

A Study of the Production Status of Commercial Crops in Madhya Pradesh

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Publication Date: 2026/09/12

Abstract: Commercial crops constitute an important component of the agricultural economy of Madhya Pradesh because they connect farm production with processing industries, domestic markets, exports, employment generation and rural income. The agro-climatic diversity of the state provides favourable conditions for the cultivation of oilseeds, fibre crops and sugar crops. Soybean occupies a particularly dominant position in the cropping system of Madhya Pradesh, while rapeseed-mustard, groundnut, cotton and sugarcane have also emerged as important market-oriented crops. The present study examines the production status, temporal changes and emerging trends of selected commercial crops in Madhya Pradesh with particular emphasis on the latest available decade. Secondary data have been obtained primarily from the Directorate of Economics and Statistics, Department of Agriculture and Farmers Welfare, Government of India, Ministry of Textiles, Press Information Bureau and relevant ICAR publications. Ten-year data have been used wherever a comparable series was available, while a minimum five-year period has been considered for crops for which consistent long-term state-level figures were not available in the same statistical series. The analysis reveals substantial structural differences among major commercial crops. Soybean continues to account for a very large share of India's soybean acreage, but its productivity in Madhya Pradesh remains comparatively volatile because a considerable proportion of cultivation depends on monsoon rainfall. Rapeseed-mustard has recorded strong expansion in both area and production, particularly after 2020-21. Groundnut has also shown a marked long-term increase in production. Sugarcane production displays comparatively moderate long-run growth accompanied by considerable annual fluctuations, while cotton continues to remain regionally significant, particularly in western and south-western Madhya Pradesh. The findings indicate that production growth has not been uniform across crops and that increasing productivity, irrigation coverage, quality seed availability, climate resilience, storage, processing and organised marketing are essential for sustainable commercial crop development in the state.

Keywords: Madhya Pradesh, Commercial Crops, Soybean, Rapeseed-Mustard, Groundnut, Cotton, Sugarcane, Agricultural Production, Productivity, Crop Diversification.

How to Cite: Dr. Sachin Awasthi; Dr. Navita Rajurkar (2026) A Study of the Production Status of Commercial Crops in Madhya Pradesh. *International Journal of Innovative Science and Research Technology*, 11(9), 115-124.
<https://doi.org/10.38124/ijisrt/26sep062>

I. INTRODUCTION

Agriculture continues to occupy a central position in the economic and social structure of Madhya Pradesh. A substantial proportion of the population of the state depends directly or indirectly upon agriculture and allied activities for employment and income. Over the years, the agricultural economy of Madhya Pradesh has undergone a gradual transformation from a predominantly subsistence-oriented system towards a more diversified and commercially integrated agricultural structure. This transformation is reflected in the expansion of crops that are cultivated not merely for direct household consumption but primarily for sale, processing and industrial utilisation. Commercial crops may broadly be understood as crops that are cultivated predominantly for market sale and generate significant monetary income for farmers. Oilseeds such as soybean,

rapeseed-mustard and groundnut, fibre crops such as cotton and industrial crops such as sugarcane are important examples in Madhya Pradesh. Unlike traditional subsistence crops, the production decisions associated with commercial crops are influenced strongly by market prices, minimum support prices, processing capacity, input costs, technology, irrigation, climatic variability, transportation facilities and market accessibility.

Madhya Pradesh enjoys considerable geographical diversity. The state includes the Malwa Plateau, Nimar region, Vindhyan Plateau, Bundelkhand, Baghelkhand, the Narmada Valley and parts of the Satpura region. Differences in soil, rainfall, temperature, irrigation and topography create distinctive regional patterns of agricultural production. Black cotton soils found extensively in western and central Madhya Pradesh are especially suitable for soybean and cotton

cultivation. The Narmada Valley and irrigated areas provide favourable conditions for sugarcane and several other high-value crops. Rapeseed-mustard has expanded significantly in northern, north-western and central districts, while groundnut cultivation has also increased in selected parts of the state. Among commercial crops, soybean possesses exceptional significance in Madhya Pradesh. The state has historically been one of India's foremost soybean-producing regions. Official agricultural statistics show that in 2023-24 Madhya Pradesh accounted for approximately 45.72 per cent of India's soybean area and about 41.89 per cent of national soybean production. The state recorded around 6.06 million hectares under soybean and produced approximately 5.47 million tonnes during the year. This concentration demonstrates not only the economic significance of soybean for farmers but also its importance for edible oil, animal-feed and agro-processing industries.

Nevertheless, the performance of commercial crops cannot be evaluated solely in terms of cultivated area. Production ultimately depends on the interaction between area and yield. Madhya Pradesh possesses large areas under soybean, yet productivity has remained vulnerable to variations in rainfall, delayed monsoon, excessive precipitation, pest incidence and limited irrigation. According to official data, soybean yield in the state was 969 kg per hectare in 2022-23 and declined to 903 kg per hectare in 2023-24. The relatively low irrigation coverage of soybean makes climatic variability particularly important. At the same time, diversification within the commercial crop economy has become increasingly visible. Rapeseed-mustard production has expanded significantly, groundnut production has increased, and cotton continues to contribute to the agricultural economy of the Nimar and Malwa regions. Sugarcane, although occupying a much smaller area compared with soybean, is economically important because of its high value, labour requirements and relationship with sugar and allied processing industries.

An assessment of the production status of commercial crops is therefore important for understanding changes in Madhya Pradesh's agricultural structure. It helps identify whether production is rising through expansion of cultivated area or through improvements in productivity. It also indicates the degree of instability associated with rainfall-dependent crops and provides a basis for framing strategies related to irrigation, processing, marketing and crop diversification. The present research paper evaluates the recent production trajectory of selected commercial crops of Madhya Pradesh by using longitudinal statistical data. Special attention has been given to soybean, rapeseed-mustard, groundnut, cotton and sugarcane because of their economic and regional importance.

➤ Objectives of the Study

The major objectives of the present research are:

- To examine the production status of major commercial crops in Madhya Pradesh.

- To analyse temporal changes in the area, production and productivity of selected commercial crops during the latest available decade.
- To assess the relative importance of soybean, rapeseed-mustard, groundnut, cotton and sugarcane in the commercial agricultural structure of Madhya Pradesh.
- To identify the major trends and fluctuations in commercial crop production.
- To analyse whether growth in commercial crop production is associated primarily with expansion of cultivated area or improvement in productivity.
- To examine the major geographical, climatic, technological and economic factors affecting commercial crop production.
- To identify major constraints affecting the sustainable development of commercial crops in Madhya Pradesh.
- To suggest policy measures for improving productivity, stability, processing and marketing of commercial crops in the state.

➤ Hypotheses

The following hypotheses have been formulated:

- H₁: The production of major commercial crops in Madhya Pradesh has increased significantly during the study period.
- H₂: Expansion in cultivated area has been an important determinant of growth in commercial crop production.
- H₃: Productivity of commercial crops in Madhya Pradesh exhibits substantial year-to-year variation because of climatic and irrigation-related factors.
- H₄: Oilseed crops, particularly soybean and rapeseed-mustard, occupy a dominant position in the commercial crop structure of Madhya Pradesh.
- H₅: Increased irrigation, improved seed technology, mechanisation and organised marketing positively influence the production performance of commercial crops.

II. RESEARCH METHODOLOGY

➤ Nature of the Study

The study is descriptive, analytical and quantitative in nature. It examines the temporal behaviour of selected commercial crops and interprets changes in cultivated area, production and productivity.

- Study Area - The geographical unit of analysis is the state of Madhya Pradesh. The state is located in central India and possesses substantial agro-climatic diversity. Its geographical location, widespread black soils, extensive plateau regions and varying rainfall conditions have resulted in a diversified agricultural system.

The study primarily focuses on:

- ✓ Soybean
- ✓ Rapeseed-Mustard
- ✓ Groundnut
- ✓ Cotton

✓ Sugarcane

These crops have been selected because they possess significant market, processing or industrial importance.

➤ *Sources of Data*

The research is based entirely on secondary data. Major sources include:

- Directorate of Economics and Statistics, Department of Agriculture and Farmers Welfare, Government of India
- *Agricultural Statistics at a Glance*
- ICAR institutions and official technical publications
- Ministry of Textiles, Government of India
- Press Information Bureau, Government of India
- Committee on Cotton Production and Consumption
- Government agricultural statistical databases
- Relevant peer-reviewed research literature

The Directorate of Economics and Statistics provides an official Area, Production and Yield reporting system for state- and crop-level agricultural statistics.

- **Period of Study** - The study attempts to cover approximately the latest ten agricultural years. For soybean, mustard and groundnut, long-term trends covering roughly 2015-16 to 2024-25 or the latest available comparable period have been used. For sugarcane and other crops where a directly comparable state-level series was available for a shorter period, at least five consecutive years have been analysed.

➤ *Statistical Techniques*

The following techniques have been used:

Percentage Change [$\text{Percentage Change} = \frac{V_n - V_0}{V_0} \times 100$]

Compound Annual Growth Rate [$\text{CAGR} = \left(\frac{V_n}{V_0} \right)^{\frac{1}{n}} - 1$]

Where:

(V_n) = value in the final year

(V_0) = value in the initial year

(n) = number of intervals between the observations.

In addition, mean values, comparative percentages and trend analysis have been used wherever appropriate.

III. REVIEW OF LITERATURE

Research relating to commercial agriculture in India highlights the importance of crop diversification, technological adoption, irrigation and price incentives in determining the expansion of market-oriented crops. The transition from subsistence farming towards commercial agriculture is generally associated with increased monetisation of rural economies, greater participation in

agricultural markets and integration with agro-processing industries.

Studies concerning the oilseed economy of India indicate that oilseeds are strategically important because domestic edible-oil demand has increased rapidly. Among these crops, soybean has emerged as a major kharif oilseed, particularly in Madhya Pradesh and Maharashtra. Madhya Pradesh historically became a major soybean-producing state because the crop adapted effectively to the black soils and monsoon conditions of the Malwa Plateau and adjoining regions. Official agricultural statistics demonstrate the continued dominance of Madhya Pradesh in soybean cultivation. During 2023-24, the state accounted for around 45.72 per cent of the national area under soybean and approximately 41.89 per cent of production. However, its yield of approximately 903 kg per hectare remained below several other major producing states. This suggests that the major challenge in Madhya Pradesh is no longer merely expansion of soybean area but enhancement and stabilisation of productivity.

ICAR-related research on rapeseed-mustard cultivation has identified Madhya Pradesh as an increasingly important contributor to national mustard production. Recent research reports strong long-term growth in area and output and indicates that Madhya Pradesh has emerged among India's major rapeseed-mustard producing states. Production increased substantially over the last decade, although annual yield remains influenced by weather, irrigation and pest conditions.

Research on groundnut has similarly emphasised the potential of improved varieties, irrigation and better crop management. Official ICAR statistics indicate that Madhya Pradesh experienced considerable expansion in groundnut area and output during the decade ending 2023-24. The state's groundnut area increased by around 130 per cent and production by more than 200 per cent over the longer period reported in the relevant ICAR publication. Studies concerning cotton emphasise the importance of technological change, particularly improved varieties, pest management, irrigation and market conditions. Madhya Pradesh forms part of India's Central Cotton Zone along with Gujarat and Maharashtra. The Ministry of Textiles identifies cotton as a major raw material for the textile sector and confirms that Madhya Pradesh is among the important cotton-growing states of the Central Zone.

The available literature therefore suggests three broad patterns. First, Madhya Pradesh possesses a strong comparative advantage in oilseeds. Second, expansion of cultivated area has contributed substantially to production growth in several commercial crops. Third, productivity instability, climate vulnerability and insufficient value addition continue to restrict the full economic benefits of commercial crop cultivation. The present study extends this literature through a comparative assessment of recent trends across several major commercial crops.

IV. DATA ANALYSIS AND INTERPRETATION

➤ *Production Trend of Soybean in Madhya Pradesh –*

Soybean is the most prominent commercial oilseed crop of Madhya Pradesh. It has contributed significantly to the agricultural transformation of the Malwa region and has developed strong linkages with solvent extraction plants, edible-oil industries, feed manufacturers and agricultural markets.

Table 1 Area, Production and Yield of Soybean in Madhya Pradesh

Year	Area (Lakh ha)	Production (Lakh tonnes)	Yield (kg/ha)
2015-16	59.06	49.08	831
2016-17	54.01	66.49	1,231
2017-18	50.10	53.21	1,062
2018-19	54.19	66.71	1,231
2019-20	61.94	48.87	789
2020-21	66.74	42.65	639
2021-22	55.13	53.92	978
2022-23	59.74	57.89	969
2023-24	60.60	54.72	903
2024-25	58.70	53.80	917

- *Note: Figures are rounded; 2024-25 figures are based on the latest estimates available in the official agricultural statistical series.*

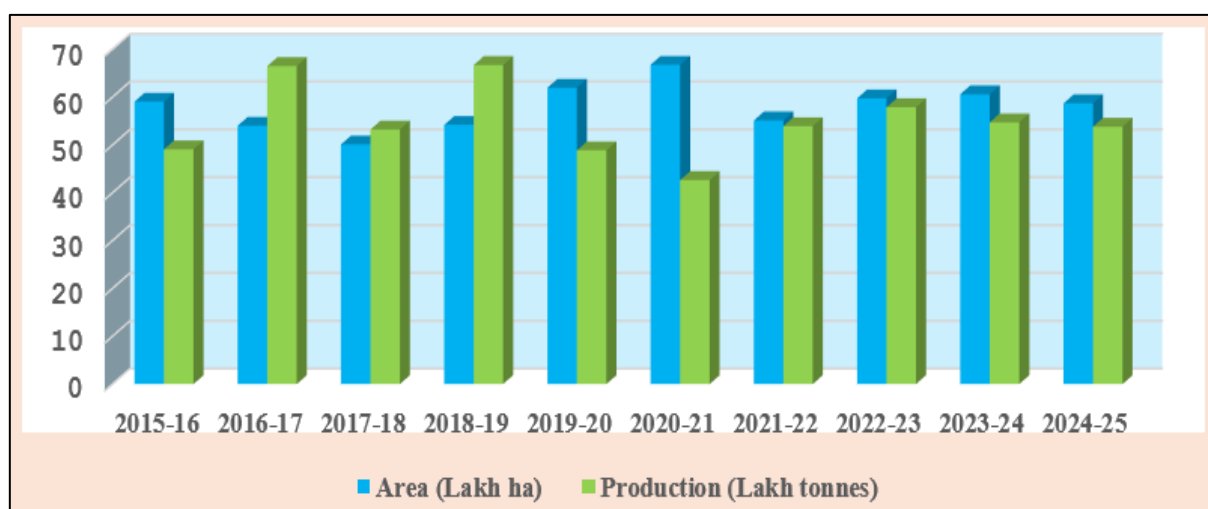


Fig 1 Area, Production and Yield of Soybean in Madhya Pradesh

Official national agricultural statistics confirm that Madhya Pradesh continued to possess the largest soybean area among Indian states in 2023-24 and 2024-25. In 2023-24 the state accounted for about 45.72 per cent of India's soybean acreage and 41.89 per cent of production. The table demonstrates that soybean production in Madhya Pradesh has been characterised by substantial fluctuations. Production stood at approximately 49.08 lakh tonnes in 2015-16 and increased sharply to 66.49 lakh tonnes in 2016-17. A similar high level was observed in 2018-19. However, production declined to approximately 48.87 lakh tonnes in 2019-20 and further to about 42.65 lakh tonnes in 2020-21 despite expansion in cultivated area. This divergence clearly indicates the importance of productivity rather than area alone. Yield declined from approximately 1,231 kg per hectare in 2018-19 to 789 kg per hectare in 2019-20 and only about 639 kg per hectare in 2020-21. Subsequent recovery

occurred, but productivity remained below the earlier peak levels.

The behaviour of soybean therefore supports the argument that climatic conditions remain a major determinant of commercial crop production. The crop is substantially dependent upon monsoon rainfall, and even a large cultivated area cannot ensure high production when rainfall distribution is unfavourable. The decade as a whole indicates relative stability in soybean acreage but substantial instability in output. This implies that future soybean policy should focus less on geographical expansion and more on productivity enhancement.

➤ *Rapeseed-Mustard: An Emerging Commercial Crop*

Rapeseed-mustard has emerged as one of the most rapidly expanding commercial oilseed crops of Madhya Pradesh.

Table 2 Area, Production and Yield of Rapeseed-Mustard

Year	Area (Lakh ha)	Production (Lakh tonnes)	Yield (kg/ha)
2015-16	6.17	6.66	1,079
2016-17	7.08	9.20	1,299
2017-18	7.48	9.76	1,305
2018-19	7.07	10.40	1,471
2019-20	6.75	10.38	1,538
2020-21	7.49	13.07	1,745
2021-22	12.26	16.91	1,379
2022-23	about 12.7	about 19.6	about 1,540
2023-24	13.35	19.62	1,470
2024-25	10.89	16.66	1,530

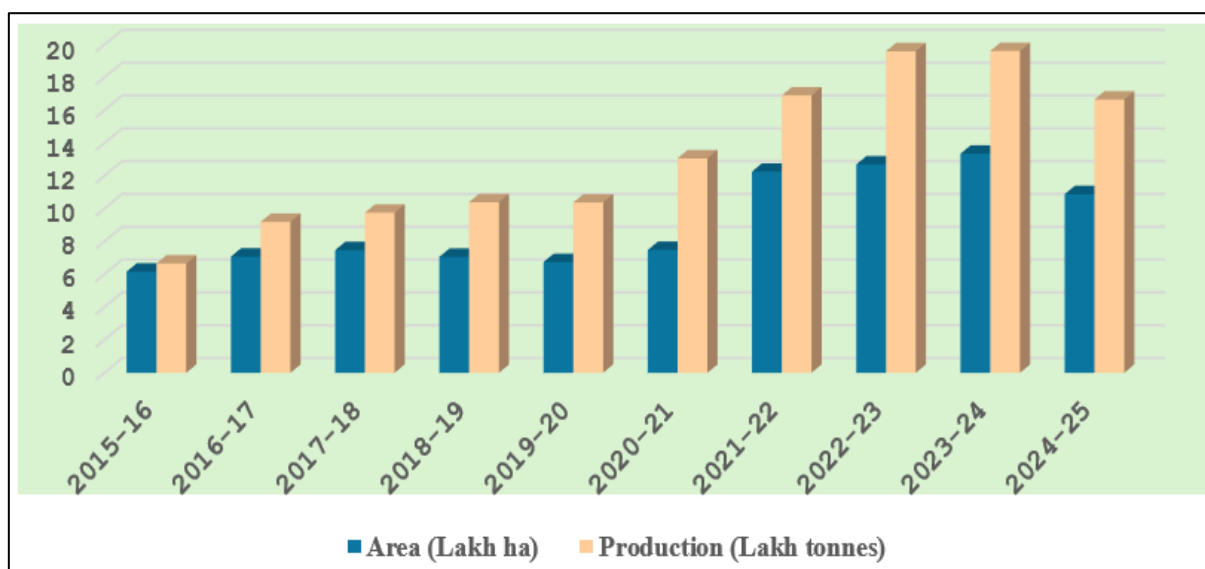


Fig 2 Area, Production and Yield of Rapeseed-Mustard

Recent research based on official agricultural statistics reports a clear long-term expansion of rapeseed-mustard in Madhya Pradesh. The most remarkable feature is the increase in production from approximately 6.66 lakh tonnes in 2015-16 to 16.66 lakh tonnes in 2024-25. This represents an overall rise of about 150 per cent. The estimated compound annual growth rate of production over the period is around 10.7 per cent per annum, indicating strong structural growth. An especially significant expansion occurred after 2020-21. Area increased from around 7.49 lakh hectares in 2020-21 to more than 12 lakh hectares during 2021-22. Production subsequently approached 20 lakh tonnes. Official agricultural statistics show that in 2023-24 Madhya Pradesh cultivated

approximately 1.34 million hectares of rapeseed-mustard and produced around 1.96 million tonnes, equivalent to approximately 14.8 per cent of national production.

This trend suggests that mustard is progressively strengthening its role in the state's commercial agricultural economy.

➤ Groundnut Production

Groundnut represents another important oilseed crop with substantial commercial value because it serves both edible-oil and food-processing markets.

Table 3 Groundnut Production Trend in Madhya Pradesh

Year	Area (Lakh ha)	Production (Lakh tonnes)
2014-15	2.31	3.70
2015-16	2.36	3.32
2016-17	2.55	3.78
2017-18	2.24	3.49
2018-19	2.23	4.12
2019-20	2.21	3.51
2020-21	2.93	5.23
2021-22	3.90	6.72
2022-23	3.89	7.44
2023-24	about 4.76	about 9.91

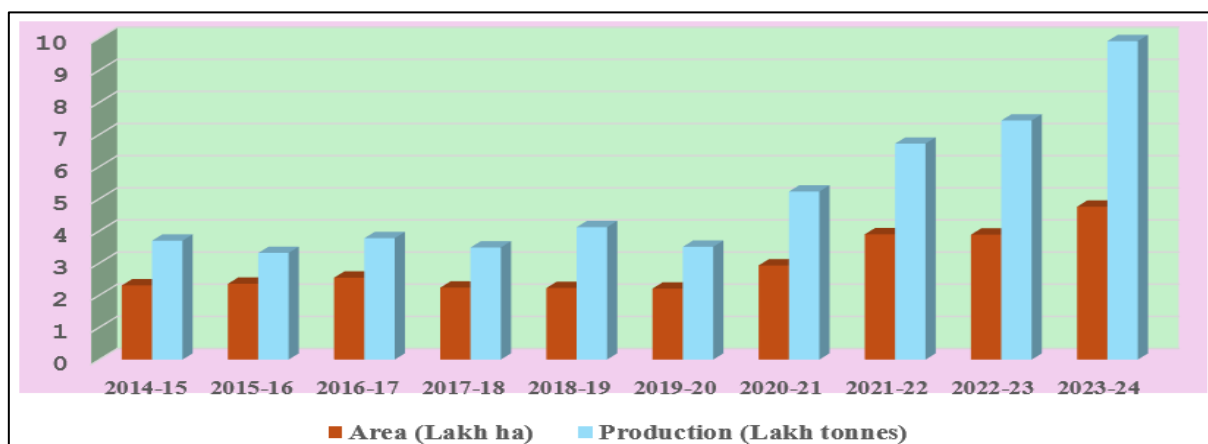


Fig 3 Groundnut Production Trend in Madhya Pradesh

ICAR statistics show a substantial expansion of groundnut in Madhya Pradesh over the decade. The corresponding official analysis indicates an increase of approximately 130 per cent in cultivated area and more than 200 per cent in production over the longer reference period. Groundnut represents one of the clearest examples of commercial crop expansion in Madhya Pradesh. Production increased from about 3.70 lakh tonnes in 2014-15 to approximately 9.91 lakh tonnes by 2023-24. Although some intermediate years recorded declines, the overall direction was strongly upward. From 2015-16 to 2023-24, the estimated compound growth rate of production is approximately 14–15 per cent per annum.

The acceleration after 2020-21 is particularly noticeable. The simultaneous expansion of cultivated area and production indicates that groundnut growth has been supported by both horizontal expansion and productivity improvement. Its future commercial importance may increase further if supported by oil-processing infrastructure, grading, improved seed, irrigation and market linkages.

➤ Sugarcane Production

Sugarcane is relatively limited geographically compared with soybean or mustard, but it is a high-value commercial crop connected directly with processing industries.

Table 4 Sugarcane Production in Madhya Pradesh

Year	Production ('000 tonnes)
2014-15	2.31
2015-16	2.36
2016-17	2.55
2017-18	2.24
2018-19	2.23
2019-20	2.21
2020-21	2.93
2021-22	3.90
2022-23	3.89
2023-24	about 4.76

Source: Government of India State-Wise Agricultural Production Data.

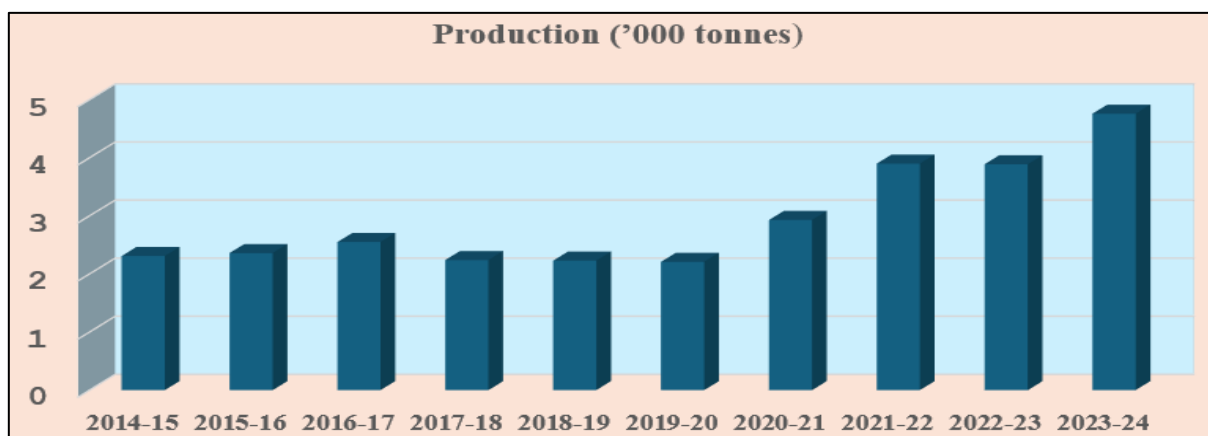


Fig 4 Sugarcane Production in Madhya Pradesh

Sugarcane production fell sharply from approximately 7.43 million tonnes in 2019-20 to 5.44 million tonnes in 2020-21 and remained near that level in 2021-22. A recovery occurred thereafter. Production increased to approximately 6.44 million tonnes in 2022-23 and further to approximately 7.59 million tonnes in 2023-24. When the first and final years are compared, the overall increase is modest—approximately 2 per cent—but the intervening fluctuations are substantial. The trend suggests that sugarcane production is sensitive to irrigation availability, climatic conditions, water requirements, profitability relative to alternative crops and processing capacity. Because sugarcane is highly water-intensive, indiscriminate expansion would not necessarily be desirable. Instead, productivity improvement and efficient irrigation should receive greater policy priority.

- **Cotton Production** - Cotton occupies considerable economic importance in the western and south-western portions of Madhya Pradesh, particularly in the Nimar belt. The Ministry of Textiles places Madhya Pradesh within India's Central Cotton Zone together with Maharashtra and Gujarat. Cotton remains an essential raw material for textile industries and supports numerous activities extending from cultivation and ginning to spinning and trade. For 2023-24, Madhya Pradesh had approximately 6.30 lakh hectares under cotton, produced around 18.01 lakh bales of 170 kg each, and achieved an estimated yield of 486 kg per hectare. For 2024-25, provisional estimates indicate approximately 5.12 lakh hectares, production of around 14.12 lakh bales, and yield of approximately 469 kg per hectare.

Table 5 Recent Status of Cotton in Madhya Pradesh

Year	Area (Lakh ha)	Production (Lakh bales)	Yield (kg/ha)
2023-24	6.30	18.01	486
2024-25*	5.12	14.12	469

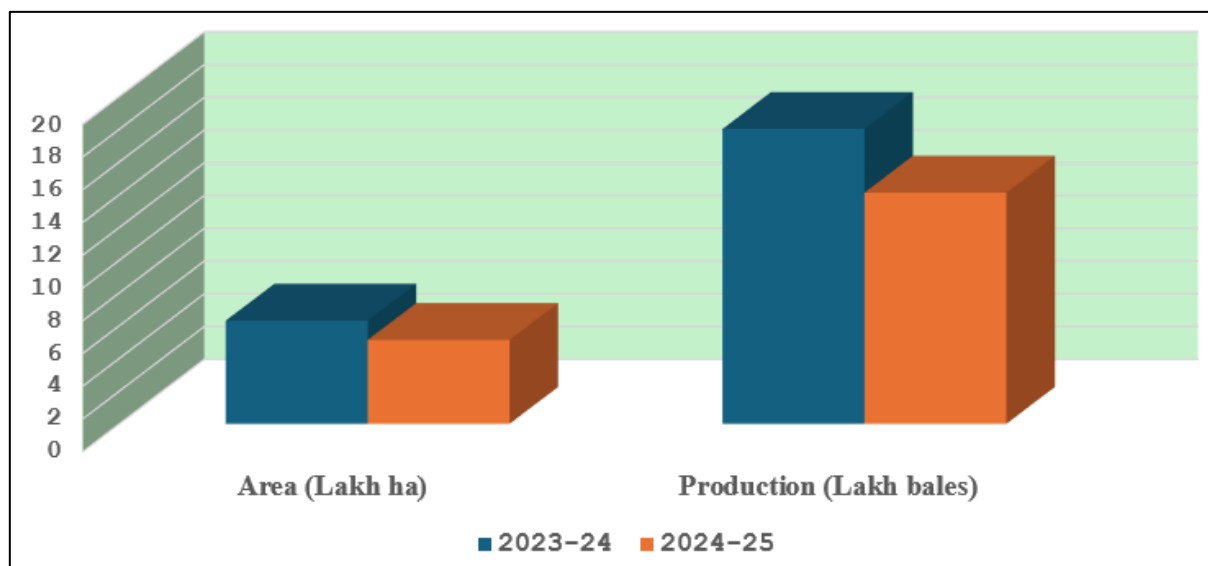


Fig 5 Recent Status of Cotton in Madhya Pradesh

The reduction in both area and production between 2023-24 and 2024-25 indicates the sensitivity of cotton cultivation to profitability, climatic conditions and farmers' crop choices. Cotton cultivation is geographically concentrated. Consequently, state-level fluctuations may be strongly influenced by production conditions in a limited number of districts. Strengthening integrated pest management, efficient irrigation, quality seed availability,

cotton grading, ginning infrastructure and textile-industry linkages can significantly enhance the contribution of cotton to the rural economy.

➤ Comparative Analysis of Major Commercial Crops

The different commercial crops of Madhya Pradesh exhibit distinctive trajectories.

Table 6 Comparative Trend of Selected Commercial Crops

Crop	Approx. Study Period	Initial Production	Latest Production	General Trend
Soybean	2015-16–2024-25	49.08 lakh tonnes	about 53.8 lakh tonnes	Fluctuating/moderate growth
Rapeseed-Mustard	2015-16–2024-25	6.66 lakh tonnes	16.66 lakh tonnes	Strong growth
Groundnut	2014-15–2023-24	3.70 lakh tonnes	about 9.91 lakh tonnes	Very strong growth
Sugarcane	2019-20–2023-24	7.43 million tonnes	7.59 million tonnes	Fluctuating/recovery
Cotton	Recent official estimates	—	18.01 lakh bales in 2023-24	Regionally important

The comparative picture clearly establishes the central role of oilseeds. Soybean remains dominant by area and absolute production, whereas mustard and groundnut demonstrate stronger relative growth.

➤ *Factors Responsible for the Changing Production Pattern*

• *Agro-Climatic Diversity -*

The diverse physical environment of Madhya Pradesh makes it suitable for several commercial crops. Black soils support soybean and cotton, whereas irrigated and comparatively well-drained areas are favourable for mustard, groundnut and sugarcane.

• *Rainfall Variability*

Rainfall remains one of the most important determinants of commercial crop output. Soybean is particularly vulnerable because a substantial proportion of the cultivated area remains rain-fed. The considerable difference between area share and production share in soybean illustrates the productivity constraint. In 2023-24 Madhya Pradesh accounted for approximately 45.72 per cent of India's soybean area but only 41.89 per cent of output.

➤ *Irrigation*

Irrigation substantially influences production stability. Crops receiving assured irrigation generally experience lower rainfall-related risk than predominantly rain-fed commercial crops. Expansion of micro-irrigation can improve water-use efficiency and is particularly relevant for cotton and sugarcane.

➤ *Technology and Improved Varieties*

Improved seed varieties, mechanised sowing, timely plant protection, scientific nutrient application and better agronomic management have contributed to productivity improvements. However, the yield gap between Madhya Pradesh and some other states suggests considerable scope for technological improvement.

➤ *Prices and Market Signals*

Commercial crop decisions are highly responsive to prices. Farmers compare expected profitability across soybean, maize, pulses, mustard, cotton and other competing crops before deciding the sowing pattern. Minimum Support Prices and procurement systems can influence acreage decisions, although actual market prices frequently remain equally important.

➤ *Processing Infrastructure*

Oil extraction units, soybean processing plants, cotton ginning units, sugar mills and food-processing facilities create derived demand for agricultural output. Madhya Pradesh can capture a larger share of agricultural value by processing commercial crops within the state rather than exporting raw produce.

➤ *Transportation and Agricultural Markets*

Improved road connectivity, regulated markets, electronic trading and warehousing reduce transaction costs and allow farmers to access a wider market.

➤ *Hypothesis Testing*

• *Hypothesis 1*

- ✓ H₁: Production of major commercial crops in Madhya Pradesh has increased significantly during the study period.

The hypothesis is partially accepted.

Mustard and groundnut have recorded substantial increases. Soybean shows moderate long-term improvement but significant annual fluctuation, while sugarcane experienced decline followed by recovery. Hence, commercial crop production has generally expanded but not uniformly across crops.

• *Hypothesis 2*

- ✓ H₂: Expansion in cultivated area has been an important determinant of production growth.

The hypothesis is accepted with qualifications.

Groundnut and mustard provide clear evidence that increasing area contributed to higher production. However, soybean demonstrates that area expansion alone cannot guarantee higher production when productivity declines.

• *Hypothesis 3*

- ✓ H₃: Productivity exhibits significant annual variability owing to climatic and irrigation-related factors.

The hypothesis is accepted.

Soybean yield varied considerably across years. The strong decline recorded during 2019-20 and 2020-21 demonstrates the vulnerability of rain-fed commercial agriculture.

• *Hypothesis 4*

- ✓ H₄: Oilseeds occupy a dominant position in commercial agriculture in Madhya Pradesh.

The hypothesis is accepted.

Soybean, mustard and groundnut together constitute the most geographically extensive and economically prominent segment of commercial agriculture in the state. Madhya Pradesh alone accounted for approximately 41.89 per cent of India's soybean output in 2023-24.

• *Hypothesis 5*

- ✓ H₅: Improved irrigation, technology and market infrastructure positively influence production performance.

The hypothesis is conceptually accepted, although crop-level causal econometric testing is beyond the scope of the available secondary-data analysis.

The observed differences in yields and production stability indicate the importance of irrigation, seed quality, agronomic technology and market linkages.

V. MAJOR FINDINGS

➤ *The Analysis Provides Several Important Findings.*

- Madhya Pradesh possesses a distinct commercial agricultural structure centred on oilseeds.
- Soybean continues to dominate the commercial crop economy, but its production is considerably more unstable than its cultivated area.
- The productivity of soybean remains a major concern. The state's share of national soybean area is greater than its share of production, suggesting the existence of a yield gap.
- Rapeseed-mustard has emerged as a rapidly expanding commercial crop. The rise from approximately 6.66 lakh tonnes in 2015-16 to around 16.66 lakh tonnes in 2024-25 is particularly significant.
- Groundnut has recorded one of the strongest relative increases among the crops examined. ICAR data indicate substantial expansion of both area and production over the decade.
- Sugarcane production has demonstrated a U-shaped movement during the latest five-year period, with a decline after 2019-20 and recovery by 2023-24.
- Cotton remains highly significant within particular districts rather than across the whole state. Its importance lies not only in agricultural production but also in its backward and forward linkages with ginning, textile manufacturing, transportation and trade.
- Crop-wise production trends clearly show that expanding cultivated area cannot substitute for improvements in productivity.
- Climate-related risk remains central to commercial agriculture, particularly in rain-fed oilseed areas.
- Finally, the increasing production of mustard and groundnut provides an opportunity for Madhya Pradesh to diversify its oilseed economy and reduce excessive dependence on soybean.

➤ *Problems and Constraints –*

Despite favourable agricultural resources, commercial crop production in Madhya Pradesh faces several challenges.

- Dependence on Monsoon - A large portion of commercial crop cultivation, particularly soybean, remains vulnerable to irregular rainfall.
- Low and Variable Productivity - Soybean productivity frequently remains below the levels achieved in several competing states.
- Climate Change - Increasing frequency of extreme rainfall, prolonged dry periods, high temperatures and changing seasonal patterns may increase production uncertainty.

- Limited Irrigation - Although irrigation coverage has increased in Madhya Pradesh, several commercial crop-producing areas continue to depend heavily upon rainfall.
- Price Volatility - Prices of soybean, cotton and other commercial commodities respond to domestic and international demand, edible-oil imports, global prices and industrial demand.
- Rising Cost of Cultivation - Farmers face increasing expenditure on seed, fertiliser, pesticides, labour, machinery and irrigation.
- Pest and Disease Incidence - Soybean and cotton may experience serious losses due to pest and disease outbreaks.
- Inadequate Value Addition - The state produces large quantities of agricultural raw materials but has further potential for refining, branded food production, textile processing and export-oriented value addition.
- Storage and Post-Harvest Losses - Inadequate scientific storage can force farmers to sell immediately following harvest, weakening their bargaining power
- Suggestions
- Increase Productivity Rather than Only Area - Agricultural policy should increasingly focus on yield enhancement. In soybean particularly, horizontal expansion has nearly reached practical limits in several areas.
- Expand Irrigation - Minor irrigation, farm ponds, watershed management, drip and sprinkler irrigation should be promoted in commercial crop regions.
- Develop Climate-Resilient Varieties - Short-duration, drought-tolerant and disease-resistant varieties of soybean, mustard, groundnut and cotton should be promoted through agricultural universities and extension systems.
- Strengthen Seed Replacement - Availability of certified seed should be ensured before the sowing season. Village-level seed systems can complement formal seed distribution.
- Crop Diversification - Overdependence on soybean in certain areas increases production and price risk. Suitable diversification towards mustard, groundnut, pulses, horticulture and other profitable crops should be promoted according to agro-climatic suitability.
- Promote Processing Industries - Oil extraction, refined edible-oil production, soybean food products, peanut processing, cotton textiles and sugar-based industries should be developed near major production centres.
- Improve Agricultural Marketing - More transparent price discovery through electronic markets, farmer producer organisations and competitive procurement should be promoted.
- Develop Warehousing and Pledge Finance - Scientific warehouses should be expanded so that farmers can store produce and postpone sale when harvest-time prices are unfavourable.
- Strengthen Farmer Producer Organisations - FPOs can aggregate produce, purchase inputs economically, undertake primary processing and improve farmers' bargaining capacity.

- Promote Micro-Irrigation in Cotton and Sugarcane - Drip irrigation should receive particular emphasis for water-intensive crops.
- Strengthen Crop Insurance - Commercial crops exposed to rainfall and market risk require effective crop-insurance coverage with timely claim settlement.
- Improve Market Intelligence - Farmers should receive regular information on domestic prices, international commodity prices, sowing trends, weather, demand conditions and processing opportunities.
- Encourage Contractual Linkages with Processing Industries - Transparent and farmer-friendly arrangements between producers and processors may provide assured markets, technological support and quality incentives.
- Promote Export-Oriented Value Addition - Instead of exporting mainly raw agricultural produce, the state should encourage processed soybean products, edible oils, peanut products, cotton yarn, textiles and other higher-value commodities.
- District-Level Crop Planning - Commercial crop strategy should be region-specific. Nimar may require cotton-focused development, Malwa may prioritise soybean productivity and processing, while districts suitable for mustard and groundnut can be encouraged to diversify accordingly.

VI. CONCLUSION

Commercial crops constitute a crucial link between agriculture and the broader economy of Madhya Pradesh. Their importance extends beyond agricultural production because they generate demand for processing, storage, transportation, trade, financial services and industrial employment. The present analysis demonstrates that Madhya Pradesh has developed a strong comparative position particularly in the oilseed sector. Soybean remains the principal commercial crop in terms of cultivated area and national importance. Madhya Pradesh continues to contribute an exceptionally large proportion of India's soybean acreage and output. However, the statistical trend reveals that soybean production is relatively unstable. Large acreage does not automatically translate into higher production because productivity remains strongly influenced by monsoon conditions and other environmental factors. Consequently, stabilising yield represents the most important challenge for the future of the soybean economy. Rapeseed-mustard presents a contrasting pattern. Its cultivated area and production have increased substantially, particularly during the more recent years. The crop has consequently become an increasingly important element of the state's commercial agricultural diversification. Groundnut has also shown an impressive long-term increase. The expansion of these two crops indicates the possibility of developing a more diversified oilseed economy rather than maintaining excessive dependence upon soybean. Cotton continues to possess strategic regional significance, particularly in the Nimar and adjoining regions. Its value chain extends considerably beyond agriculture because of connections with ginning, spinning and textile industries. Sugarcane also remains commercially important, although its relatively high water requirement suggests that future development must be

oriented towards water-use efficiency rather than indiscriminate acreage expansion. The study thus concludes that the overall commercial crop sector of Madhya Pradesh has expanded, but growth has been neither uniform nor consistently productivity-driven. Mustard and groundnut have displayed comparatively strong expansion, soybean has exhibited significant production instability, and cotton and sugarcane remain important in specific regional and industrial contexts. For sustainable future growth, commercial crop policy in Madhya Pradesh should move from a predominantly production-centred approach towards a productivity-resilience-value addition model. Greater irrigation efficiency, climate-resilient varieties, scientific crop management, farmer producer organisations, storage, agro-processing, market intelligence and export-oriented value chains are essential. If these elements are integrated effectively, Madhya Pradesh can strengthen its existing leadership in oilseeds while simultaneously creating a more diversified and resilient commercial agricultural economy.

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