

“ How can women's role increase onion trade in Madhya Pradesh?”

1. Importance of Onion production and trade in MP

Madhya Pradesh is the second largest Indian state in size with an area of 3,08,000sq. Km, it has a diverse history, from the Narmada Valley civilisation to Marthas and the Britishers. Agriculture is one of the main pillars of this state, with an economy of 74.43% of people are rural. As per the data of 2010-11, 49% of the land area is cultivable (Apni kheti, n.d.). Onions are grown in nearly all types of soil, but cannot be grown in alkaline or low-lying, marshy soil. Onions prefer acidic soil with a pH ranging from 5.9 to 6.9. Madhya Pradesh soil is very suitable for growing onions because the onion required a loamy to alluvial soil, which is commonly found in Madhya Pradesh in region of Malwa and Nimar, which is excellent for onion cultivation because it is deep and fertile, all of which helps to grow well (Vikaspedia, n.d.).

The Madhya Pradesh Agro-climatic Condition is mild and not too extreme, which can help to grow onions with less stress from intense heat & cold. Also, Madhya Pradesh is considered second largest producer of onions after Maharashtra. As per the government data, Madhya Pradesh is produced 41.66 lakh metric tons in 2023-24, making it a major national supplier. Also, Madhya Pradesh plays a major role in exporting the onion from India. M.P. has 17% share in 2023-24, which supports the trade flows (Press Information Bureau, n.d.).

Some data related to India's state-wise onion production: -

Top producer is first Maharashtra, second Madhya Pradesh

State-wise Production of Onion during each of the last three years (2021-22 to 2023-24) and annual household consumption 2022-23 in Lakh Metric Tons.

States	2023-24	2022-23	2021-22	Annual Household Consumption 2022-23*
Andhra Pradesh	5.13	9.56	7.23	7.64
Bihar	13.88	13.44	13.75	20.88
Chhattisgarh	3.80	3.93	3.88	3.89
Gujarat	20.57	20.47	25.55	10.55
Haryana	5.41	5.38	5.14	5.82
Karnataka	16.38	26.65	27.80	9.79
Madhya Pradesh	41.66	52.62	47.41	10.87
Maharashtra	86.02	120.33	136.69	17.13
Odisha	3.69	3.69	3.69	6.37
Punjab	2.67	2.49	2.45	5.60
Rajasthan	16.31	16.15	14.48	9.29

Source- (Press Information Bureau, n.d.)

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2042765®=3&lang=>

- Data related to the country-wise export of onions by India in metric ton

Country-wise export of Onion by India in Lakh Metric Tons			
Country	2021-22	2022-23	2023-24
BANGLADESH PR	6.59	6.71	7.24
SRI LANKA DSR	1.63	2.71	1.7
MALAYSIA	1.7	3.93	1.67
U ARAB EMTS	1.23	4.03	1.55
NEPAL	1.68	1.76	0.81
INDONESIA	0.38	1.17	0.47
VIETNAM SOC REP	0.18	0.76	0.47
QATAR	0.33	0.8	0.34
OMAN	0.15	0.62	0.28
KUWAIT	0.24	0.45	0.28
OTHERS	1.27	2.13	1.27
TOTAL	15.39	25.27	16.07

Source - (Press Information Bureau, n.d.)

From exporting India's onion export is only extended to Asian nations or some parts of middle east Indian need better production and quality, and also need to extend their exports to other continent.

2. What Potential Does Women's Participation Have in the Context of Population, Productivity, and Household Income in Madhya Pradesh?

Women play an important role because, according to the survey based on the census 2015-2016 conducted on the Women farmers in the country, Madhya Pradesh has 1189 females in ('000) who are operational holder which has increased after the recent women-oriented schemes. which boosted the gender equality in the state and also encouraged women socially to hold agribusiness and agricultural activities of the state. Also, women's initiatives, such as SHG groups, led to the collective production of agricultural products. Especially Madhya Pradesh has the potential to grow onions on a large scale, and also leads to making a long sustainable product related to onions, which can be exported nationally and internationally (rsdebate.nic.in, n.d.).

2.1 Improve household income and boost women's participation in agricultural businesses, and increase the women labour force of Madhya Pradesh.

Women's work across the crop production, livestock and harvest activities contributes to the family's earnings and nutrition. Women's groups like SHG and FPO help strengthen women's role in the production of agriproducts and market access. Also, the Government scheme, such as Tejaswini-MP, has provided an opportunity to women in the sphere of economy, socially and politically, for their upliftment and led to equality in this scheme. The women are provided not only with funds but also with work to mobilise and empower them in a collective group, and provided with training for the SHG group. Empowered women progress through different programs like sensitisation programs, local governance training and drudgery reduction activities. Tejaswini-M.P. implemented the concept of Shaurya Dal (IFAD).

The main initiatives carried out in 2015-16 are: (i) conducting a wellbeing assessment of all households and making sure that impoverished households not included in the BPL list are added; (ii) creating new SHGs extensively; (iii) educating federation leaders about their roles and duties; and (iv) involving 3 extra staff members per federation to offer support services to SHGs. Tejaswini-MP has organised 14,697 SHGs comprising 187,806 members (total outreach of 1,032,933 individuals) versus the goal of 20,000 SHGs with 246,000 members (1,353,000 individuals). 12,873 SHGs have established a bank account and are connected to bank savings. There are 2,604 VLCs operational in 2,610 villages, surpassing the target of 2,400 VLCs. VLCs are dynamic and tackle various social problems while functioning as pressure groups. Increasing women's participation in agriculture is not only good for the household or local community, but also good for the country's growth (nitiaayog.in).

The Food and Agriculture Organisation (FAO) of the United Nations estimates that, should women.

Had equal access to productive resources as men, they could enhance yields on their farms by 20-30%, resulting in increased agricultural productivity in developing nations and a significant decrease in hunger. Acknowledging the essential role of women as equal contributors to development, the government has initiated numerous 'pro-women initiatives' on a large scale since 2007 and designated at least 30% of benefits and resources for women

within all beneficiary-focused initiatives and interventions. NABARD implemented a comprehensive strategy to integrate rural women into mainstream society through different economic activities focused on addressing their small, cyclical, and microcredit requirements and implementing suitable strategies. Linkage Between Self-Help Groups and Banks (NABARD.org, n.d.).

Increasing participation of women in the labour force, as indicated by national and state employment surveys, has significant consequences for the economy of Madhya Pradesh. As more women participate in productive activities—such as agriculture, related jobs, or off-farm employment—underutilised or “latent” labour is transformed into real economic output. This directly increases household income and lessens dependence on one male provider. When women earn income, the dependency ratio (the count of non-working individuals reliant on workers) decreases, alleviating financial strain on families. At the broader level, increased involvement of women enhances the productive workforce, boosts local economies, and fosters inclusive development and poverty alleviation in Madhya Pradesh. Data from the Niti Aayog Madhya Pradesh summary report mentions that the yearly Unemployment Rate for the State, at 1.6 per cent, is significantly lower than the national average of 3.2 per cent, and the Female Labour Force Participation Rate has increased and stayed above national estimates since 2017-18.

3. Problems and Barriers of Women of Madhya Pradesh in the context of onion farming of socio-economic, institutional, logistics and market barriers.

Rural women are mainly deprived of their capabilities, mainly affected by the patriarchal norms, and if the women are allowed to work, the concern of safety in society arises, and after the safety is ensured, the unequal payment at the workplace and ill treatment of women in recent year all issues that have decreased because the government also emphasises women’s upliftment and safety also ensuring by making a specific sector wise shames for them but this paper emphasis on onion production in Madhya Pradesh that need special planning and policy for women of Madhya Pradesh that has potential and capability to make MP as a first state that produce quality and huge quantity of onion. And can export if the basic problem is solved, basic problems are – Socio-economic, Institutional barriers, Logistics, post-harvest and Market Barriers.

1. Socio-economic.

- **The women workforce has limited access to market information**

Agriculture is the cornerstone of India’s economy. Farmers are dedicated to improving their agricultural practices, while women who are from agriculture background or from that sector face a severe challenge because of a lack of education in technology, limited opportunity for leadership positions, gender biases, and lack of recognition and face the difficulty of balancing work and family duties. The role of women in the workforce in agriculture in low-income nations in Asia is positioned in the middle, 60–80%. access to productive resources like men, their output can could be improved by 20–30% and agricultural output might be increased by 2.5–4.0% highlights the significance of women farmers in the recent past and also indicates that women require to gain access to technologies and high-quality resources

for enhancing the farming output (Tongar, 2025). ICT holds significant opportunities for women and girls to eradicate poverty, enhance education and health, boost farming output and establish fair.

They possessed a more positive perspective on ICTs since it offers prompt answers for the farmers based on their requirements and agricultural circumstances. ICT serve as a viable means to achieve the Impoverished female farmers can obtain profitable prices for their goods via ICT-driven market intelligence solutions. If we talk about livestock, there are two-thirds of the 600 million impoverished livestock owners globally. Just 15% of global extension agents are female, and merely 5% of the women engaged in farming gain from different extension program services. Access to resources, inputs, and technologies is the extra gaps that adversely impact farm women's capabilities to establish their enduring livelihoods through their agricultural activities (Tongar, 2025).

- **Education and Skill Gap**

Numerous onion farmers in MP possess only basic or secondary education, with a significant portion having just primary schooling or being functionally illiterate. District research (Indore, Rewa, and additional MP studies) indicates that approximately 30%–40% of onion farmers possess primary to high-school education, whereas about 20%–30% are either illiterate or have low education levels. This trend restricts farmers from utilising written or digitally-provided recommendations. majority of onion grower, having middle age group 53.33 percent were followed by young 25.00 percent, and old 21.67 percent, Education, shows that most of onion grower 40.83 percent were illiterate education level, followed by up to primary 29.17 percent, intermediate and above 15.83 percent, up to high school 14.17 percent, Cast, most of onion grower belong, 28.33 percent were OBC cast followed by 25 (ssociation of knowledge level with socio-economic profile ..., n.d.). Per cent SC cast, General 24.17 per cent general cast and 22.50 per cent ST cast, respectively

The skill gap among onion growers in Madhya Pradesh largely consists of weak practical knowledge in scientific nursery and crop-establishment practices, limited capacity in integrated pest management, poor post-harvest (harvesting, curing and storage) techniques, and insufficient marketing and business skills — all documented by government and agricultural research agencies. Front-Line Demonstrations (FLDs) by ICAR–KVKs show a clear technology/yield gap: recommended onion production technologies (improved varieties, scientific nursery management, nutrient schedules) raise yields when adopted, but adoption remains low without hands-on extension. ICAR and allied post-harvest studies report that improper curing and unscientific storage cause very large storage losses (estimates commonly cited at 30–40% under poor storage conditions), demonstrating that post-harvest skill deficits (timing of harvest, curing method, crate handling and ventilation) translate directly into quantitative and economic losses. District studies from Madhya Pradesh (Indore, Rewa) document low-to-medium levels of technical and marketing knowledge among many onion growers — for example many growers lack aggregation, grading and price-discovery skills, which forces smallholders to sell through intermediaries at lower farmgate prices. National programmes and policy guidance (Mahila Kisan Sashaktikaran Pariyojana and NABARD technical notes) therefore emphasise sustained, gender-sensitive hands-on FLDs, group

aggregation (SHG/FPO) models for shared storage/processing, and practical business/market literacy training as the evidence-backed solutions to close these skill gaps (Mahila kisan sashaktikarn Pariyojana).

2. Institutional Barriers

Institutional obstacles to women's complete involvement in agriculture are complex and multifaceted: they encompass legal and policy deficiencies that do not acknowledge women as farmers, land-tenure systems that seldom list women as titled property owners, restricted access to formal financing and market-oriented institutions, and exclusion from decision-making roles within cooperatives and producer associations. These obstacles are strengthened by administrative processes and service delivery frameworks tailored to male heads of households, such as subsidy and credit distribution systems, input allocation, and land-record systems that assume a male recipient, making it challenging for women to assert their entitlements or register as beneficiaries despite executing the majority of farm tasks. At the organisational level, extension services, research, and input supply systems have traditionally focused on male farmers, resulting in technology development and dissemination that frequently overlook women's workloads, time limitations, and labour roles; this maintains the low adoption of productivity-enhancing practices by women. Failures in institutional coordination (among agriculture, social welfare, and women's development departments) and the lack of sex-disaggregated data additionally obscure gendered constraints for policy-makers, leading to policies that are neutral in language yet blind to gender effects. Ultimately, social norms are perpetuated by institutions—local governance entities, credit associations, and market committees that do not have gender-sensitive measures (e.g., quotas for female representation, women-exclusive outreach), resulting in even progressive initiatives not benefiting women fairly. Thus, overcoming these obstacles necessitates legal changes (identification of land and beneficiaries), reconfiguration of service delivery (planning and data that consider gender), and institutional motivations to integrate gender into agricultural organizations (ICAR.org, n.d.).

- **Weak Gender sensitive extension and schemes targeting women.**

Gender-sensitive extension and targeted schemes remain weak across many developing-country contexts because of design, capacity, and resource limitations. At the design stage, many national extension systems are supply-driven and assume a male “farmer” as the primary client; training curricula, demonstration plots and field days are timed and located without regard for women's time burdens and mobility constraints, so women rarely attend or benefit. There are often too few female extension agents and frontline workers — a critical gap because evidence shows women farmers are more likely to use advice from other women or from mixed-gender teams that actively include women — and institutions frequently lack training modules on gender-aware communication, participatory methods, or on technologies adapted to women's tasks (ICAR.org, n.d.). Financially, schemes purportedly for women (credit windows, subsidies, skill-building programs) are often underfunded, routed through channels that require documentation women lack (land titles, identity proofs), or implemented without monitoring indicators that track women's actual uptake and outcomes. Intersectional factors, caste, class, and literacy, compound these weaknesses: one-size-fits-all “women's”

programs frequently miss the poorest and most marginalised. Furthermore, extension content often focuses on cash and export crops or input-intensive technologies that presuppose control over assets and markets; as a result, technologies and practices that reduce drudgery, save time, or increase returns for women's specific crop portfolios are under-promoted. A growing body of research recommends concrete fixes: recruit and properly deploy more female extension workers, schedule outreach to suit women's availability, co-design technologies with women, require sex-disaggregated monitoring, and link extension with women's self-help groups and market access interventions so information, inputs, credit and value-chain support reach women in an integrated way (ICAR.org, n.d.). In short, without explicit gender objectives, appropriate staffing, budgetary commitments and monitoring, extension and supposedly women-targeted schemes remain tokenistic and fail to close productivity and opportunity gaps.

- **Information Asymmetry, reinsurance, subsidies and procurement**

Information asymmetry in agriculture, (the Role of Asymmetric Information in Multi-Peril Picture ..., n.d.) where farmers, buyers, insurers and public agencies hold different, incomplete or misaligned knowledge, amplifies risks for smallholders and complicates policy instruments such as crop insurance, subsidies and procurement. For insurance, asymmetric information causes adverse selection and moral hazard: farmers with riskier plots are more likely to insure, and farmers may not adopt recommended risk-reducing practices after coverage. To manage insurer risk, schemes rely on coarse indices, delayed loss assessments or high administrative involvement; governments then subsidise premiums or provide reinsurance/backstop arrangements. (Pradhan mantri fashal Bima Yojana, n.d.) In India's Pradhan Mantri Fasal Bima Yojana (PMFBY), the central role of the government as premium subsidiser and program designer reduced private-market signals and concentrated contingent fiscal exposure on public accounts; reinsurance mechanisms and pooling arrangements have evolved, but transparency about pricing, actuarial assumptions and claim-settlement performance remains limited for many stakeholders. Subsidies (for inputs, power, or insurance premiums) can distort farmer signals and market functioning when their availability differs across regions or beneficiary lists gaps, which are often opaque because entitlement databases (land records, beneficiary registries) are outdated or gender- and tenancy-blind, producing exclusion errors. Procurement interventions (market-intervention purchases, MSP-related buys, or MIS) intended to stabilise prices introduce further complexity: lack of timely market information and weak procurement logistics can lead to delayed purchases, distress sales, or fiscal losses for procurement agencies; when procurement decision-making and stock-release policies are not publicly clear, traders and producers face informational disadvantages that exacerbate price volatility. Reinsurance and risk-sharing need good actuarial data and transparent contracting; without accessible, disaggregated loss and yield data (by crop, region, and farmer type), reinsurance pricing is opaque and the fiscal burden of calamity can shift unexpectedly to taxpayers. Remedying these problems requires investments in timely, granular data, transparent actuarial modelling and public reporting, digitised beneficiary and procurement systems that reduce exclusion and leakage, and contract designs that align incentives across farmers, insurers and reinsurers so that subsidies and procurement serve stabilisation and inclusion goals rather than create perverse information rents.

3. Logistics and post-harvest

Effective logistics are crucial for reducing losses and guaranteeing prompt transport of onions from farms to markets. Onion supply chains in India face challenges due to inadequate rural infrastructure, insufficient road connectivity, a shortage of packhouses, and a lack of specialised transportation options. As per the World Bank and NITI Aayog, ineffective logistics greatly elevate post-harvest losses and diminish the portion of consumer prices received by farmers. Relying on several intermediaries increases transaction expenses and extends access to the market. Women farmers encounter extra challenges due to restricted mobility, inadequate access to transport resources, and societal norms that limit their involvement in market-related activities. Consequently, women frequently rely on male traders or commission agents, which restricts their negotiating strength and financial gains. Enhancing rural logistics, supporting aggregation centres, and facilitating direct market involvement for women are crucial for boosting supply chain effectiveness (Krishikosh.egranth.ac.in, n.d.).

Women are essential in the post-harvest management of onions, especially in curing, drying, sorting, grading, and getting them ready for storage and sale. Even with their significant participation, women frequently do not have access to formal training, extension services, or the authority to make decisions regarding post-harvest practices. Research conducted by the (FAO.org, n.d.) and NABARD emphasises that gender-insensitive agricultural extension systems limit women's access to knowledge of advanced technologies, such as scientific curing techniques and ventilated storage facilities. As a result, post-harvest losses remain significant, and women's labour yields diminished economic benefits. Improving women's access to training, credit, and collective bodies like self-help groups and farmer-producer organisations can greatly boost post-harvest efficiency and income stability. Interventions that respond to gender in post-harvest processes are crucial for minimising losses and enhancing women's roles in the onion value chain.

- **Inadequate storage and cold storage**

Cold chain systems are essential for maintaining the quality of onions by controlling temperature, humidity, and airflow from harvest until consumption. In India, the cold chain for onions is inadequately established, as the majority of current cold storage units are meant for potatoes and are inappropriate for onion bulbs. The (ICAR.org, n.d.) Directorate of Onion and Garlic, along with the Food and Agriculture Organisation, reports that without onion-specific cold chain systems, post-harvest losses are between 15 and 25 per cent. In regions such as Madhya Pradesh, restricted availability of cold storage forces farmers to keep onions in normal conditions, rendering them susceptible to sprouting, decay, and microbial harm. The absence of decentralised cold chain systems limits farmers' capacity to time their market sales, causing distress sales during peak harvests. Enhancing cold chain facilities specific to onions is crucial for minimising losses and enhancing price stability.

- **Transport and marketing access constraints**

Insufficient storage infrastructure represents a significant structural limitation in onion production systems throughout India. Farmers often depend on conventional storage methods like open piles or inadequately ventilated shelters, which do not safeguard onions

from dampness, insects, and mould. The Government of India states that the lack of scientific storage facilities results in significant quantitative and qualitative losses, especially during the monsoon period. Small and marginal farmers are greatly impacted because of insufficient capital and restricted access to subsidised storage programs. Insufficient storage compels quick post-harvest sales at decreased prices, raising income instability and diminishing farmers' bargaining strength in markets. Women farmers face additional difficulties due to limited access to land ownership and institutional financing, which hinders their qualification for storage-related assistance programs. Investing in economical, ventilated onion storage facilities is essential for enhancing post-harvest results (ICAR.org, n.d.).

4. How role of women be enhanced to increase the onion trade

Several factors are already used, and some factors can be used by the government for the enhancement of the onion trade, such as Direct benefit transfer to the women's accounts, digital market access to the women, and extension training for market level requirement and training also provides financial help to the micro insurance and grants.

- **Direct DBT to women's accounts or to the SHG's accounts for procurement payment**

Mandating direct DBT (Direct Benefit Transfer) to women's bank accounts or to SHG accounts for onion procurement in Madhya Pradesh would remove an important leak in the market chain: payments routed through middlemen or male household members. When procurement agencies (NAFED/NCCF) transfer purchase proceeds straight to a woman's account or to a registered SHG/FPO account where women are signatories, it (a) ensures the producer who delivered the crop receives the cash, (b) reduces the scope for pay-out delays and fee-capture by intermediaries, and (c) increases transparency and traceability of transactions — all of which support better price realization and financial inclusion for women suppliers (NABARD.org, n.d.). NAFED's procurement practice already emphasises electronic payment to registered beneficiaries, which provides an operational template for mandating beneficiary-account payment. Empirical literature on DBT shows that when cash transfers reach women's accounts directly, they tend to increase women's bargaining power and control over income, improving household welfare outcomes; translating this evidence into the procurement context suggests direct payments can strengthen women's economic agency in market transactions. Practically, the policy would require (1) flexible proof-of-cultivation rules permit SHG & FPO or panchayat certification where land titles are absent, (2) mandate DBT to named women or SHG accounts in procurement tenders, and (3) a short enrolment drive for Aadhaar or bank account verification. linked to NRLM or NABARD SHG bank-linkage channels to onboard women sellers — leveraging the wide coverage of SHG bank linkages documented by NABARD. These steps are administratively feasible within existing procurement frameworks and align with India's broader DBT and financial inclusion architecture.

Support groups. NABARD's Bank Linkage Programme for Self Help Groups (SHG-BLP) has assisted in empowering rural women who are without. of assets and availability to traditional banking via its creative method for financial understanding, the collective guarantees method, and the objective impartiality of loans. This program, from its launch in 1992, has helped rural women to save, lend, and develop community capital and now encompasses 16.2 crore households within its scope. This initiative has enhanced the quality of life for women and reached multiple goals in savings and banking connections! By assisting their members in achieving higher earnings and decreasing their reliance on individual moneylenders, SHGs have shown to be a viable choice, especially for women in rural areas. NABARD disbursed ₹513 lakh as a grant to institutions promoting SHGs in FY2023, resulting in savings. Connection of 4,489 SHGs and financial linkage of 9,305 SHGs. Groups for women's self-improvement, NABARD has been assisting Women SHGs (WSHGs) in 150 regions (underdeveloped, impacted by left-wing extremism, or any one under the WSHG Development Fund since the fiscal year 2013 (NABARD.org, n.d.).

Particulars	As on 31 March 2023		Percentage change in FY2023 over FY2022	
	No. of SHGs (lakh)	Amount (₹ crore)	No. of SHGs	Amount
Loans disbursed during FY2023	43	1,45,200.2	26	46
Loans outstanding	70	1,88,078.8	3	25
Savings with banks	134	58,892.7	13	25
Non-performing assets (%)	2.8		-27	
Average loan disbursed per SHG (₹ lakh) during FY2023	3.4		15	

SOURCE - (NABARD.org, n.d.)

- **Aggregation and market access to onion-growing women farmers.**

Female farmers are crucial in agricultural production, post-harvest processing, and local sales, but they still face restrictions in accessing organised markets, obtaining price information, and exercising bargaining power. "Farm Women: Powering Agriculture" emphasises that a collective strategy via Self-Help Groups (SHGs), Commodity Interest Groups (CIGs), and informal networks empowers women farmers to surpass these challenges by consolidating produce, sharing transportation and transaction expenses, and securing improved pricing. Collective marketing bolsters economies of scale, enhances quality and volume consistency, and boosts women's confidence in dealings with traders, suppliers of inputs, and institutional purchasers. Platforms based on groups also enhance access to training, market insights, grading and packaging techniques, as well as connections with extension services and agribusiness companies. The report highlights that belonging to economic or social organisations enhances women's social capital, boosts leadership confidence, and encourages market involvement, which in turn strengthens income stability and empowers decision-making within families and communities (MANAGE, n.d.). It also provides monthly training to the women's group in the major onion-growing region of Madhya Pradesh, which helps women to extend their onion production to the state level as well as foreign exports.

Leveraging this base, supporting Women Farmer Producer Organizations (FPOs) via market connections enhances collective action on a larger scale. Women-led FPOs consolidate produce, standardise quality, set up storage and primary processing facilities, and directly link with wholesalers, processors, retail chains, and government procurement systems. The MANAGE volume indicates that robust market connections allow FPOs to transcend distress sales, lessen reliance on intermediaries, and attain greater value via collective branding, bulk contracts, and enhanced logistics. Market-linked FPOs provide access to credit, insurance, digital payments, and input sourcing, thus enhancing the involvement of women farmers throughout the entire value chain (MANAGE, n.d.). Notably, market exposure enhances managerial abilities, financial understanding, and governance skills among female members, thereby strengthening leadership and promoting the long-term viability of the organisation. The publication also highlights that market linkages that consider gender enhance women's control over earnings and their involvement in leadership positions, which are crucial aspects of empowerment. Therefore, combining collective methods with organised FPO market connections establishes a scalable route for inclusive agriculture growth, higher farm incomes, and durable economic empowerment of women in rural areas.

According to the International Journal of Creative Research Thought (IJCRT) on Women's participation level on onion cultivation practices in Rewa district, Madhya Pradesh Which shows the women's participation on various themes during cultivation work, but emphasising "preparation of onions for marketing and decision making for marketing"

S.no	Practices	No participation		Partial participation		Complete participation	
		F	%	F	%	F	%
	Preparation of onion for marketing	13	10.8	30	25	77	64.1
	Decision making for marketing	30	25	78	65	12	10

Source- <https://share.google/MXSDKJ84xBPSmdner>

According to data which is provided by IJCRT, women have 3 different percentages for the preparation of onions for marketing with no participation- 13(10.8), partial participation- 30(25), complete participation- 77(64.1). For decision-making for marketing, no participation -30(25), Partial participation- 78(65), complete participation- 12(10) (IJCRT, n.d.).

- **Finance and risk management, and micro insurance to women farmers, and government subsidies for cluster storage.**

Female onion farmers in Madhya Pradesh encounter significant production and market risks from unpredictable rainfall, pest invasions, price fluctuations, and losses after harvesting. Enhancing financial safeguards and infrastructure is crucial for stabilising earnings and boosting market engagement. (krishivistar.gov.in, n.d.) emphasises two key interventions: enrollment in crop insurance and micro-insurance, along with grants and subsidies for storage infrastructure at the cluster level.

Micro-insurance and participation in government crop insurance programs like the Modified National Agricultural Insurance Scheme (MNAIS) and Weather-Based Crop Insurance Scheme (WBCIS) offer a protective measure against crop losses and adverse weather events. The handbook highlights the importance of achieving comprehensive outreach to women farmers, particularly those from SC/ST groups, along with appropriate budget distribution. Premium subsidies may reach 75 per cent based on the risk category, greatly reducing the financial load for small female farmers (FAO.org, n.d.). Compensation is available for prevented planting, yield deficits, post-harvest damages from cyclones, and specific risks like hailstorms and landslides, providing prompt payments and financial support during challenging times. Onion producers in Madhya Pradesh face challenges from late rains and market downturns, making higher PMFBY and related insurance enrollment crucial for safeguarding working capital, allowing ongoing input investment, and decreasing reliance on informal credit (krishivistar.gov.in, n.d.).

Furthermore, funding and assistance for storage at the cluster level specifically tackle post-harvest risk and forced sales. Under the Integrated Scheme for Agricultural Marketing (ISAM), women beneficiaries and women-led FPOs qualify for a 33.33% capital subsidy for storage facilities, while men receive 25%, with elevated subsidy limits for greater capacities. This clause promotes the creation of onion storage facilities, aggregation hubs, and minor warehouses close to production groups. Enhanced storage enables female onion farmers in areas like Indore, Shajapur, Dewas, and Ratlam to retain their harvests during price declines, minimise both quantity and quality losses, and collectively secure improved market prices. The manual also supports post-harvest technology units for scientific storage, packaging and value addition with higher financial assistance for women groups.

Together, insurance coverage mitigates production and climate risks, while storage subsidies reduce market and post-harvest risks. When integrated with women-led FPOs and SHG aggregation models, these measures enhance income stability, creditworthiness and long-term resilience of Madhya Pradesh's women onion growers, strengthening their participation in organised markets and value chains.

- **Digital training and gender responsive extension.**

Extension training is vital in enhancing women's productivity, income, and decision-making abilities in agriculture. The (MANAGE, n.d.) emphasises that involving women in extension activities boosts the adoption of new technologies, increases farm efficiency, improves home gardens, and livestock and fisheries outcomes, while also creating new business opportunities by connecting women to input and output markets. Greater access to Extension Advisory Services (EAS) also aids in dispelling discriminatory beliefs and enhances women's confidence and abilities. Traditional extension systems, however, have primarily concentrated on production technologies, providing minimal assistance in value addition, marketing, and climate adaptation, thereby limiting women's involvement in the market. To close this gap, digital tools and ICT-driven platforms are becoming more essential. Gender-sensitive ICT solutions like SMS in regional languages, community radio, information boards in public areas, and mobile advisory services address women's mobility challenges and restricted information networks, facilitating improved access to pricing, aggregation, and market data. The framework also highlights the importance of gender-sensitive extension methods that incorporate community involvement, advisory techniques, market participation, and livelihood strategies.

Educating extension personnel on gender analysis and hiring female extension workers enhances outreach and guarantees that advisory services cater to women's distinct needs, thus reducing gender disparities in access to information, markets, and economic chances

5. Role of women in marketing of onions and byproducts in MP, which can boost onion export?

Women are taking on a more significant role in onion marketing, particularly in post-harvest management, grading, packaging, storage choices, and selling at the local level via village markets and regulated mandis. Marketing effectiveness heavily relies on understanding grading, choosing suitable marketing channels, bulk transactions, and temporary storage to enhance negotiating strength. A field study conducted in Indore district reveals that more than 93% of farmers understand that grading results in better prices, and over 86% agree that choosing the appropriate marketing channel is the initial step for profitable onion selling. Farmers recognize that selling to village traders or pre-harvest contractors typically leads to lower prices, and that delaying storage enhances their bargaining strength. Women involved in sorting, packaging, weighing, and retail activities play a vital role in enhancing quality and achieving better prices, yet their involvement is hindered by restricted access to market information, training, storage facilities, and representation in market committees. Enhancing women's access to extension services and market intelligence systems is essential for boosting their marketing results and ensuring household income stability (Marketing knowledge of onion growers of Indore district (..., n.d.).

Price fluctuations in onion markets subject small producers, including women farmers, to urgent sales right after harvest. (Prakash, 2007) The emphasises that the National Agricultural Cooperative Marketing Federation of India (NAFED) is crucial in supporting and stabilising prices. NAFED steps in when prices drop to unviable levels by purchasing onions according to production costs and consistently tracking key markets. This system safeguards producers with limited storage abilities and insufficient financial resources. In external trade, NAFED establishes the Minimum Export Price (MEP) each month by taking into account domestic prices, global market trends, and profit margins. Export quotas are determined by a committee comprising various ministries to maintain local availability and price stability. These price support systems indirectly assist women farmers by minimising market uncertainty, enhancing income predictability, and fostering involvement in organised procurement and cooperative marketing structures.

Onion is a strategic commodity within the agro-food system, which integrates input supply, farm production, storage, processing, distribution, and environmental management. The agro-food system approach recognises that agriculture extends beyond production into logistics, value addition, quality standards, and sustainability practices such as good farming and manufacturing practices (Prakash, 2007). Approximately 10–15% of onion production is processed or exported, while the remainder is consumed domestically. However, inadequate facilities for sorting, grading, curing, and storage result in post-harvest losses of 15–20%, weak market forecasting, and high spatial price variation. Strengthening cooperatives, warehousing, and processing capacity is therefore essential for improving efficiency and stabilising farmer incomes (Prakash, 2007).

In Madhya Pradesh, particularly the Malwa Plateau, onion production feeds national markets and exports, yet farmers frequently incur losses due to low prices, limited market outlets, and

insufficient marketing infrastructure. The region contributes significantly to the state's onion output but faces structural inefficiencies in marketing channels and price realisation (researchjournal). Integrating women more effectively into organised marketing systems, price stabilisation programs, and agro-food value chains can enhance productivity, reduce losses, and strengthen inclusive agricultural growth.

- **The women led onion companies and FPO's of Madhya Pradesh.**

Madhya Pradesh has a high number of Farmer-Producer Organisations, and the participation of women is also higher, as more than half of the population resides in villages. And the state's primary source of revenue is generated from agriculture, as well as the women-led organisations like the Bhumisha organisation and Bajna Mahila Farmer Producer Company Limited, which are the foundation which work primarily in agriculture and provides with onion products and organic products.

Bhumisha Organics is a women-led organic agri-enterprise based in Madhya Pradesh, founded by agripreneur Pratibha Tiwari, with a strong focus on farmer capacity building, sustainable agriculture and market linkage. The organisation works with more than 300 certified organic farmers and over 1,300 natural farmers across 500+ villages, providing training in organic cultivation practices, certification support and direct access to organised retail and institutional markets (Bhumisha Organics, n.d.). The company operates a processing unit that creates regular employment for local women, especially in sorting, grading, packaging and value-addition activities, thereby strengthening women's participation in post-harvest value chains (Bhumisha Organics, n.d.). Bhumisha markets more than 70 organic food products, including pulses, spices, flours, herbs and processed foods, which are distributed in cities such as Delhi, Mumbai and Bengaluru through organic retail networks and direct sales channels (Bhumisha Organics, n.d.). Although onion-specific branded products are not explicitly listed on the website, vegetables and value-added organic produce form part of the company's portfolio, indicating future potential for onion processing and export-oriented value addition.

Bajna Mahila Farmer Producer Company Limited is a registered women-led Farmer Producer Organisation located in Ratlam district of Madhya Pradesh, established to aggregate farm produce, strengthen women farmers' collective bargaining power and improve market access. Corporate registration records show that the company is governed by women directors, confirming women's leadership and ownership in decision-making and enterprise management (zaubacorp - Bajna Mahila farmer Producing company, n.d.). The FPO engages in collective farming support, primary aggregation and local marketing of agricultural commodities, enabling women members to participate in harvesting, basic post-harvest handling and village-level trade activities (kisaanhelpline-bajna-mahila-farmer-producer-company-limited, n.d.). Publicly available online marketplace listings indicate that the organisation currently sells limited agro and grocery products, but there is no clearly documented branded onion product catalogue available in the public domain, suggesting that onion processing remains at a nascent or informal stage. Nevertheless, Bajna Mahila FPC represents a strong institutional platform for women farmers in an onion-growing region, with significant potential to expand into onion value-added products such as dried onion flakes or powder through targeted training, infrastructure investment and market linkage support.

6. Ongoing Schemes related to Training programmes and market linkage programmes for women.

A scheme that is provided by the government to the farmers, more specifically for women, in this article, we have emphasis on women of Madhya Pradesh who grow onion which ultimately leads to two objectives: one, which increases female engagement in the agriculture sector, as well as ultimate use of funds of Ladli Behan Yojana funds, which increase the productivity and work force. Second: an increase in onion production and export to foreign countries, and countering China's trade to importing countries. Some of the Schemes which are women-oriented, which help women farmers in training and market linking and eradicate the middlemen, and lack in technology, so the first scheme, (Mahila kisan sashaktikarn Pariyojana) Mahila Kisan Sashaktikaran Pariyojana (MKSP) is a major initiative under the Deendayal Antyodaya Yojana–National Rural Livelihoods Mission (DAY-NRLM) by the Ministry of Rural Development, focusing on acknowledging women as farmers and enhancing their economic involvement in agriculture. MKSP aims to enhance women's access to skills, technology, extension services, institutional credit, and productive resources while fostering sustainable and climate-resilient farming practices. Anticipated results consist of increased agricultural productivity, enhanced household income and nutrition stability, diminished laborious tasks, and more resilient women-led groups. In Madhya Pradesh, particularly in onion-producing regions like Ratlam, Mandsaur, Shajapur, and Ujjain, MKSP aids women onion farmers by enhancing their skills in better farming techniques, water management, pest management, and post-harvest processes via Self-Help Groups and producer collectives. The program additionally enhances aggregation and collective marketing, lessening reliance on intermediaries and boosting price realisation. Collaboration with Krishi Vigyan Kendra's and state agricultural departments enhances access to advisory services and quality inputs, thereby boosting onion productivity and storage management (Mahila kisan sashaktikarn Pariyojana). MKSP thus aids in ensuring stable incomes, strengthening institutions, and fostering the long-term market involvement of female onion farmers.

Second scheme, (The support to training and employment programmes for women) is a central sector scheme of the Ministry of Women and Child Development designed to strengthen women's employability and self-employment through structured skill development. The objective of STEP is to provide market-oriented training in sectors such as agriculture, food processing, handicrafts and services, and to create forward and backward linkages with credit and markets. Expected outcomes include higher labour force participation, diversified livelihood opportunities, improved productivity and enterprise creation among women. For women onion growers in Madhya Pradesh, STEP is particularly relevant for developing skills in post-harvest management and value addition, including onion dehydration, grading, packaging, food safety and basic entrepreneurship. These skills help women reduce distress sales during seasonal price crashes and convert surplus onions into higher-value products such as flakes or powder. Training exposure also builds confidence in business management, branding and market linkage, enabling participation in FPO-led processing units or micro-enterprises. By strengthening employability and enterprise readiness, STEP supports income diversification and economic resilience for women engaged in onion cultivation and allied activities (The support to training and employment programmes for women).

The third scheme, the (Mahila Udyami Nidhi) Scheme, provided under the aegis of SIDBI and partner financial institutions, promotes women entrepreneurship by facilitating access to

affordable credit for micro and small enterprises. The motivation is to reduce one of the major financial barriers impeding women entrepreneurs from enterprise creation in manufacturing, agro-processing, and services, thereby directly encouraging enterprise creation. The expected outcomes of this would include the growth of women-owned MSMEs, an increase in employment generation, an increase in financial inclusion, and stronger participation by women in the formal economy. For women onion growers in Madhya Pradesh, this could create access to capital for establishing small processing and aggregation infrastructure, like onion dehydration units, grading sheds, packaging facilities, cold storage, and transport assets. Such institutional finance will decrease dependency on informal moneylenders and will expand investment by women-led FPOs and SHGs in food safety compliance, machinery, and working capital (Mahila Udhya Nidhi). This will improve value addition, reduce post-harvest losses, and strengthen participation in organised domestic and export markets. Thus, the Scheme enhances entrepreneurial capacity and long-term asset creation among rural women engaged in onion value chains.

Fourth scheme, The Public Procurement Policy for Micro and Small Enterprises (MSE Order) specifies a minimum of 3% of all purchases annually to be made by the ministries and departments of the government and public sector enterprises from women-owned MSMEs. The policy aims to increase market access for female entrepreneurs, mainstream them in the economy by including them in formal market chains, and ensure enterprise sustainability (Public Procurement Policy MSE). The success of this policy will ensure assured market access, revenue stability, increased credibility of enterprises, and growth of female-owned enterprises. For female onion farmers and female-led FPOs in Madhya Pradesh, it will be possible to access institutional customers like government hostels, hospitals, defence, Mess, and government nutrition programs via the Government eMarketplace (GeM) to supply onions and processed products. Secure marketing will enable stability of onion prices and will stimulate investments for grading and packaging of onions to meet food safety standards (Public Procurement Policy MSE). Online registration for GeM will increase transparency for female-led enterprises. After evaluating all these schemes, which led to the process in which the schemes help onion producer and after that, this good condition of onion production led to the extension of export of onion to foreign trade and also led to direct foreign buyers to the local companies.

7. Quality of onion required by the top foreign importer countries and recommendations to the M.P. onion growers for boosting onion export.

The top importers are usually the Western nations, and they also have the quality requirement from the exporter and only allow the best quality of onion, which is set by the country's nutritional value, not only this, but also sets the packaging, etc. for food and processed food. As China is the world's no.1 producer of onions and also exports to various nations, to compete with China in the onion market, India needs to produce a good quality of onion and good packaging with certification as per the requirement, because onions led to changes in geopolitics as well, if India will lead global market then China funding and economy will affect which leads to onion led diplomatic win of india.

Requirement of the United State :-

U.S. import compliance, onions fall under plant/plant-product entry controls and must meet USDA-APHIS requirements that vary by commodity and country. APHIS directs

importers/exporters to use its Agricultural Commodity Import Requirements (ACIR) system to confirm whether a shipment needs a phytosanitary certificate, specific additional declarations, treatment, or other conditions; exporters typically align documentation and pre-shipment inspection to the ACIR commodity/country pathway to avoid holds at the port. Practically for Madhya Pradesh, this means export planning must begin with ACIR-based requirement confirmation for “fresh onion/shallot (*Allium*)” shipments, then building packhouse SOPs around cleanliness, pest exclusion, and document readiness to reduce clearance risk (ams.usda.gov rules-regulations: onion, n.d.).

As per the Subject to Section 8e requirements. View the full regulation. Onions imported into the United States must meet minimum grade, size, quality, and maturity requirements before importation. Please review the information below carefully as some of the requirements change depending on the variety and/or date.

- June 5 through March 9 - White varieties (except cipolline (Borettana) varieties)

Grade: U.S. No. 1 Size:

Shall be either: (1) 1 inch minimum diameter with a 2 inch maximum diameter, or (2) 1 ½ inches minimum diameter. Neither of these two categories may be mixed in the same bag or container.

Maturity: At least “moderately cured”

Red onions, except braided red onions

Grade: U.S. No. 2 or better

Size: At least 1 ½ inches minimum diameter

Maturity: At least “moderately cured”

All other varieties of onions, except white, red, cipolline, or pearl:

Grade/Size: Shall be either:

(1) U.S. 2 or Commercial grade where onions are at least 3 inches minimum diameter (but not more than 30 percent of the lot shall be comprised of onions of U.S. No. 1 when packed in containers weighing less than 60 pounds);

(2) U.S. No. 1 grade, 1 ¾ inches minimum to 2 ¾ inches maximum diameter; or

(3) U.S. No. 1 grade, at least 2 ¼ inches minimum diameter.

None of these three categories of onions may be commingled in the same bag or other container.

Maturity: At least “moderately cured”

- March 10 through June 4

All onions, except cipolline or pearl

Grade: Shall not exceed 20% defects of U.S. No.1 grade. Tolerance for serious damage shall not exceed 10%, including not more than 2% decay.

Size: Small - 1 to 2 ½ inches in diameter (limited to white onions only) Repacked – 1 ¾ to 3 inches in diameter (60 % 2 inches or larger)

Medium – 2 to 3 ½ inches in diameter

Jumbo/large – 3 inches or larger in diameter

Colossal – 3 ¾ inches or larger in diameter.

Year Round

Pearl

Size: A maximum of 2 inches in diameter

Maturity: At least “moderately cured” Cipolline (also known as “Cippollini” or Borettana) variety of onions

Grade At least US No. 2

Size At least 1 ½ inches minimum diameter.

Maturity At least “moderately cured” Onions in transit from the country of origin to entry into the United States for 10 or more days may be entered if they meet an average tolerance for decay not to exceed 5 per cent (ams.usda.gov rules-regulations: onion, n.d.).

- Requirement of the European Union:-

EU import compliance, the European Commission’s plant-health framework requires that many plants and plant products entering the EU be accompanied by a phytosanitary certificate (unless explicitly exempt), and consignments are subject to official controls at entry. The Commission’s guidance on trade in plant products from non-EU countries emphasises that the phytosanitary certificate attests the consignment has been properly inspected and meets EU plant-health requirements; exporters should therefore align field pest management, grading, and packing-house hygiene to minimize regulated pest risk and ensure documentation consistency for border checks. For Madhya Pradesh onion growers, EU readiness is strongest when exports are organised through FPO or aggregator systems that can standardise traceability, lot coding, and inspection document workflows across many smallholders (UNECE Standard FFV-23 standard for onion).

As per (UNECE Standard FFV-23 standard for onion), onions for fresh use must satisfy certain standardised minimum requirements, classification criteria, size criteria, and quality tolerances. For minimum requirements, onions must be sound, clean, and free from frost damage, pests, excess moisture, foreign smell, visible shoots, and insufficient drying, with their stems twisted or clean-cut to no more than 6 cm. They must be transportable and reach their destination in sound condition. Onions have two classifications, Class I and Class II. For Class I, onions must be hard, dense, and typical for their variety, with only slight cosmetic damage acceptable, and for Class II, onions can have considerable damage to their shape, colour, spots, and skin. Size criteria are based on maximum equatorial diameters, with a size limit no smaller than 10 mm. For uniformity criteria, no size deviation can exceed 15 mm, 20 mm, or 30 mm for the largest bulb. For quality tolerance levels, a deviation range up to 10% for each type must be followed,

with stricter levels for decay and shoots. Total size non-conformity may be up to 10% for all grades (UNECE Standard FFV-23 standard for onion).

Onions exported by Madhya Pradesh can be improved by considering time, quality, compliance, and joint efforts. For this reason, MP onion suppliers should consider harvest time. The U.S. imports onions from both MX and Canada, while the EU imports from Egypt, New Zealand, and Peru. Since these countries supply high quantities, the price is low. MP suppliers should consider proper storage and exporting during the offseason when countries receive low quantities. Secondly, farmers need to comply with export procedures. The U.S., as well as the European Union, needs onions to be free from pests, clean, and accompanied by a Phytosanitary Certificate. Farmers need to process their produce through Farmer-Producer Organisations FPOs or Packhouses, where the process of grading, cleaning, packing, and documentation needs to be done professionally. Thirdly, quality is more important than quantity. The export buyers want a similar size, well-dried bulbs, appropriate skin colour, less damage, and a low level of residues. Basic steps, such as proper storage of the produce, along with proper sorting, increase the price value. Lastly, a group marketing approach is necessary. This will help FPOs and women SHGs to pool their demand, negotiate prices effectively, and link directly with the exporters.

Case Study of Women's Empowerment in Agriculture, specifically onion growers in Northern Tanzania.

This study on women onion growers in Northern Tanzania's participation in the onion value development, which enhances women socio economic employment. Women reported increased income, greater confidence to speak in public, improved awareness of rights, ownership of small assets, and enhanced participation in household and community decision-making. Group-based interventions such as producer groups, savings and credit groups, and training platforms enabled women to access production inputs, credit, and market linkages. Women's participation in lower level value chain, women benefit less than men due to gender based division of roles and unequal power relations. Also, patriarchal rural norms, which led to restrictions on women some of the key challenges faced by the onion grower women. Transport difficulty because women face restrictions and a high workload for managing housework and farm work, in which Madhya Pradesh SHG and FPO are the best for managing things easily. Also, women lack in onion trading because they lack access of big market and only have access to the local market. Also, the government of Tanzania provide a support to the women farmers through a policy of "the Agriculture sector development scheme" and also Kilimo Kwanza "agriculture first" which provides support to the women farmers and focuses on modernising and commercialising private sector-based small, medium, large scale (Jeckoniah, 2012). The major takeaway from the Tanzanian case suggests three critical takeaways for MP onion development strategies. First, women-centred value chain interventions must integrate structured capacity building on leadership, financial decision-making, and rights awareness, similar to the group-based empowerment observed in Simanjoro. Second, empowerment programs in MP should actively involve men, community leaders, and local institutions to reduce resistance and shift gender norms, preventing income appropriation and workload transfer to women. Third, strengthening women's control over income, credit utilisation, and asset creation through women-led FPO governance, transparent payment systems, and independent savings mechanisms can enhance real empowerment outcomes. Adopting a holistic, socially embedded approach—rather than only productivity-focused interventions can enable Madhya Pradesh

women onion growers to convert market participation into sustained economic autonomy, social recognition, and leadership within local agri-food systems, reflecting the lessons evidenced in the Tanzania case study (Jeckoniah, 2012).

- **Way Forward**

1. Educating Madhya Pradesh women onion growers about the world-level onion market and providing them with essential socio-economic support to the women farmers of Madhya Pradesh that helps them to meet the world-level top exporter country's requirements for quality of onion.
2. Provide an online platform to the onion growers for providing online training and education, and also provide a platform to the local farmer group for making online deals with foreign companies and also get the proper value of onion and by this also eradicate the middleman issue.
3. Improve mobility and participation of women in market activities by facilitating safe transport, group travel, and digital market access so women can directly engage with buyers and institutions.
4. Ensure women's control over income and assets by promoting direct payments to women or women-group accounts, strengthening savings and credit groups, and encouraging asset ownership in women's names to prevent income appropriation by male members.
5. Ensuring the proper training of women regarding production, post-harvesting and market access and trading of onions because it is the backbone process for boosting the trade of onions.
6. Monitor beyond income indicators, the process of empowerment regarding women's participation in household decisions, leadership roles, workload balance, and social recognition to make sure that empowerment remains a continuous process rather than a one-time gain.
7. The onion production and trade are multidimensionally beneficial because it led to economic gain for the country. Geopolitically, India is countering China's onion export to the importing countries, which is a diplomatic win for India. In the context of the Madhya Pradesh government, the initiative of Ladli Behan Yojana became successful because the participation of the women workforce will increase not only in onion production but in the agriculture sector.

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