RESEARCH ARTICLE

Economics of Farming in Mahatwar, Uttar Pradesh

Deepak Johnson* and Tapas Singh Modak†

Abstract: Recent policy efforts have focussed on transforming eastern Uttar Pradesh, an acknowledgement of the relative backwardness of the region's agricultural development. Despite this, there has been little discussion in the literature of agrarian relations and their implications for the economics of farming. Taking Mahatwar village in eastern Uttar Pradesh as a case study, this article examines disparities across socio-economic classes in incomes and the costs of cultivation. We found substantial inequality, with landlord and big capitalist farmer households earning nearly 30 times the annual income of lower peasant and manual worker households. These disparities arise primarily from differences in costs: poor peasant and manual worker households bear a disproportionate rental burden, rely excessively on family labour, and use much of their produce for self-consumption. Our findings highlight the need for rent reduction and yield enhancement, along with support measures such as minimum support prices (MSPs), to provide meaningful incomes to low-income farmers.

Keywords: Eastern Uttar Pradesh, crop incomes, cost of cultivation, rent, minimum support price (MSP), yield, socio-economic classes.

https://doi.org/10.25003/RAS.15.02.0006

Introduction

Uttar Pradesh lags behind several other states in the country in terms of agricultural incomes (Basu and Misra 2022). Within the State, eastern Uttar Pradesh is generally considered a relatively backward region in respect of agricultural development. The value of crop output per agricultural worker in this region was 40 per cent of crop output per agricultural worker in western Uttar Pradesh, the most advanced region

* Assistant Professor, Department of Economics, Christ University, deepakjohnson91@gmail.com
† Joint Director, Foundation for Agrarian Studies

in the State (Srivastava and Ranjan 2016). The prevalence of rigid hierarchies and widespread agricultural tenancy in the region have been noted in village studies over the years (Ballabh and Pandey 1999; Rajni 2007; Srivastava 2016). Farm incomes are relatively low while the share of non-farm incomes among rural households has been large in recent years (Srivastava 2016; Bakshi 2017; Das and Swaminathan 2017; Trivedi 2017; Varkey 2023; Das *et al.* 2024).

The region's backwardness has made it the focus of policy discussion in recent years. The policy focus on agricultural development in eastern Uttar Pradesh is illustrated by the implementation of a large World Bank project, specifically intended to improve farm productivity and incomes (World Bank 2023), in the region.

This article uses detailed data on crop incomes from Mahatwar, a village in Rasra tehsil, Ballia district, eastern Uttar Pradesh, to examine the factors that ail crop production in the region.

Our class-based approach to examine farm incomes contributes to the existing literature in two ways. First, only a few studies on eastern Uttar Pradesh (for example, Varkey 2023) have focused on class relations and inequalities across socioeconomic classes. Secondly, our approach offers insights into crop incomes not provided by secondary sources of data (e. g., the Comprehensive Scheme on Costs of Cultivation/Production of Principal Crops of India (CCPC scheme)). We present household-wise crop income across different class groups, information that is not available from the CCPC scheme.

Finally, although we present the case of only one village, Mahatwar, it is one where there are two main crop seasons (kharif, when rice is the main crop and rabi, when wheat is cultivated), reflecting and exemplifying the regional pattern of crop cultivation and thus offering a micro-level perspective on the larger region.

We address the following specific questions: What are the levels of crop income in Mahatwar village? What are the variations in crop incomes across class groups? What explains these variations across class groups (in terms of yields, prices, and cost components)? And lastly, what policy measures can be considered to improve farm incomes?

Data and Method

A census-type household survey was conducted by the Foundation for Agrarian Studies (FAS) for its Project on Agrarian Relations in India (PARI) in Mahatwar in 2006. The village was resurveyed by FAS in 2023, when it sampled nearly half of the households for detailed information on the economics of crop cultivation. We focus on the data from 2022–23, and make some observations about the changes seen in relation to the 2005–06 survey. We follow the methodology adopted by the CCPC

scheme for measuring Costs A2 (or the paid-out costs that include costs of all purchased inputs and home-grown biophysical inputs), Cost A2 + family labour (FL, paid-out costs *plus* imputed costs of family labour) and deriving the farm business income (FBI or income calculated at Cost A2) and net income (NI or income calculated at Cost A2 + FL).

Mahatwar had 218 households in 2023. Its gross cropped area (GCA) of 155.5 ha was irrigated almost completely, with 97 per cent irrigated by tubewells. While rice was the main kharif crop, wheat and several vegetables were grown in the rabi season. The average cropping intensity was 1.9, implying that households cultivated two crops on average. Over the two rounds of surveys, Mahatwar saw very limited change in its cropping pattern. The rice-wheat cycle dominated the crop cultivation throughout. The noticeable changes were the increase in vegetable cultivation (from 2 to 10 per cent of the GCA) and the disappearance of sugarcane in 2023.

The socio-economic classes were identified using the methodology adopted by FAS (Ramachandran 2011), and the socio-economic classes used in this paper are drawn from the classification made by Dhar (2025), in *this issue* (*RAS*, 15, 2). The classification of households in the village was based on a Marxian framework following three criteria: control over the means of production, relative use of family and hired labour, and the surplus that a household is able to generate within a working year. Using this approach, households were categorised broadly as landlord, capitalist farmer, manual worker, other non-agrarian class, and peasantry. The peasantry was further subdivided based on the ownership of means of production and other assets, labour ratio, rent exploitation (or rent received or paid by the household), net agricultural income, and sources of income of the household.

A total of 143 households belonging to various classes were involved predominantly in crop cultivation and were spread across the following classes: Landlord/big capitalist farmer (2 per cent), upper peasant (7 per cent), middle peasant (19 per cent), lower peasant (28 per cent), and manual workers with operational holding (31 per cent). Additionally, there were 23 households that belonged to the business or self-employed class and engaged in some form of cultivation. However, they were largely dependent on remittances, pensions, rental incomes or were salaried households. The land operated by them was very small in comparison to that operated by any other class, and their contribution to the total value of output was also small. Thus, our analysis focused on the 143 households belonging to the five classes mentioned above.

While manual worker households with operational landholdings were predominantly involved in wage labour and only cultivated small plots, they were numerically the largest among cultivators in the village, and are therefore included in our analysis.

In terms of caste composition, 63 per cent of all households belonged to Scheduled Castes (SCs), 30 per cent to Other Backward Classes (OBCs), and 7 per cent to Other

Caste Hindus (OCs). Among those engaged in crop cultivation, most Scheduled Castes were manual workers with operational holding or lower peasants. All landlord/big farmer and upper peasant households came from Other Caste Hindus or Other Backward Classes. Tenancy was also demarcated along socio-economic lines: 71 per cent of all tenant households were Dalit households.

Results

Annual Incomes and Costs

In Mahatwar, the average crop income per household (across all crops and both seasons) was Rs 17,215 in 2022–23 (Table 1). This figure represents approximately one-third of Uttar Pradesh's average annual crop income per household (Rs 49,034 in 2022–23 prices), as reported in the 2018–19 Situation Assessment Survey. The median income was Rs 7,123, ranging from a loss of Rs 46,996 to a gain of Rs 233,877. The median being less than half of the mean indicates a disproportionate concentration of households at the lower end of income distribution.

Secondly, there existed considerable variation in crop incomes across classes. The average income of a landlord or big farmer was 37 times that of a manual worker household with some operational holding, and 27 times that of a lower peasant. Inequality in incomes arose partly from inequality in landholdings. A landlord or big farmer household operated nearly eight times the land as that of a manual worker household with some operational holding and five times that of a lower peasant.

Thirdly, the differences between classes become sharper when we include the imputed costs of family labour. Table 2 shows net incomes, arrived at after considering the Cost A2 + FL. From Rs 5,198 per household, the average income for a lower peasant household fell to − Rs 21,760. More than half of the households in the lower peasant

Table 1 *Average operational holding and crop income per household, by class group, Mahatwar, 2022–23* in hectares and rupees

Socio-economic class	No. of households	Average operational holding (ha)	Annual income from crop production (FBI) (Rs)
Landlord/Big farmer	3	2.5	140253
Upper peasant	11	1.2	46487
Middle peasant	31	0.6	34755
Lower peasant	47	0.5	5198
Manual workers with operational holding	51	0.3	3921
All	143	0.5	17215

Note: FBI = Farm business income.
Source: Project on Agrarian Relations in India (PARI) survey, 2023.

Table 2 *Average net income (NI) for both seasons and share of households with negative NI, by class group, Mahatwar, 2022–23* in rupees per household

Socio-economic class	No. of households	NI (based on Cost A2 + FL)	Households with negative NI (%)
Landlord/Big farmer	3	139752	0
Upper peasant	11	41981	0
Middle peasant	31	18733	35
Lower peasant	47	−21760	74
Manual workers with operational holding	51	−8120	81
All	143	220	61

Source: PARI survey, 2023.

class incurred negative incomes. While the average was still positive at Cost A2 + FL, about 35 per cent of middle peasant households also incurred negative incomes. These findings point to the reliance on self-exploitation by smaller peasant classes for crop production.

Fourthly, even after controlling for differences in size of operational holding (by examining per hectare incomes), large variations in income persist (Table 3). The gross value of output (GVO) for landlords and big farmers did not differ markedly from that of lower peasants or manual worker households with operational holdings. However, we observed an inverse relationship between paid-out costs and class position: better-off classes (such as landlords, big farmers, and upper peasants) incurred lower per hectare costs than others. Specifically, the average Costs A2 incurred by lower peasant households and manual worker households with operational holdings were 29 per cent and 34 per cent higher, respectively, than those of landlord or big farmer households. When Cost A2 + FL and net income (NI) were considered, lower peasants and manual workers with operational holdings

Table 3 *Average gross value of output (GVO), Cost A2, and farm business income (FBI) for both seasons, by class group, Mahatwar, 2022–23* in rupees per hectare

Socio-economic class	GVO	A2	FBI
Landlord/Big farmer	111042	69927	41115
Upper peasant	111698	68683	43015
Middle peasant	130342	79356	50986
Lower peasant	111554	90343	21210
Manual workers with operational holding	113180	93442	19738
All	111893	85935	29558

Note: The relatively higher than average GVO and FBI for middle peasant households were largely due to vegetable cultivation and two households obtaining very high wheat yields.
Source: PARI survey, 2023.

Table 4 *Average gross value of output (GVO), Cost A2 + FL, and net income (NI; based on Cost A2 + FL) for both seasons, by class group, Mahatwar, 2022–23* in rupees per hectare

Socio-economic class	GVO	Cost A2 + FL	NI
Landlord/Big farmer	111042	70087	40955
Upper peasant	111698	73288	38410
Middle peasant	130342	105289	25053
Lower peasant	111554	153997	−42444
Manual workers with operational holding	113180	150724	−37544
All	111893	130979	−15085

Note: The relatively higher than average GVO and FBI for middle peasant households were largely due to vegetable cultivation and two households obtaining very high yields on their wheat crop.
Source: PARI survey, 2023.

received negative incomes on average (Table 4). We return to this in the following section.

Crop Incomes and Costs: Rice and Wheat

Table 5 summarises information on the average GVO, Cost A2, and FBI for the two major crops – rice and wheat.[1] The average level of FBI, Rs 12,602 per hectare for rice and Rs 17,423 per hectare for wheat, were low in comparison to major regions for these crops in India. In FAS's study villages in northern Bihar, the income from rice was very similar, but it was almost double in the case of wheat (Das *et al.* 2018). The average NI for rice was – Rs 18,113 per hectare and Rs 1,997 per hectare for wheat (Appendix Table 1), implying that cultivation of rice was less profitable than wheat if family labour was added to the paid-out costs.

Table 5 *Average gross value of output (GVO), Cost A2, and FBI for rice and wheat, by classes, Mahatwar, 2022–23* in rupees per hectare

Class	Rice			Wheat		
	GVO	A2	FBI	GVO	A2	FBI
Landlord/Big farmer	55407	37228	18179	66336	37284	29052
Upper peasant	54307	43773	10534	81115	41675	39440
Middle peasant	59598	39518	20080	68874	42086	26788
Lower peasant	52670	42795	9875	64080	53846	10234
Manual workers with operational holding	54440	43662	10777	64676	55443	9233
All	55959	42357	12602	67423	50000	17423

Note: Two upper peasant households had higher wheat yields in comparison to village average.
Source: PARI survey, 2023.

[1] We have used rice in place of paddy, and all values reported are for rough rice (unmilled rice).

Overall, yields for both crops were much lower than that of advanced regions of the country. Rice yield in Mahatwar was 2,971 kg per hectare, which was slightly higher than the State average (2,679 kg per hectare) but lower than the yield in West Bengal, Telangana, and Tamil Nadu. The average wheat yield in Mahatwar was 2,870 kg per hectare. This was much below the average for Uttar Pradesh (3,700 kg per hectare) and Punjab, Haryana, Madhya Pradesh, and Rajasthan.

There was a clear advantage for landlord/big farmer, upper peasant, and middle peasant households in terms of both costs and prices for both crops. The average paid-out cost incurred by a landlord/big farmer household was much less than the average cost of a lower peasant household. Since these households only employed negligible family labour, their returns did not change drastically at Cost A2 + FL (Appendix Table 1). But that was not the case for lower peasant households. Their returns were much lower, the average incomes being negative, when Cost A2 + FL was considered. The variation in GVO (the coefficients of variation for rice was 33 per cent and for wheat 27 per cent) was smaller than the variation in income levels (the coefficients of variation for FBI from rice and wheat were −201 and 837 per cent respectively).

To examine differences across groups in detail, we conducted a one-way ANOVA test (Appendix Table 2). For this analysis, we combined the landlord/big farmer and upper peasant classes due to limited observations in the former category. Our results indicated no statistically significant differences between classes in terms of yield, GVO, Cost A2, and FBI of rice. However, for wheat, we found statistically significant differences across classes for yield, Cost A2, and FBI (though not for GVO). Both crops showed significant differences in Cost A2 + FL and net income (NI) across the two groups.

The lack of statistically significant differences in GVO across classes, especially for rice, stemmed partly from uniform yields across classes. It is apparent that substantial variations in cost components drive income disparities. Rental costs constitute the primary difference within paid-out costs, while differential use of family labour further widened cost variations across classes. We elaborate on these differences with specific illustrations in the following section on inter-class inequalities.

Analysis of the cost components shows that machine labour, rent, manure, fertilizer, and plant protection form substantial categories of costs associated with the cultivation of rice and wheat (Appendix Table 3 and Appendix Table 4). Machine labour accounted for nearly one-fourth of all paid-out expenditure on average for rice. The cost of machine labour as a share of all expenses varied from one-fifth for manual workers with operational holdings to about one-third for landlord/big farmer households. The next largest cost component was irrigation, contributing 16 per cent of paid-out cost for rice and 14 per cent for wheat on average. There was disparity in terms of the per hectare cost for irrigation: landlord/big farmer

households paid considerably lower sums than that paid by all categories of peasants in the case of rice and wheat. For wheat, the condition of manual worker households with operational holding was particularly noteworthy. They incurred more than double the cost incurred by landlord/big farmer households on irrigation, as they were entirely dependent on private markets for water.

The third and crucial difference was on account of rent. Rent for leased-in land comprised nearly 14 per cent of all costs on average for rice and wheat. This stands in stark contrast to the findings from the CCPC scheme, which reported rental cost of leased-in land to be around 1 per cent of Cost A2 for Uttar Pradesh. The under-reporting of rental costs by the CCPC Scheme partly draws from its methodological limitations (Sen and Bhatia 2004). In addition to rent being a substantial component of the costs of cultivation, there were variations across different classes. The landlord/big farmer households cultivated their own lands, implying their expenditure was zero on this count for both rice and wheat. While the upper peasant household had to pay only around 2 per cent of their costs towards rent, manual worker households with operational holdings had to pay nearly 27 per cent of their paid-out costs towards rent.

Such extreme differences in rental payments between classes were not seen for other components of cost. The practice of tenancy in the village exacerbated the burden on manual worker households with operational holdings and lower peasant households. Around 38 per cent of all land operated in Mahatwar was leased-in by households. Among cultivating households, 54 per cent were tenant households and of these tenant households, 71 per cent were Dalit households. It should be noted that most of the tenant households were operating marginal and small holdings, implying that incomes were low for the most disadvantaged group of cultivators in the village. The difference in rental components should be seen along with differences in the use of family labour, which was once again disproportionate among households of lower peasants and manual workers with operational holdings.

Changes Between 2006 and 2023

While the cropping landscape – the total area cultivated and the kind of crops – of Mahatwar showed little change over the two survey rounds, crop yields increased. Wheat yields in Mahatwar rose by 25 per cent between 2006 and 2023 (from 2.3 to 2.9 tonnes per hectare). In 2006, the rice crop failed due to water shortage, owing to which rice yields showed an 86 per cent increase (from 1.6 tonnes per hectare to 3 tonnes per hectare) in 2023.

When it came to the economics of crop cultivation, we found some changes in GVO, Cost A2, and FBI for both crops. However, profitability did not change much. For the crop that was least affected by water scarcity in both periods, wheat, profitability (defined as GVO divided by Cost A2) remained at around 1.4, implying

that the profits were about 40 per cent over Cost A2. Profitability of rice was around 1.3, slightly lower than wheat in 2022–23. Most of the increase in GVO was compensated by an increase in costs in real terms.

An examination of the cost structure between the two survey rounds showed that the major increase in Cost A2 was contributed by machines, rent, casual labour, and fertilizer (the last two, in particular, for rice). Over the two time periods, the real cost of machine labour increased by nearly 36 per cent for rice and 58 per cent for wheat. In terms of rent, the increases were 18 and 21 per cent respectively. While casual labour and fertilizer costs showed a pronounced increase in the case of rice, for wheat, seeds costs was one of the major contributors to rising costs.

Inequalities Across Classes: Some Illustrations

The analysis of incomes and costs show the prevalence of high inequality across class groups. To elaborate on differences across class groups and the factors contributing to them, we discuss three contrasting case studies of households belonging to different classes.

CS, belonging to a dominant caste group (Rajput), was a rich peasant operating 1.27 ha of owned land. He was also a political activist in the village. The household consisted of seven members, including his brother's family. His brother served as a school teacher in Azamgarh, a city approximately 75 km from the village.

CS cultivated rice on 1.21 ha of land in the kharif season and wheat on about 1 ha of land, and the remaining land was under mustard, chickpea, and fodder crops in the rabi season. He obtained about 3.7 tonnes per hectare for both crops, rice and wheat, which was slightly higher than the village average (2.9 tonnes per hectare). The cost of machine labour and casual labour, at about 64 per cent, comprised the largest share in total paid-out costs. The farm business income was about Rs 65,000 in 2022–23. The crop income for the household was much higher than the village average (Rs 15,833 per household). In relative terms, the net returns from crop production were extremely low: only 11 per cent of the total household income. The household was diversified in terms of its income sources and derived substantial incomes from government salaries.

The income diversification observed for this household was almost similar to that of most Other Caste Hindu and Other Backward Class cultivator households. Earlier, households from both groups mainly engaged in cultivation, and the difference between them in net returns per household arose from the extent of land cultivated. Consider the example of RN, an Other Backward Classes (Yadav) household belonging to the upper peasant class, who operated 0.73 ha of cropland in the survey year, cultivating rice in the kharif season and wheat, mustard, and fodder crops in the rabi season. His net returns over the paid-out cost (FBI) were Rs 34,755. The FBI

per hectare for RN was similar to other households from the same class, around Rs 50,000 per hectare.

Net returns were much lower for Dalit tenant households. Many landless or near-landless Dalit households engaged in cultivation by leasing land from Other Caste Hindu and Other Backward Class households, growing rice and wheat for subsistence using family labour. Their net returns were significantly lower than those of Other Caste Hindu and Other Backward Class households, largely due to higher cultivation costs on account of rental payments and dependence on hired machinery and irrigation.

Consider the case of HP. HP belonged to a landless Dalit household and leased 0.54 ha from a Rajput household at a fixed annual rent. His five-member household (all working adults) cultivated this land, though one son had migrated to Ghaziabad for construction work. The other four members, including HP, his wife, daughter, and daughter-in-law, engaged in crop cultivation on the leased-in land. Their farm business income totalled Rs 15,000 (Rs 28,000 per hectare), almost half of what non-Dalit owner-cultivators obtained. Rent constituted 30 per cent of the paid-out costs, and when the imputed value of family labour was included, the family incurred a loss of Rs 9,574, revealing an even starker disparity between Dalit and non-Dalit households, since non-Dalit households use minimal family labour.

Notably, labour undertaken by women members comprised 45 per cent of family labour in Dalit households and just 15 per cent in non-Dalit households. With limited employment options in the village, Dalit women increasingly turned to tenancy-based cultivation to secure household foodgrain. This pattern was evident in the case of HP's household.

Improving Incomes: Price and Rents

Given the low incomes from crop production, we ask whether any specific policy changes can be recommended to increase incomes. Our questions relate to two aspects arising from recent policy debates and the analysis of costs of cultivation: (1) Will implementing minimum support price (MSP) help raise crop incomes in Mahatwar? (2) What will be the effect of rent reduction on farm incomes?

Marketed Surplus and Prices

First, we examined the marketed surplus for two major crops – rice and wheat – and prices realised in relation to MSPs. Implementing MSP for crops has been articulated as a step towards greater incomes from crop production. In practice, this would mean that peasants and other cultivators are able to market their surplus to government through procurement operations.

Table 6 *Marketed surplus for rice and wheat, by class group, Mahatwar, 2022–23* in kilograms and per cent

Class	Rice			Wheat		
	Total production (kg)	Sale (kg)	Sale (%)	Total production (kg)	Sale (kg)	Sale (%)
Landlord/Big farmer	23000	19300	84	16600	0	0
Upper peasant	28073	17267	62	39074	20671	53
Middle peasant	54477	19157	35	49779	7967	16
Lower peasant	54781	7548	14	53036	3173	6
Manual workers with operational holding	31328	44	0	33494	176	1
All	191659	63316	33	191983	31987	17

Source: PARI survey, 2023.

Table 6 shows the marketed surplus (share of sale in total production) of different socio-economic classes. On aggregate, the penetration of the market for output was extremely low in Mahatwar. For instance, the share of marketed surplus in the total output was 33 per cent for rice and only 16 per cent for wheat. We found that manual workers with operational holdings sold the least from their total production (less than 1 per cent). It increased to above half of the total production in the case of upper peasants and was 84 per cent among landlord/big farmer households. The low marketed surplus indicates that households cultivated cereal crops primarily for their own consumption. But beyond this, it also suggests that cash incomes derived from this exercise were notional.

Table 7 compares the actual FBI (as received by cultivators) and the recalculated FBI at MSP. We constructed a simple counterfactual income for separate classes of cultivators

Table 7 *Actual farm business income (FBI) and estimated FBI with minimum support prices for rice and wheat, Mahatwar, 2022–23* in rupees per hectare and per cent

Class	Rice			Wheat		
	FBI	FBI with MSP	Change as a share of FBI (%)	FBI	FBI with MSP	Change as a share of FBI (%)
Landlord/Big farmer	18179	24517	35	29052	29458	1
Upper peasant	10534	22981	118	39440	41515	5
Middle peasant	20080	25602	28	26788	26232	−2
Lower peasant	9875	17152	74	10234	9967	−3
Manual workers with operational holding	10777	17990	67	9233	9635	4
All	12796	20433	60	17480	17687	1

Source: PARI survey, 2023.

by considering the announced MSP as the price realised by farmers. Among the cultivating households in Mahatwar, only one household received a price higher than the MSP for rice and three households for wheat. Table 7 shows the counterfactual case if all cultivators marketed their full production and received prices equivalent to MSP, without any adjustment to their production process. It is possible that if farming households had an assurance of their produce being marketed at a higher price, they may alter their practices to improve yields. However, since yields were similar across classes, we believe improving yields further is not possible without substantially changing the current agricultural practices (such as adopting newer varieties that provide higher yields, switching to widely different farm management practices, and so on). And given the limited scope of improving yield in this manner under the present context, we did not explicitly consider farmers responding to higher prices by increasing yields in the following exercise.

The difference between the realised price and MSP was substantially high for rice. The price realised by cultivators was Rs 1,800 per quintal, whereas the MSP was Rs 2,040 per quintal in 2022–23. Recalculating the FBI under this MSP would yield a 60 per cent increase in the FBI for all classes, provided all other things remained the same. But there was no substantial difference between the price realised (Rs 2,000 per quintal) and MSP (Rs 2,015 per quintal) for wheat. Implementing MSP for wheat would have only increased the average FBI by 1 per cent over the current level. According to Government of India (2024), the average market price of wheat was higher than the MSP from March 2022 to June 2024, because of tighter supply in the domestic market.

The counterfactual incomes at the level of MSP (without any changes in costs and yields) were still low (compared to the all-India average or average of best-performing regions as reported by CCPC). The limited impact of MSP shows the relevance of other factors in improving farm incomes. Yield improvements in both rice and wheat can bring in additional incomes, if they are complemented with procurement at MSP. Similarly, reduction in costs – focusing on specific components – can also be a pathway to improve incomes.

Rental Costs

Secondly, we examined the role of rent across different classes.

Table 8 categorises cultivator households into three groups based on their tenancy status: (1) owner cultivator, (2) cultivators with owned and leased-in lands, and (3) pure tenant cultivator (cultivators with only leased-in land). It is clear that rental costs make a key difference in the paid-out costs and consequently to FBI of owner cultivators and the other two groups. The average rent paid by pure tenant cultivators was about three times the average FBI they actually received. For cultivators with both owned and leased-in land, the average rental costs were

Table 8 *Average gross value of output (GVO), Cost A2, and farm business income (FBI) for both seasons, by cultivator group, Mahatwar, 2022–23* in rupees per hectare

Cultivators	No. of households	GVO	A2	FBI	Rent	FBI excluding rent cost
Owner cultivator	77	123296	74472	48824	0	48824
Cultivators with owned and leased-in land	63	107621	95043	12577	23657	36235
Pure tenant cultivator	26	117701	105748	11953	33903	45855
All	166	117317	85039	32278	11917	44195

Note: All 166 cultivating households were considered in this table.
Source: PARI survey, 2023.

nearly double the average FBI. Lower peasant and manual worker households with operational holdings constituted 80 per cent of total cultivators with some leased-in land, implying that high rental cost was a factor contributing to higher costs and lower returns for these households.

Conclusions

Our study analysed data from the detailed socio-economic household survey conducted by the Foundation for Agrarian Studies in Mahatwar, Uttar Pradesh, under its Project on Agrarian Relations in India (PARI) in 2023. We examined agricultural incomes and their variation across socio-economic classes. The classification of households into classes provided us important information on the access to resources of different groups of households.

The average farm business income per household was Rs 17,215 in 2022–23. While this is lower than the State average, there was wide variation across different class groups. The landlord and big capitalist farmer class enjoyed a much higher income than poor and middle peasant households. The latter groups were predominantly engaged in cultivation for their basic livelihood, and their average income was negligible when family labour was included in the costs. We identified three factors that contributed to extremely low incomes for the bulk of the peasantry: the small size of operational holdings, the rental burden, and the reliance on family labour (the last one being particularly apparent when imputed costs were considered).

With respect to existing policy on minimum support prices (MSPs), we observed the following: most cultivators, especially manual workers with operational holdings, poor peasants, and middle peasants do not sell their produce – MSP appears to be irrelevant for them. While it might have offered them some relief in the case of rice, there was no substantial difference between the realised price and MSP for wheat. Further, the MSP and prevailing prices did not offer a level of Cost C2 + 50 per cent, implying that cultivators could not secure remunerative returns at the time.

While there has been a slight change between 2006–07 and 2022–23, the village ranks very low in terms of crop yields, irrespective of the class of cultivator. Low crop yields must be overcome to bring about substantive improvement in farm incomes. There is also a need for substantive policy action on costs and land leasing in the region. Solving the problem of the disproportionate rental cost burden on smallholders, who have increasingly taken up cultivation in recent years, must be prioritised to improve incomes. Among lower peasant households, nearly one-third of the gross value of output goes into paying rent. As most smallholders grew cereal crops – the two most important crops of the region – for self-consumption, there was a heavy reliance on family labour in order to save on paid-out costs. Leasing small plots of land, a high engagement of family labour, and the use of produce for self-consumption are features of the distress experienced by poor peasant and manual worker households. Government policies should comprehensively address this widespread distress in order to transform the region's agricultural landscape.

Acknowledgements: The authors thank Madhura Swaminathan, Jens Lerche, Kunal Munjal, and two anonymous referees for their valuable comments.

References

Basu, Deepankar, and Misra, Kartik (2022), "An Empirical Investigation of Real Farm Incomes Across Indian States Between 1987–88 and 2011–12," *Economic and Political Weekly*, vol. 57, no. 26–27, pp. 7–8.

Bakshi, Aparajita (2017), "Incomes of Small Farmer Households," in Madhura Swaminathan and Sandipan Baksi (eds.), *How Do Small Farmers Fare: Evidence from Village Studies in India*, Tulika Books, New Delhi, pp. 126–70.

Ballabh, V., and Pandey, S. (1999), "Transitions in Rice Production Systems in Eastern India: Evidence from Two Villages in Uttar Pradesh," *Economic and Political Weekly*, vol. 34, no. 13, pp. A11–A16.

Das, Arindam, Dhar, Niladri Sekhar, Munjal, Kunal, and Swaminathan, Madhura (2024), "Patterns of Income Growth in an Eastern Uttar Pradesh Village, 2006–23," *Economic and Political Weekly*, vol. 43, no. 26, pp. 54–61.

Das, Arindam, Vijaykumar, and Munjal, Kunal (2018), "Economics of Farming: Results from Two Villages in Bihar," paper presented at the Consultation on Village Surveys in Bihar.

Das, Arindam, and Swaminathan, Madhura (2017), "Cropping Pattern, Productivity and Incomes from Crop Production," in Swaminathan, Madhura, and Baksi, Sandipan (eds.), *How Do Small Farmers Fare: Evidence from Village Studies in India*, Tulika Books, New Delhi, pp. 95–126.

Dhar, Niladri (2025), "Socioeconomic Classes in Two Villages in Uttar Pradesh," *Review of Agrarian Studies*, vol. 15, no. 2, pp. 36–60.

Government of India (2024), *Price Policy for Rabi Crops: Marketing Season 2025–26,* Commission for Agricultural Costs and Prices, Ministry of Agriculture and Farmers' Welfare, available at https://cacp.da.gov.in/default.aspx, viewed on May 27, 2025.

Ramachandran, V. K. (2011), "Classes and Class Differentiation in India's Countryside," *World Review of Political Economy*, vol. 2, no. 4, pp. 646–70.

Rajni, V. (2007), "Casual Labour Contracts of Agri-cultural Labourers in East and West Uttar Pradesh," *Economic and Political Weekly*, vol. 42, no. 2, pp. 154–60.

Sen, Abhijit, and Bhatia, M. S. (2004), *State of Indian Farmer: Cost of Cultivation and Farm Income*, Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India.

Srivastava, Ravi, and Ranjan, Rahul (2016), "Deciphering Growth and Development: Past and Present," *Economic and Political Weekly*, vol. 51, no. 53, pp. 32–43.

Srivastava, Ravi (2016), "Assessing Change: Land, Labour and Employment in an Eastern UP Village, 1994–2012," in Himanshu, Jha, Praveen, and Rodgers, Gerry (eds.), *The Changing Village in India: Insights from Longitudinal Research*, Oxford University Press, New Delhi.

Trivedi, Prashant K. (2017), "Revisiting Senapur: Reflections on Agrarian Changes in North India," *Social Change*, vol. 47, no. 4, pp. 509–25.

Varkey, Shinu (2023), "The Role of Prevailing Agrarian Relations in Lower Crop Productivity and Profitability: Evidence from Uttar Pradesh, India," *Agrarian South: Journal of Political Economy*, vol. 12, no. 4, pp. 455–87.

World Bank (2023), "Development Projects: Uttar Pradesh Agriculture Growth and Rural Enterprise Ecosystem Strengthening Project," available at https://projects.worldbank.org/en/projects-operations/project-detail/P178253, viewed on April 14, 2025.

Appendix

Appendix Table 1 *Average gross value of output (GVO), Cost A2 + FL, and net income (NI) for rice and wheat, by classes, Mahatwar, 2022–23* in rupees per hectare

Class	Rice			Wheat		
	GVO	A2 + FL	NI	GVO	A2 + FL	NI
Landlord/Big farmer	55407	37316	18092	66336	37357	28979
Upper peasant	54307	46842	7465	81115	42630	38485
Middle peasant	59598	56424	3174	68874	52128	16746
Lower peasant	52670	88155	−35485	64080	74188	−10108
Manual workers with operational holding	54440	82219	−27779	64676	76288	−11612
All	54959	73072	−18113	67423	65446	1977

Source: PARI survey, 2023.

Appendix Table 2 *F Statistic and statistical significance for one-way ANOVA, by class, Mahatwar, 2022–23* in kilograms per hectare and rupees per hectare

Crop	Yield	GVO	Cost A2	FBI	Cost A2 + FL	NI
Rice	0.650	0.496	0.395	0.924	7.016 (***)	7.845 (***)
Wheat	3.857 (**)	1.713	3.043 (**)	3.043 (**)	6.774 (***)	10.630 (***)

Notes: 1. (**) = significant at 5 per cent level; (***) = significant at 1 per cent level.
2. For each variable, statistically significant differences between four class groups were examined: (i) landlords/ big farmers and upper peasants, (ii) middle peasants, (iii) lower peasants, and (iv) manual worker households with operational holding.
3. Yield was taken in kilogram per hectare and the rest of the variables in rupees per hectare.
4. Normality (Shapiro-Wilk test) and homogeneity of variances (Levene's test) were performed before undertaking a one-way ANOVA test.
5. Number of observations: 74 for rice and wheat in the case of yield; 73 for wheat and 72 for rice for all other variables.
6. GVO = gross value of output; FBI = farm business income; NI = net income.
Source: PARI survey, 2023.

Appendix Table 3 *Average expenditure on different cost items by classes for rice, Mahatwar, 2022–23* in rupees per hectare

Cost items	Landlord/ Big farmer	Upper peasant	Middle peasant	Lower peasant	Manual workers with operational holding	All
Seed	1063	1248	1658	1864	2052	1783
Manure	1482	1269	919	2547	131	1265
Fertiliser	6329	4431	5202	5960	5493	5478
Plant protection	2223	1775	2077	1045	767	1292
Irrigation	4149	6774	6746	6366	8839	7213
Casual labour	8374	11035	6760	6035	4725	6452
Long-term labour	0	0	0	0	0	0
Animal labour	0	0	0	0	0	0
Machine labour	12572	13439	12692	11285	8917	11129
Rent	0	741	2513	6841	11864	6595
Other cost	1034	3060	951	849	875	1152
Cost A2	37228	43773	39518	42791	43662	42357
Family labour	88	3069	16906	45365	38557	30715
Cost A2 + FL	37316	46842	56424	88155	82219	73072

Source: PARI survey, 2023.

Appendix Table 4 *Average expenditure on different cost items by classes for wheat, Mahatwar, 2022–23* in rupees per hectare

Cost items	Landlord/ Big farmer	Upper peasant	Middle peasant	Lower peasant	Manual workers with operational holding	All
Seed	5176	5749	6762	5931	6127	6123
Manure	185	154	727	770	108	452
Fertiliser	6507	6604	5854	7134	5930	6393
Plant protection	2223	1040	2263	1227	642	1252
Irrigation	3334	3837	5794	6747	8687	6737
Casual labour	4884	3263	1667	1052	1966	2971
Long term labour	0	0	0	0	0	0
Animal labour	0	0	0	0	0	0
Machine labour	13897	16801	15502	21301	13653	16838
Rent	0	471	2288	8438	13740	7704
Other cost	1077	3756	1229	1245	1199	1532
Cost A2	37284	41675	42086	53846	52052	50000
Family labour	73	955	10042	20342	20845	15445
Cost A2 + FL	37357	42630	52128	74188	72897	65445

Source: PARI survey, 2023.

Date of submission of manuscript: April 14, 2025
Date of acceptance for publication: June 15, 2025