PUBLIC HEALTH
OpenJournal

Openventio
PUBLISHERS

Open Journal

Review of Rice Cultivation in Chhattisgarh

Priti Sandeep Bhandarkar[1] Sandeep Bhandarkar[2]
[1]College of Dairy Science and Food Technology, Raipur (Dau Shri Vasudev Chandrakar Kamdhenu Vishwavidyalaya), Durg, Chhattisgarh, India
[2]RSV College of Agriculture and Research Station, Bemetara (Indira Gandhi Krishi Vishwavidyalaya), Raipur, Chhattisgarh, India
Corresponding Author
Priti Sandeep Bhandarkar,
Email: priti.pas@gmail.com

Article Information:
Received: 20 October 2025 | Revised: 17 November 2025 | Accepted: 21 December 2025 | Published: January 26, 2026

Cite this article:
Priti Sandeep Bhandarkar and Sandeep Bhandarkar (2026). Review of Rice Cultivation in Chhattisgarh. *Public Health Open Journal*. 11(1):49–52. https://doi.org/10.17140/PHOJ.11.01.49

Abstract
Rice is the most important staple crop of Chhattisgarh and constitutes the backbone of the state's agricultural economy and rural livelihoods. The state cultivates rice on approximately 3.77–3.80 million hectares, representing nearly 70% of the total cropped area. Although productivity historically remained below the national average due to the predominance of rainfed ecosystems, substantial improvement has been observed during the past two decades. Research and extension initiatives undertaken by Indira Gandhi Krishi Vishwavidyalaya have significantly contributed to germplasm conservation, varietal improvement and crop production technologies. The adoption of improved varieties, hybrid rice, balanced nutrient management and increasing seed replacement rates have enhanced rice productivity. Supportive government policies including minimum support price and efficient procurement mechanisms have further strengthened farmer participation in rice-based production systems. Recent procurement exceeding 14 million tonnes of paddy reflects the growing stability of rice production in the state. This review synthesizes information on agro-climatic conditions, varietal diversity, seed systems, productivity trends and policy interventions influencing rice cultivation in Chhattisgarh and highlights major constraints and future research priorities for sustainable rice production

Keywords: *Rice cultivation, Chhattisgarh, agro-climatic zones, seed replacement rate, hybrid rice, MSP.*

1. Introduction

Rice (Oryza sativa L.) is the primary food crop for a large proportion of the population in India and plays a crucial role in national food security. Among the rice-growing states of India, Chhattisgarh is widely recognized as the "Rice Bowl of India" due to its extensive rice cultivation and rich diversity of traditional rice landraces. Rice research and development in the state have been strengthened by the contributions of Indira Gandhi Krishi Vishwavidyalaya, which maintains a valuable repository of more than 23,000 indigenous rice germplasm accessions. These genetic resources serve as a vital foundation for breeding programs aimed at developing high-yielding, stress-tolerant and specialty rice varieties. Rice cultivation occupies approximately 3.8 million hectares in the state, with a large proportion of the area under rainfed conditions. Variability in monsoon rainfall and soil fertility constraints often influence productivity levels. Nevertheless, continuous efforts in varietal development, improved crop management, hybrid rice adoption and strengthened seed distribution systems have contributed to gradual improvements in rice productivity in the state.

2. Literature Review on Rice Production in Eastern India

Rice production in eastern and central India is characterized by diverse agro-ecological conditions and varying productivity levels. Singh et al. (2019) reported that rice productivity in eastern India is often constrained by erratic rainfall, soil fertility limitations and low mechanization levels. Studies have shown that improved crop management practices such as balanced fertilization, efficient water management and improved varieties can significantly enhance rice productivity in rainfed ecosystems (Pathak et al., 2018). Hybrid rice technology has also emerged as an important strategy for increasing rice production. According to Yadav et al. (2020), hybrid rice varieties can produce 15–25% higher yields compared with conventional varieties under optimal management. Strengthening seed systems and improving seed replacement rates are also critical for enhancing productivity and ensuring rapid dissemination of improved varieties in rice-growing regions.

3. Agro-climatic Features of Chhattisgarh

The state has diverse soil types ranging from light-textured upland soils to heavy clay lowland soils. Major soil groups include Entisols (Bhatha), Alfisols (Matasi), Inceptisols (Dorsa) and Vertisols (Kanhar). These soils support a wide range of rice-based cropping systems. Micronutrient deficiencies, particularly zinc and boron, are reported in several regions and can limit crop productivity. Proper soil fertility management and conservation practices are therefore essential for sustaining productivity in rice-based farming systems.

4. Agro-climatic Zones of Chhattisgarh

Table 1. Agro-climatic zones and major cropping systems

Zone	Area (%)	Major Soil Types	Dominant Cropping System
Chhattisgarh Plains	50	Dorsa, Kanhar	Rice–Wheat / Rice–Gram
Bastar Plateau	29	lateritic soils	Rice–Pulses
Northern Hills	21	Light soils	Rice–Millets

5. Rainfall Distribution

Rainfall is the most critical factor influencing rice productivity in Chhattisgarh. Average annual rainfall ranges from 1200 to 1600 mm, most of which is received during the southwest monsoon season (June–September). Districts such as Bijapur, Bastar, Sukma and Narayanpur receive relatively higher rainfall, whereas districts including Raipur, Durg and Rajnandgaon experience comparatively lower rainfall.

6. Status of Rice Cultivation

Rice occupies nearly 70% of the total cropped area in the state. Improvement in rice productivity has been associated with better nutrient management, improved varieties and increased adoption of hybrid rice. Balanced fertilization and improved agronomic practices have been shown to enhance yield and resource use efficiency in rice production systems.

7. Important Rice Varieties

Table 2. Important traditional and improved rice varieties

Variety	Type	Duration	Special Characteristics
Dubraj Selection-1	Aromatic	130–135 days	Premium grain quality
Jeeraphool	Aromatic	125–130 days	Export potential
Mahamaya	HYV	135 days	High yield
Samleshwari	HYV	125 days	Adapted to rainfed areas
Indira Sugandhit Dhan-1	Aromatic	130 days	Superior aroma
Chhattigarh Devbhog & Aromatic	HYV	135 days	Aromatic with high yield potential
Chhattisgarh Dhan 1919	HYV	135 days	High yield

8. Hybrid Rice Cultivation

Table 3. Popular hybrid rice varieties

Hybrid	Company	Yield Potential
JKRH-401	JK Seeds	6–7 t/ha
Arize Swift Gold	Bayer	7–8 t/ha
PHB-71	Pioneer	6–7 t/ha
VNR-2245	VNR Seeds	6–7 t/ha

Hybrid rice varieties generally produce 20–25% higher yield than conventional varieties under favourable management conditions.

9. Seed Production and Seed Replacement Rate

Quality seed plays a crucial role in determining crop productivity. In Chhattisgarh, seed production and distribution are facilitated by government agencies, seed corporations, agricultural universities and progressive farmers. The seed replacement rate increased from 36% in 2012 to about 50% in recent years, contributing to improved productivity.

10. Minimum Support Price and Procurement

The MSP mechanism has played an important role in stabilizing rice production and farmer income. In the 2024–25 marketing season, the state procured nearly 14.9 million tonnes of paddy, benefiting more than 25 lakh farmers. Digital procurement systems and direct benefit transfer mechanisms have improved transparency and efficiency in procurement operations.

11. Major Constraints

Major constraints in rice cultivation include:

- Dependence on monsoon rainfall
- Soil fertility limitations
- Pest and disease incidence
- Low mechanization in tribal regions
- Limited post-harvest infrastructure

12. Future Research Priorities

Future research should focus on:

- Climate-resilient rice varieties
- Direct seeded rice technology
- Precision nutrient management
- Digital agriculture tools
- Conservation of indigenous rice germplasm

Conclusion

Rice cultivation in Chhattisgarh has made significant progress through improved varieties, strengthened seed systems and supportive policy interventions. Continued research on climate-resilient technologies, improved resource use efficiency and value-chain development will be essential for sustaining rice productivity and farmer income in the state.

References

1. Anonymous. 2010. Status Paper on Rice for Chhattisgarh. Rice Knowledge Management Portal, Directorate of Rice Research, Hyderabad.
2. Anonymous. 2020. Vision 2050: ICAR–National Rice Research Institute. ICAR–NRRI, Cuttack, Odisha.
3. Anonymous. 2021. Ministry of Agriculture & Farmers Welfare, Department of Agriculture, Cooperation & Farmers Welfare (Seed Division III), Government of India, New Delhi.
4. Anonymous. 2022. Agricultural Statistics at a Glance 2022. Directorate of Economics & Statistics, Department of Agriculture & Farmers Welfare, Government of India, New Delhi.
5. Anonymous. 2023. Directorate of Agriculture, Agriculture Development and Farmers Welfare and Bio-Technology Department, Government of Chhattisgarh.
6. Anonymous. 2024. Agricultural Statistics at a Glance 2024. Directorate of Economics & Statistics, Department of Agriculture & Farmers Welfare, Government of India, New Delhi.
7. Anonymous. 2025. Paddy Procurement Policy and MSP Operations in Chhattisgarh. Department of Food, Civil Supplies and Consumer Protection, Government of Chhattisgarh.
8. Amanullah, Iqbal, A., Ali, A., Fahad, S. and Parmar, B. 2016. Nitrogen source and rate management improve maize productivity of smallholders under semiarid climates. *Frontiers in Plant Science*. 7:1773.
9. Bhattacharyya, R., Ghosh, B.N., Dogra, P., Mishra, P.K., Santra, P., Kumar, S., Fullen, M.A., Mandal, U.K., Anil, K.S., Lalitha, M. *et al.* 2016. Soil conservation issues in India. *Sustainability*. 8:565.
10. FAO. 2022. Rice Market Monitor. Food and Agriculture Organization of the United Nations, Rome.

11. Government of Chhattisgarh. 2023. Economic Survey of Chhattisgarh 2022–23. Directorate of Economics & Statistics, Raipur.
12. IRRI. 2021. Rice Almanac (5th ed.). International Rice Research Institute, Los Baños, Philippines.
13. Kumar, M., Jha, A.K., Hazarika, S. *et al.* 2016. Micronutrients (B, Zn, Mo) for improving crop production on acidic soils of Northeast India. *National Academy Science Letters*. 39: 85–89.
14. Singh, R.K., Singh, U.S. and Sharma, R.K. 2019. Rice production systems of eastern India: constraints and opportunities. *Oryza*. 56(4): 321–330.