Jhansi, UP	deancohf.rlbcau@gmail.com	09436053047
	Sri. R. S. Katara	Joint Director Horticulture, Jabalpur, M.P.	jdhjabalpur@gmail.com	09993144622
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	Dr. R. L. Bhardwaj	Assoc. Prof., CoA, Jodhpur, Rajasthan	rajubhardwaj3@gmail.com	06350009890
Rapporteurs	Dr. Akhilesh Tiwari	Pri. Scientist, Horticulture, CoA, Jabalpur, M.P.	tiwariakhilesh@rediffmail.com	09893162444
	Dr. Kanchan Bhan	Scientist, Pl. Breeding & Genetics, CoA, Jabalpur, M.P.	bhan.manish@gmail.com	08305499127

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LUNCH BREAK: 2:00 pm to 2:30 pm
Theme Area IV : Role of animal husbandry in diversification of crops
(2:30 pm to 3:30 pm)

Role	Name	Designation	E-mail	Contact number
Chairperson	Dr. Umesh Sharma	President, Veterinary Council of India, New Delhi	presidentvci@gmail.com	09826294714
	Shri Bharat Singh	Director, Deptt. of Fisheries, GoMP	dirfish@mp.nic.in	
Moderators	Dr. Madhu Swami	DRS, NDVSU, Jabalpur, M.P.	drsnduvs@gmail.com	09644627656
	Dr. Sharad Tiwari	Dean, College of Agriculture, JNKVV, Jabalpur, M.P.	dacjbp@gmail.com	09424658241
Speakers	Dr. Umesh Sharma	President, Veterinary Council of India, New Delhi	presidentvci@gmail.com	09826294714
	Dr. M. K. Mehta	Dean Faculty, NDVSU, Jabalpur, M.P.	drmkmehtamau@gmail.com	09826047397
Panelists	Smt. Shashi P. Dubey	Joint Director Fisheries, Jabalpur, M.P.	ddfisbal@mp.gov.in	09425859372
	Dr. A. P. Gautam	Joint Director Veterinary, Jabalpur, M.P.	ayodhyaprasadgautam@gmail.com	09425174309
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Rapporteurs	Dr. Vishwajeet Roy	Pri. Scientist, LPM, NDVSU, Jabalpur, M.P.	drsnduvs@gmail.com	09644627656
	Dr. Sandeep Khare	Scientist, KVK, Tikamgarh, M.P.	getsandeepkumar@gmail.com	07000149580

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**Theme Area V : Role of FPOs, Farmers Cooperatives, MSP, agro-industries in
diversification of crops
(3:30 pm to 5:00 pm)**

Role	Name	Designation	E-mail	Contact number
Chairperson	Dr. Ravindra Pastor	CEO, e fasal, Indore, M.P.	ravi090@gmail.com	09425166766
Moderators	Dr. S. R. K. Singh	Director, ATARI, Jabalpur, M.P.	shyam.singh@icar.gov.in	09407338262
	Dr. Rewa Singh Sisodia	Registrar, JNKVV, Jabalpur, M.P.	registrarjnkvv@gmail.com	09425369155
	Dr. A. K. Sarawgi	Prof. & Head, Agril. Econo., JNKVV, Jabalpur, M.P.	aksarawgi_57@rediffmail.com	09826351087
Speakers	Dr. Ravindra Pastor	CEO, e fasal, Indore, M.P.	ravi090@gmail.com	09425166766
	Dr. S B Nahatkar	Director, ABM, JNKVV, Jabalpur, M.P.	sbnahatkar@rediffmail.com	09424676740
	Ms. Samidha Gupta	DGM, APEDA, New Delhi	apedabho@apeda.gov.in	09953001967
Panelists	Dr. Madhu Sharma	Director, IAB, SKRAU, Bikaner, Rajasthan	director@iabmbikaner.org	09461036631
	Dr. S. K. Chaturvedi	Dean, CoA, RLBCAU, Jhansi, U.P.	deanagriculture.rlbcu@gmail.com	09336214977
	Dr. N. K. Jain	Dean, CFT, MPUAT, Udaipur, Rajasthan	nkjain64@gmail.com	09414167540,
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Rapporteurs	Dr. Deepak Rathi	Prof., Agril Economics, JNKVV, Jabalpur, M.P.	drathi@rediffmail.com	09424601211
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Valedictory Session

- Time** : 5.00 pm – 5.30 pm
- Presentation of Reports** : Rapporteurs of Technical sessions I to V
- Remarks by** :
- Smt Priti Maithil Nayak, IAS**
Director, Farmer Welfare and Agriculture Development, GoMP
 - Prof. Pradeep K. Bisen**
Vice Chancellor, JNKVV, Jabalpur
 - Shri Ajit Kesari, IAS**
Additional Chief Secretary
Deptt. of Farmer Welfare & Agri. Dev. GoMP
 - Shri J.N. Kansotiya, IAS**
Additional Chief Secretary
Deptt. of Animal Husbandry, Horti. & Food Processing, GoMP
 - Shri Shailendra Singh, IAS**
Agriculture Production Commissioner, GoMP
- Vote of Thanks** : **Dr. Madhu Swami**
Director Research Services, NDVSU, Jabalpur

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JAWAHARLAL NEHRU KRISHI VISHWA VIDYALAYA, JABALPUR, MP

Workshop on
Diversification of Crops in Madhya Pradesh
25th January 2022

List of Participants

S.No.	Name (Original Name)	User Email
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2.	A R Sharma	
3.	A. K. Jat	
4.	A.S.Solanki (P.D.Atma) Khandwa (Aanand Singh Solanki)	
5.	Aanand Singh Solanki	
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S.No.	Name (Original Name)	User Email
23.	Akhlesh singh	
24.	Albrat patta	
25.	Alok kumar singh	
26.	Amit Pandey ADA jabalpur	
27.	Amita Dubey	
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