



ISSN Print: 2664-844X
ISSN Online: 2664-8458
NAAS Rating (2026): 4.97
IJAFA 2026; 8(8): 674-676
www.agriculturaljournals.com
Received: 22-06-2026
Accepted: 25-07-2026

Sejal C Somkuwar
PG Scholar, Agricultural
Economics and Statistics
Section, College of Agriculture,
Nagpur, Maharashtra, India

AS Tingre
Professor, Agricultural
Economics and Statistics
Section, College of Agriculture,
Nagpur, Maharashtra, India

MS More
Assistant Professor,
Agricultural Economics and
Statistics Section, College of
Agriculture, Nagpur,
Maharashtra, India

Harsha S Mendhe
Assistant Professor,
Agricultural Extension
Education Section, College of
Agriculture, Nagpur,
Maharashtra, India

VJ Rathod
Associate Professor (CAS),
Agricultural Economics and
Statistics Section, College of
Agriculture, Nagpur,
Maharashtra, India

Corresponding Author:
Sejal C Somkuwar
PG Scholar, Agricultural
Economics and Statistics
Section, College of Agriculture,
Nagpur, Maharashtra, India

Economic analysis of drill Paddy based cropping patterns in Bhandara district

Sejal C Somkuwar, AS Tingre, MS More, Harsha S Mendhe and VJ Rathod

DOI: <https://www.doi.org/10.33545/2664844X.2026.v8.i8h.1827>

Abstract

The present study was undertaken to identify existing drill paddy based cropping patterns and to work out their economics in Bhandara district of Maharashtra. The study was based on primary data collected from 120 farmers during the crop year 2025-26 through personal interview method using a specially designed schedule. Three tehsils, namely Bhandara, Sakoli and Lakhani, were selected purposively, and two villages from each tehsil were selected for the study. From each selected village, 20 farmers were selected randomly. The study revealed three major drill paddy based cropping patterns, namely drill paddy + gram, drill paddy + linseed and drill paddy + lathyrus. Among these, drill paddy + gram was the most widely adopted cropping pattern, accounting for 45.84 per cent of the selected farmers, followed by drill paddy + linseed 33.33 per cent and drill paddy + lathyrus 20.83 per cent. The economics of the identified cropping patterns was worked out using standard cost concepts i.e. Cost A₁ to Cost C₃. The total gross returns were highest under drill paddy + gram at Rs. 1,87,135.00 per hectare, followed by drill paddy + linseed at Rs. 1,59,459.10 and drill paddy + lathyrus at Rs. 1,24,076.20 per hectare. The corresponding net returns at Cost C₃ were Rs. 68,397.92, Rs. 49,473.77 and Rs. 29,538.13 per hectare, respectively. The output input ratio at Cost C₃ was 1.58, 1.45 and 1.31 under drill paddy + gram, drill paddy + linseed and drill paddy + lathyrus, respectively. The constraints faced by the farmers in drill paddy production were studied using percentage analysis. The major constraints were non-availability of drill paddy machines at the proper time of sowing 81.82 per cent, lack of subsidy on drill paddy machines 72.73 per cent, weed infestation at the early stage 67.27 per cent and high cost of drill paddy machines 61.82 per cent. The study indicated that drill paddy + gram was the most widely adopted as well as the most remunerative cropping pattern among the identified patterns.

Keywords: Cropping pattern, Drill paddy, Cost of cultivation, Gross returns

Introduction

Rice (*Oryza sativa* L.) is one of the most important cereal crops and a major staple food crop in India. India is one of the major rice-producing country of the world, with West Bengal, Uttar Pradesh, Punjab, Andhra Pradesh and Telangana being among the important rice-producing states. Maharashtra is an important rice-growing state, particularly in the Vidarbha and Konkan regions. Bhandara, Chandrapur, Gondia and Gadchiroli are the major paddy-growing districts of Vidarbha. During 2024-25, Maharashtra had about 1,520 thousand hectares under paddy cultivation with a production of 3,975 thousand tonnes and productivity of 2,615 kg per hectare.

Bhandara district is an important paddy-growing district of eastern Vidarbha, where paddy constitutes a major crop. The traditional transplanted method of paddy cultivation requires higher labour, water and cultivation costs. Drill sowing or direct-seeded rice has gained importance as it can reduce labour requirement, save irrigation water and lower cultivation costs.

However, the profitability of drill paddy cultivation also depends on the choice of succeeding rabi crop. Different drill paddy based cropping patterns involve varying levels of input use, costs and returns. Hence, the present study was undertaken to work out the economics of different drill paddy based cropping patterns in Bhandara district of Maharashtra. The present study has undertaken with following specific objectives:

Objectives

1. To identify the existing drill paddy based cropping patterns.
2. To work out the economics of different drill paddy based cropping patterns.
3. To identify constraints faced by the farmers in drill paddy production.

Methodology

The study was conducted for Bhandara district of Maharashtra. The district was selected because of the importance of paddy cultivation and the prevalence of drill paddy based cropping patterns. Three tehsils, namely Bhandara, Sakoli and Lakhani, were selected for the study. Two villages were selected from each tehsil, making a total of six villages. From each selected village, 20 farmers were selected randomly, resulting in a total sample of 120 farmers. Primary data were collected during the agricultural year 2025-26 through personal interview method using a specially designed schedules.

Analytical tools

Identification of drill paddy based cropping patterns

Drill paddy based cropping patterns were identified by conducting special survey and discussion with the farmers.

Three major cropping patterns were identified.

1. Drill paddy + Gram
2. Drill paddy + Linseed
3. Drill paddy + Lathyrus

Economics of drill paddy based cropping patterns

For working out the economics of drill paddy based cropping patterns, the cost of cultivation was worked out by using standard cost concepts i.e. Cost A₁, Cost A₂, Cost B₁, Cost B₂, Cost C₁, Cost C₂ and Cost C₃.

Constraints faced by the farmers in drill paddy production

The constraints faced by the farmers in drill paddy production was studied by percentage analysis.

Results and Discussion

Existing drill paddy based cropping patterns

The study identified three major drill paddy based cropping patterns in the selected area, namely drill paddy + gram, drill paddy + linseed and drill paddy + lathyrus.

Table 1: Existing drill paddy based cropping patterns followed by selected farmers

Sr. No.	Cropping patterns	No. of farmers selected	Percentage
1	Drill Paddy + Gram	55	45.84
2	Drill Paddy + Linseed	40	33.33
3	Drill Paddy + Lathyrus	25	20.83
	Total	120	100.00

Table 1 revealed that drill paddy + gram was the most widely adopted cropping pattern, followed by drill paddy + linseed and drill paddy + lathyrus. Out of the 120 selected farmers, 55 farmers followed drill paddy + gram, accounting for 45.84 per cent of the total farmers. Drill paddy + linseed was followed by 40 farmers 33.33 per cent, whereas 25 farmers 20.83 per cent followed drill paddy + lathyrus. The predominance of drill paddy + gram indicates the greater preference of farmers for gram as the succeeding rabi crop under the prevailing conditions of the study area. Linseed and lathyrus were the other important rabi crops grown after drill paddy. The identification of these cropping patterns provided the basis for their subsequent economic comparison.

Economics of different drill paddy based cropping patterns

The comparative economics of the identified drill paddy based cropping patterns were assessed in terms of yield, gross returns, cost of cultivation, net returns and output-input ratio.

Table 2: Comparative economics of different drill paddy based cropping patterns

Particulars	Drill Paddy + Gram	Drill Paddy + Linseed	Drill Paddy + Lathyrus
Yield (q/ha)			
Paddy	37.65	35.42	33.45
Rabi crop	14.25	9.20	6.50
Gross returns	187135.00	159459.10	124076.20
Cost A ₁	62840.39	55439.61	49769.18
Cost A ₂	62840.39	55439.61	49769.18
Cost B ₁	67315.27	61132.93	54898.61
Cost B ₂	99482.21	88557.69	77664.11
Cost C ₁	76852.23	73544.58	65382.36
Cost C ₂	107942.80	99986.67	85943.69
Cost C ₃	118737.08	109985.53	94538.07
Net returns at Cost A ₁	124294.61	104019.49	74307.02
Net returns at Cost A ₂	124294.61	104019.49	74307.02
Net returns at Cost B ₁	119819.73	98326.17	69177.59
Net returns at Cost B ₂	87652.79	70901.41	46412.09
Net returns at Cost C ₁	110282.77	85914.52	58693.84
Net returns at Cost C ₂	79192.20	59472.43	38132.51
Net returns at Cost C ₃	68397.92	49473.77	29538.13
Output input ratio	1.58	1.45	1.31

The comparative economics of different drill paddy based cropping patterns is presented in Table 2. Among the three patterns, drill paddy + gram recorded the highest gross returns of Rs. 1,87,135.00 per hectare and net returns of Rs.

68,397.92 per hectare at Cost C₃. The corresponding net returns under drill paddy + linseed and drill paddy + lathyrus were Rs. 49,473.77 and Rs. 29,538.13 per hectare, respectively. The output-input ratio was also highest under

drill paddy + gram 1.58, followed by drill paddy + linseed 1.45 and drill paddy + lathyrus 1.31. Thus, drill paddy + gram was found to be the most profitable cropping pattern

among the identified patterns.

Constraints faced by farmers in drill paddy production

Table 3: Constraints faced by farmers in drill paddy production

Sr. No.	Constraints	Number of farmers faced the problem (N = 55)	Percentage to total farmers	Rank
1.	Non-availability of drill paddy machine at the proper timing of sowing	45	81.82	I
2.	No subsidy on drill paddy machine	40	72.73	II
3.	Weed infestation at early stage	37	67.27	III
4.	High cost of drill paddy machine	34	61.82	IV
5.	Non-availability of labour during peak period	28	50.91	V
6.	Lack of awareness of mechanization used in farm	23	41.82	VI

It is observed from Table 3 that the non-availability of drill paddy machine at the proper timing of sowing was the most prominent constraint faced by the farmers, reported by 81.82 per cent of the farmers and ranked I. This was followed by the lack of subsidy on drill paddy machine, which was expressed by 72.73 per cent of the farmers and ranked II. Weed infestation at the early stage was reported by 67.27 per cent of the farmers and ranked III. The high cost of drill paddy machine was another important constraint, reported by 61.82 per cent of the farmers and ranked IV. Non-availability of labour during the peak period was expressed by 50.91 per cent of the farmers and ranked V. Lack of awareness regarding mechanization used in farming was reported by 41.82 per cent of the farmers and ranked VI.

Conclusion

1. Three major drill paddy based cropping patterns, namely drill paddy + gram, drill paddy + linseed and drill paddy + lathyrus, were identified in the study area.
2. Drill paddy + gram was the most widely adopted cropping pattern, followed by drill paddy + linseed and drill paddy + lathyrus.
3. Drill paddy + gram recorded the highest gross returns Rs. 1,87,135.00 per hectare among the identified cropping patterns.
4. The highest net returns at Cost C₃ Rs. 68,397.92 per hectare were obtained under drill paddy + gram.
5. The output input ratio was also highest under drill paddy + gram 1.58, indicating its better economic performance.
6. Overall, drill paddy + gram was found to be the most profitable cropping pattern among the three patterns followed by the selected farmers.
7. The major constraints faced by farmers in drill paddy cultivation were non-availability of drill paddy machines at the proper time of sowing 81.82 per cent, lack of subsidy 72.73 per cent, weed infestation 67.27 per cent and high cost of drill paddy machines 61.82 per cent reported by the selected farmers.

References

1. Churpal D, Koshta AK, Choudhary VK. An economic analysis of rice cultivation and constraints in Dhamtari district of Chhattisgarh, India. *Plant Archives*. 2015;15(2):651-656.
2. Deep A, Bhat A, Kachroo J, Sharma BC, Sharma MK, Dwivedi S, Puniya R, Singh SP, Bali D, Kumar R, Sutradhar S. An economic analysis of cultivation of direct-seeded rice versus transplanted rice in irrigated

sub-tropics of Jammu region of J&K. *An International Journal*. 2023;10(2):105-112.

3. Deep M, Kumar RM, Saha S, Singh A. Rice-based cropping systems for enhancing productivity of food grains in India: Decadal experience of AICRP. *Indian Farming*. 2018;68(1):27-30.
4. Diwate SA, Phuge SC, Mhatre SJ, Yadav JM, Anap VN, Talathi JM. An economic analysis of rice-based cropping systems in Ratnagiri district of Maharashtra. *Bulletin of Environment, Pharmacology and Life Sciences*. 2018;8(1):121-125.
5. Kaiira MG, Miyamoto K, Kasozi N, Elesu M, Bayega E. Performance of direct-seeded upland rice-based intercropping systems under paired rows in east-west orientation. *Journal of Agricultural Science*. 2024;16(4):29-40.
6. Karangami RS, Dhenge SA, Yadav SV, Mehta PG. Constraints faced by rice growers in adoption of recommended rice cultivation practices in Palghar district of Maharashtra, India. *Int J Curr Microbiol App Sci*. 2019;8(10):682-685.
7. Kashiwar SR, Kumar D, Dongarwar UR. Experiences, challenges and opportunities of direct-seeded rice in Bhandara district of Maharashtra. *International Journal of Tropical Agriculture*. 2016;3(2):141-145.
8. Sharmah D, Thakuria C, Paul S. Rice-based cropping systems for augmentation of productivity and profitability of farmers in Dibrugarh district, Assam. *The Pharma Innovation Journal*. 2023;12(7):1241-1243.