Agrarian Economy of Bihar: Structural Constraints versus Technological Optimism?

Awanish Kumar
Azim Premji University, Bangalore

and

Manish Kumar
Delhi School of Economics

Introduction

The last few decades have witnessed the emergence of a new discussion around Bihar. The overarching element in this discussion is Bihar's development since the year 2005 when Nitish Kumar became the chief minister of the state. Some scholars, such as Dasgupta (2010) and Nagaraj and Rahman (2010), have questioned the tall claims made by the National Democratic Alliance (NDA) government. However, there has been another argument, especially related to the agrarian change and agricultural development in Bihar that has largely gone uncontested. A number of international institutions such as the World Bank (2005), Agha Khan Development Network (2007), and scholars like Avinash Kishore (2004, 2013) and Tushaar Shah (1999) have argued that technological change, as contrasted with the transformation of the agrarian structure, can be the prime mover of agricultural growth in Bihar. In this paper, we will try to respond to this argument by referring to the development trajectory of agriculture in Bihar over the last few decades.

The paper is divided into five sections. In the first section, we will provide our reading of the technology question in agriculture, especially in a backward context such as Bihar. In the second section, we will try to articulate the main themes present in the literature that we deem as technology-optimist and explore them in detail. The third section focuses on the agrarian relations and agricultural development in Bihar. In the fourth section, we look at the recent data on agricultural development in Bihar using the framework of Agricultural Value Systems (AVS), especially cropping pattern, productivity and yield growth. This will be analysed in the context of the hypotheses and explanations posed by the technology optimists. The final section will make some concluding observations.

Technology in a Backward Agrarian Setting: The Case of Bihar

Bihar, with its highly fertile land has one of the worst productivity in major crops across the country while agriculture, as a sector, has remained limited to subsistence for most farmers in the state. Land reforms in Bihar have been a non-starter and agrarian movements have largely failed to hit at the fundamental basis of persisting backward and oppressive agrarian-social system, i.e., land monopoly by historically and ritually dominant castes and classes (Barik 1992; Bharti 1988, 1992; Mohanty 2001; Rajalakshmi 2001; Sharma 1995).

The view that technological factors can not only expedite the transformation of the agricultural sector in Bihar but can also possibly explain its lacklustre performance over the years is not new. A number of scholars have pointed out the significant role played by commercialization and use of technology in heightening of agrarian contradictions in Bihar during the colonial times (Das 1983; Robb 1992). But it is obvious that technology does not work in the same way everywhere. The agro-climatic and ecological context of Bihar agriculture is starkly different

from Punjab, Haryana or Western Uttar Pradesh (Chadha and Khurana 1989). Keeping Bihar in focus, scholars and commentators on agriculture have highlighted a variety of issues. First and foremost, even the limited system of highly centralised irrigation has been fundamentally unsuitable for small-plot, sub-infuedated agrarian context of Bihar (Bagchi 1976, as cited in Timberg 1982, p. 476). Bharti (1992) goes on to assert that size and productivity have no direct linkage in Bihar agriculture because of the unique agro-climatic context of the state. Wilson (1999, 2002) strongly puts forward the case for analysing the role of technology as *shaped* by the agrarian structure in rural Bihar. Small and marginal farmers, owing to the recent rise in input prices as well as the fall of other support structures, are *forced* to access the market and technology as a *distress* measure[1]. According to her, rather than transforming the dominant forms of production relations and labour, such infusion of technology strengthens the stronghold of the landholding classes and leads to an absolute decline in the social and economic power of small cultivators and landless agricultural labourers[2]. Additionally, other studies have shown that the use of technology has heightened the process of class differentiation among the peasantry (Rodgers and Rodgers 2001; Mitra and Vijayendra 1983).

The bottom line, perhaps, is that the role of technology cannot be discussed devoid of a systemic analysis of the agrarian structure which shapes the interaction of various classes and castes. As J Mohan Rao (1994) puts it, "the shape of technical changes and their impact on employment cannot be dissociated from the prevailing agrarian structure" (p. 138). It goes without saying that we use the term "technology optimism" to describe a set of positions that do not consider the structural constraints of land, labour and class/caste relations into their understanding of the agrarian problem. We identify as strong votaries of technological change, especially in transforming the agricultural sector in India and Bihar. In the same spirit, our criticism of what we call "technology optimism" is restricted to the Bihar context and is limited to its positioning as something that is a better and more practical alternative to agrarian reforms.

The Binary of Machine vs Land Reforms

In the post-liberalisation period, a section of scholars has made a radical departure from the understanding that technology may not work independent of social relations, especially in agriculture. Instead, they have argued for a policy shift towards provision of infrastructure, such as roads, transport and electricity (Kishore 2004, 2013) and adoption of technology such as pumps, machines and tractors, etc. (Shah 1999; Shah and Ballabh 1997). Kalpana Wilson (2006), in her critique of this line of argument, characterised them as much part of the neoliberal discourse as the World Bank (2005). We may not agree with this blanket labelling but find her three-point characterization of this neoliberal discourse in Bihar useful, that we rephrase here. First, the belief that Bihar can change without reforming its socio-economic structure that lies at the foundation of its society. Secondly, the positioning of "machine reforms" as a better and perhaps more practical alternative to land reforms. And finally, a complete neglect of agricultural labourers from the discussions of agricultural development in Bihar. We will focus only on the first two points in this article.

The green revolution was based upon, among other things, the enhanced utilisation of groundwater resources. The first round of the green revolution during the 1960s was not

[1] As a historical corollary in Berar region, forced commercialization led to the lower peasantry subsiding into petty tenancy and landless wage labour.

[2] At the same time, other studies, such as Thakur et al (2000), conclude that adoption of modern technology has led to reduction in inequality as well as poverty in their study villages.

targeted at and therefore bypassed Eastern India. The second phase, starting in the early 1980s, did produce good results in terms of increasing production, yield and overall agricultural growth, especially in West Bengal. However, Bihar's agricultural growth remained short-lived and sluggish. This was despite the wide and easy availability of groundwater for irrigation and gradual expansion of tubewells over the years. According to this group of scholars, Bihar performed poorly because of inadequate utilisation of its groundwater owing to its lack of technological orientation (see Shah 1999; Shah and Ballabh 1997; Kishore 2004). In a more recent paper, Kishore (2013) extends the argument to the economic scarcity of water in Bihar despite its physical abundance. This according to Kishore is because of fluctuating variable costs associated with the lack of availability of power, i.e., limited rural electrification.

We do not take issue with any of the arguments posed above that in our view are well-meaning. However, as pointed out earlier, all these writings posit the need for machine reforms as a more practical and better alternative to land and/or agrarian reforms. Can the agricultural sector in Bihar develop without a fundamental restructuring of its underlying agrarian social relations? This is the question that we ask and try to answer in this paper.

Agrarian Relations and Agricultural Development in Bihar

The 'technocratic' explanation of backwardness of Bihar agriculture focuses on poor irrigation, low levels of input (mainly fertiliser) use, land fragmentation, lack of credit and extension services. Citing the State's poor irrigation base as the main reason for Bihar's agricultural backwardness, policy makers encouraged groundwater irrigation by increasing tube-well density during the 1980s. This resulted in higher production during the period 1981-82 to 1991-92 (Kishore, 2004). However, it was also observed that with the increase in yield, the use of fertilisers also increased (Jha, 1997). The impressive expansion of yield could not be sustained during the mentioned period despite the increase in tube-well density (Kishore, 2004). Even if large technological efforts are required to increase agricultural production, it may not result in improving the livelihoods of actors of agricultural value systems (e.g., agricultural workers) (Jha, 1997), which suggests the limits of technological efforts to overcome the agricultural backwardness of Bihar. Therefore, the technocratic thesis may be necessary but not sufficient to explain the agrarian crisis in the state.

Sharma and Rodgers (2015) show that while the average yield of paddy and wheat increased by 99 percent (2.5 percent per year) and 91 percent (2.3 percent per year) between 1981–82 and 2009–10, but this growth did not translate into overall *productivity* of the workforce given continued dependence of a large mass of Bihar's population on agriculture alone (Sharma and Rodgers, 2015). Shah (2016) has shown that the GSDP (at constant prices) in agriculture in Bihar has not grown for any two consecutive years since 1993-94. This argument is consistent with the finding that Bihar is among the states where the yield of major food grains is lowest in India.

Alternative explanations for backwardness of agriculture in Bihar include poor public provisioning, as proposed by Amartya Sen and the semi-feudal hypothesis put forth by Amit Bhaduri. In Bihar, after the 1960s, substantial land was sold by privileged castes (Brahmins, Bhumihars, Rajputs and Kayasthas) to middle castes (Yadavs, Koiris and Kurmis). The reason behind the transfers was the relative disinterest of the privileged caste in agriculture due to non-agricultural sources of income. Land helped the middle castes to challenge the social and political supremacy of the privileged castes that led to the weakening of the "semi-feudal relations of production" (Jha, 1997). Despite such transfer of land, land reforms initiated in

1962 is considered incomplete till date. The Commission, formed under the chairmanship of D Bandyopadhyay, noted, "there is a structural bottleneck in Bihar agriculture due to very queer pattern of land ownership and very extortionate system of tenancy-at-will which are causing a great impediment to an accelerated rate of agricultural growth" (Bandyopadhyay, 2009). Furthermore, the commission noted the tilt of land ownership in favour of the medium and large landowning classes. The Commission highlights that 96.5 per cent of the landowning classes are small and marginal agricultural households, which own 66 per cent of the total agricultural land, and the remaining 3.5 per cent landowning classes, which are large and medium agricultural households, own 33 per cent of the total land. The commission made several recommendations, but subsequent governments in Bihar refrained from implementing them (Thakur, 2013).

In line with the ideas under alternative explanations, the present study uses the Agricultural Value System (AVS) framework to understand the agricultural economy in Bihar. The AVS comprises agriculture and non-agriculture segments involving various actors in backward and forward linkages. These AVS actors interact with each other with their embedded power position. The agricultural segment in AVS faces relative structural constraints and hence, the non-agricultural segment captures a significant share of the surplus generated in agriculture (Kumar, 2019). As discussed in earlier work (Kumar, 2021), the absence of substantial public intervention in Bihar's AVS reinforces the power of the non-agricultural sector. In most cases, the risk of AVS is borne entirely by farmers, while profits are earned by actors in non-agricultural sectors. In this case, the land/tenancy relationship, input supply, market, timing of sale etc. are the defining characteristics for the distribution in the AVS. In other words, the factor endowments of farmers are responsible for their specific backward and forward linkages, which lead to different earnings from the same product. This is the reason why the prices received by small land holders in Bihar are relatively lower than those received by large land holders (Kumar, 2021).

Contemporary Agricultural Value System in Bihar

As emphasized earlier, a dominant perspective within the mainstream discourse advocates machine reforms as a practical and superior alternative to land and agrarian reforms. Within this framework, an important inquiry emerges: can Bihar's agricultural sector move forward without a fundamental restructuring of its underlying agrarian relations? This section of the article looks into the mainstream claim attributing the lack of technological reforms for the agrarian crisis in the state, with the aim of examining its validity. Additionally, it attempts to evaluate the effects of agricultural changes that have taken place in Bihar over the last three decades.

The prevailing narrative advocating technocratic reform presents itself as a viable solution, challenging classical land and livelihood-centric approaches. To understand the root causes of the agrarian crisis, it becomes imperative to assess the historical trajectory of these reforms and their impact on the agricultural landscape of the state. Furthermore, we do not testing extends beyond causality to explore the lasting consequences of agricultural changes. An in-depth analysis of the state's agricultural development over the last thirty years serves as a lens to measure the efficacy and sustainability of the changes implemented.

Yield Growth in Major Crops

Table 1 provides an overview of the average area under cultivation for major crops in Bihar from 2016-17 to 2020-21. Paddy, the major staple crop of Bihar, forms a major part of the agricultural landscape with a vast cultivated area of 3142.75 thousand hectares. Next is wheat, which is an important crop with an extensive cultivation area of 2147.29 thousand hectares. The table highlights the agricultural diversity in Bihar as maize, another essential crop, has a notable area of cultivation of 678.03 thousand hectares. The information presented in Table 1 serves as a valuable reference to understand the distribution and scale of major crop cultivation in Bihar during the specified five-year period.

Table 1: Area under cultivation of major crops in Bihar, average of 2016-17 to 2020-21

Major Crops	Area '000 Ha.
Paddy	3142.75
Wheat	2147.29
Maize	678.03

Source: Directorate of Economics and Statistics, Ministry of Agriculture, Government of India

As illustrated in Figure 1, Bihar's mean rice yield varies throughout the mentioned years, reaching its lowest at 792 kg/ha in 2004-05, gradually ascending to peaks in 2011-12 (2155 kg/ha) and 2016-17 (2467 kg/ha), followed by fluctuations in subsequent years. The standard deviation in Bihar tends to be higher during years with more pronounced variations, indicating unpredictability. On a national level, similar trends are observed in mean rice yield, fluctuating from a minimum of 1984 kg/ha in 2004-05 to a maximum of 2722 kg/ha in 2019-20. India's standard deviation demonstrates relatively lower values in certain years, suggesting stability, and higher values in others, indicating increased variability.

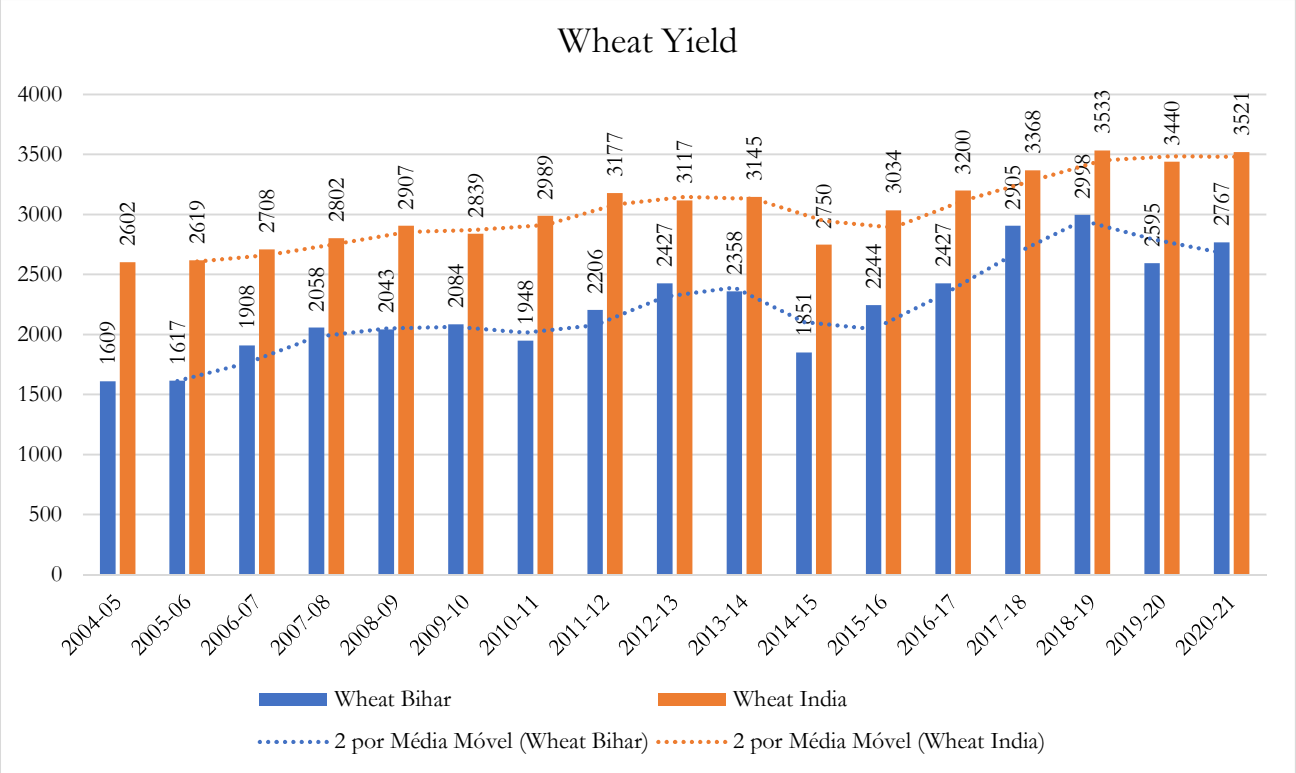
Figure 1: Rice yield in Bihar and India, 2004-05 to 2020-21

Source: Directorate of Economics and Statistics, Ministry of Agriculture, Government of India

Bihar's rice yield consistently tends to be lower than the national average in several years, reflecting performance variations between the state and the country. Growth rates in Bihar exhibit significant fluctuations, ranging from negative in certain years to substantial positives, particularly in 2011-12. India generally maintains positive growth rates, indicating overall improvement, albeit notably lower than Bihar in specific years. Bihar's average growth rate for rice yield over the specified period is approximately 9.9 per cent, whereas India's average growth rate for rice yield during the same timeframe is around 2 per cent, demonstrating less variability than Bihar. These growth rates offer a dynamic perspective on annual changes in rice yield for both Bihar and India. Bihar, with a higher average growth rate, experiences more pronounced fluctuations, suggesting periods of rapid improvement and decline. In contrast, India demonstrates a more stable but comparatively moderate growth trajectory in rice yield over the specified years.

Figure 2 displays the same figures for another important crop, wheat. Bihar's mean values fluctuate, ranging from 1609 kg/ha in 2004-05 to peaks in 2017-18 (2905 kg/ha) and 2018-19 (2998 kg/ha). Bihar's standard deviation indicates higher values during years with pronounced variations. Nationally, India's wheat yield exhibits fluctuation, ranging from a minimum of 2602 kg/ha in 2004-05 to a maximum of 3533 kg/ha in 2018-19. India's standard deviation reveals relatively lower values in certain years, indicating stability, and higher values in others, reflecting increased variability.

Figure 2: Wheat yield in Bihar and India, 2004-05 to 2020-21

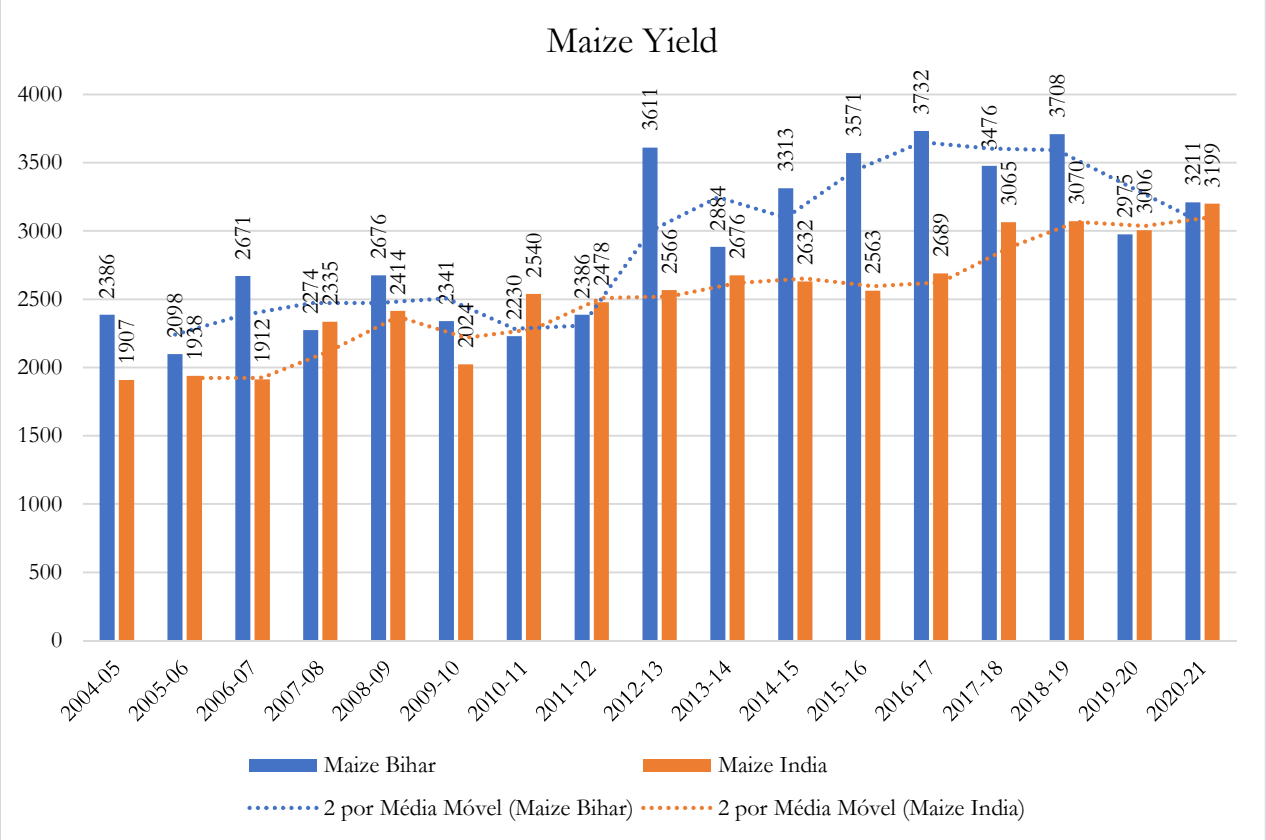


Source: Directorate of Economics and Statistics, Ministry of Agriculture, Government of India

The story of Bihar's wheat yield is similar to paddy. It consistently tends to be lower than the national average, and it fluctuates significantly. Bihar's average growth rate for wheat yield over the specified period is approximately 7.51 per cent, whereas India's average growth rate for wheat yield during the same period is about 5.47 per cent, demonstrating less variability than Bihar.

A slightly different can be seen with maize in Figure 3 below. Bihar's mean values showcase variations, ranging from 2098 kg/ha in 2005-06 to peaks in 2016-17 (3732 kg/ha) and 2018-19 (3708 kg/ha). Bihar's standard deviation indicates higher values during years with pronounced variations. Nationally, maize yield exhibits fluctuations, ranging from a minimum of 1907 kg/ha in 2004-05 to a maximum of 3199 kg/ha in 2020-21. India's standard deviation reveals relatively lower values in certain years, indicating stability, and higher values in others, reflecting increased variability. However, quite differently from the case of paddy and wheat, Bihar's maize yield consistently tends to be higher than the national average, showcasing performance variations.

Figure 3: Maize yield in Bihar and India, 2004-05 to 2020-21



Source: Directorate of Economics and Statistics, Ministry of Agriculture, Government of India

Bihar's average growth rate for maize yield over the specified period is approximately 7.39 per cent, showcasing variability with a maximum observed growth of 7.62 per cent in 2016-17. India's average growth rate for maize yield during the same timeframe is around 4.21 per cent, demonstrating less variability than Bihar.

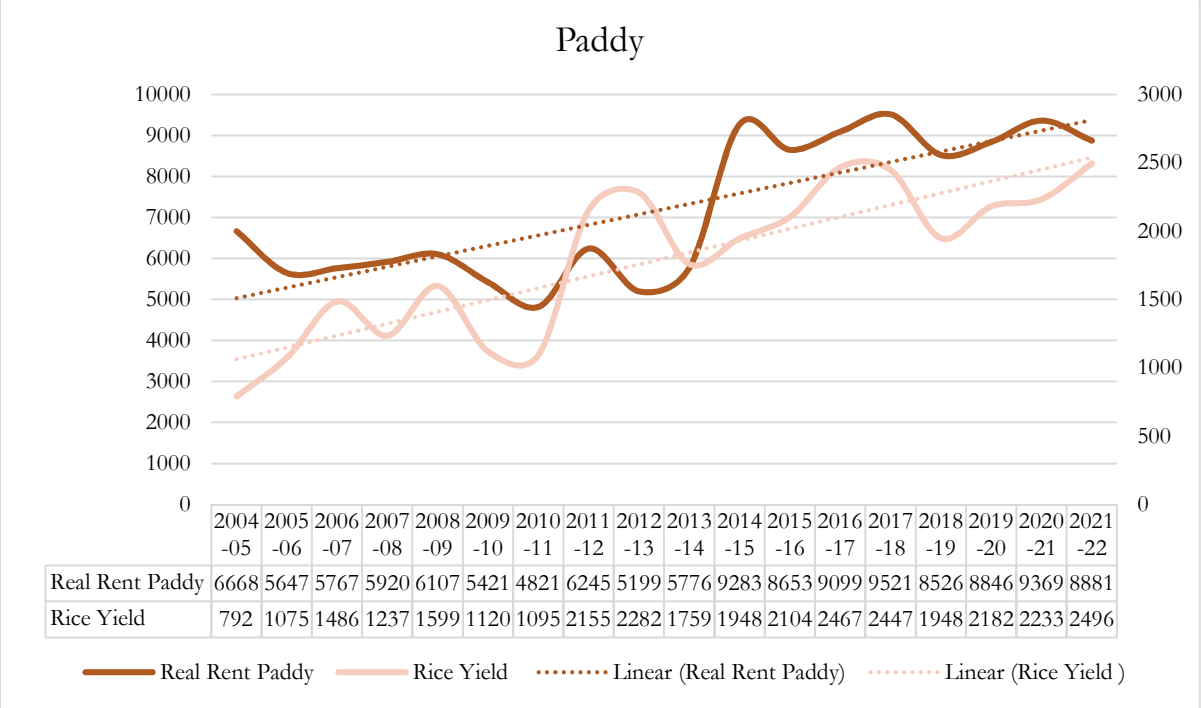
Who Benefits from Yield Growth?

As mentioned above, there is a significant rise in crop yields in both Bihar and at the national level during the last two decades. Bihar consistently exhibits higher growth rates than the national average across all three major crops, indicating a more dynamic agricultural landscape in the state. This suggests that Bihar's agricultural sector not only follows national trends but exceeds them, highlighting the state's superior performance in this regard. Nevertheless, the question remains: who reaps the benefits of this increased yield? To answer this question, in this subsection, we aim to examine the extraction of surplus generated by the actual tiller of the soil.

In the AVS, a significant amount of surplus is extracted through the backward linkages. As per NSS 2018-19, in Bihar 23 percent of total area under cultivation was leased-in. In such cases, a significant portion of the surplus value in agriculture goes to the owner of the land as rent. The siphoning of the surplus is a barrier to investment and hence hinders the growth of agriculture (Patnaik, 1999). In Bihar, on an average, 29 percent of the value of paddy, 29 percent of the value of wheat and 25 percent of the value of maize were paid as land rent for the last two decades. Whereas, the same shares for all India were 26 percent, 27 percent and 26 percent respectively. As already argued, this portion of the value is not reinvested in agriculture for farmers who leased in land for cultivation and proportion of such farmers is huge in Bihar.

Secondly, while the productivity of major crops increased in Bihar in the last two decades, the rent also increased in at least the same proportion.

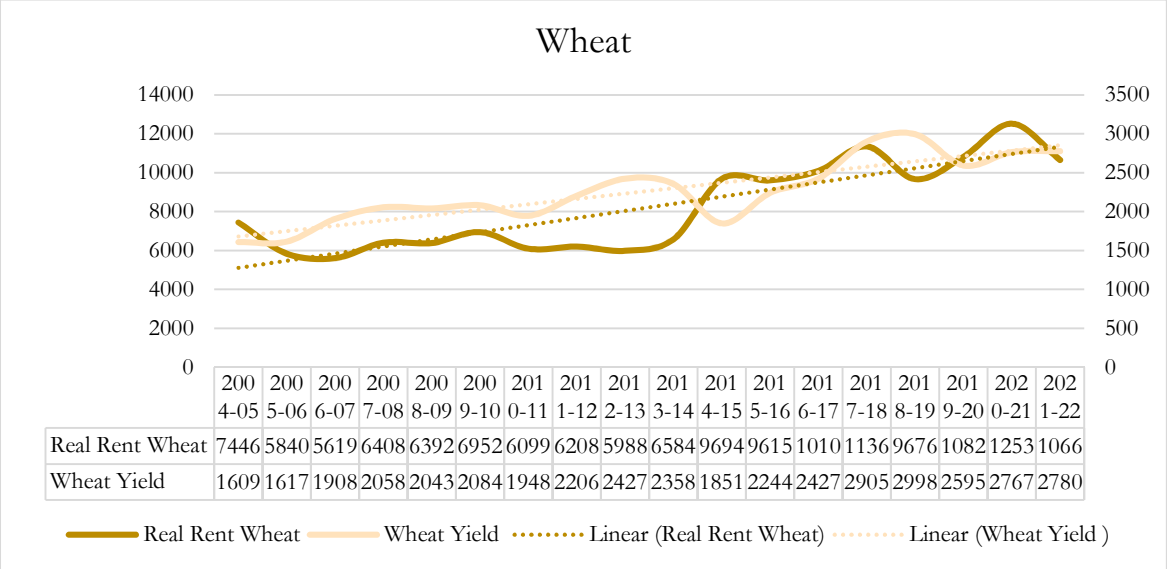
Figure 4: Rent (real) and yield of paddy/rice in Bihar, 2004-05 to 2021-22



	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Real Rent Paddy	6668	5647	5767	5920	6107	5421	4821	6245	5199	5776	9283	8653	9099	9521	8526	8846	9369	8881
Rice Yield	792	1075	1486	1237	1599	1120	1095	2155	2282	1759	1948	2104	2467	2447	1948	2182	2233	2496

Source: Directorate of Economics and Statistics, Ministry of Agriculture, Government of India

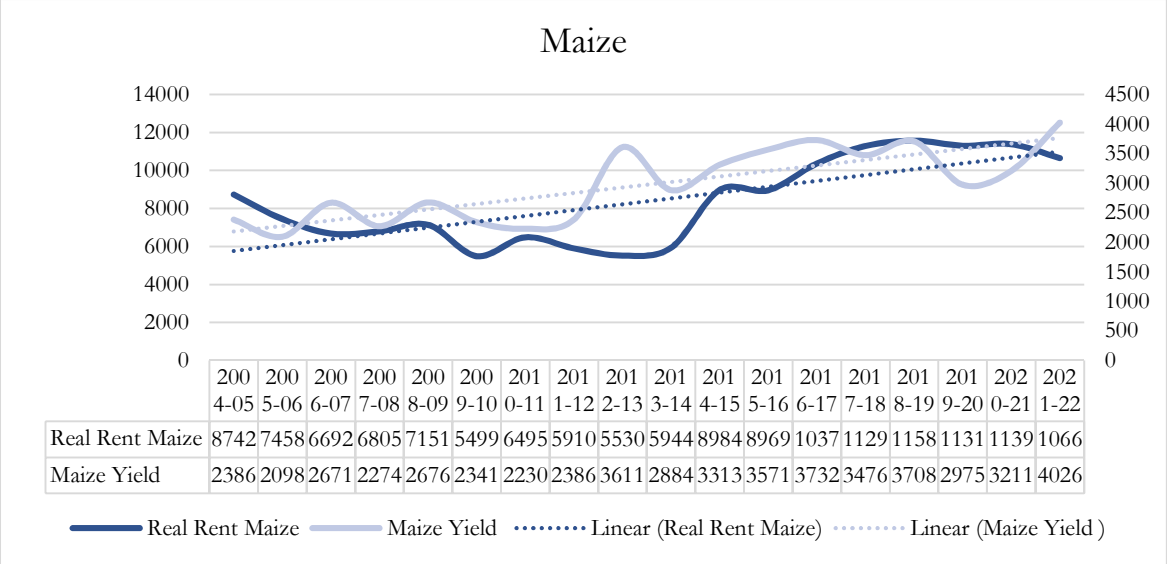
Figure 5: Rent (real) and yield of wheat in Bihar, 2004-05 to 2021-22



	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Real Rent Wheat	7446	5840	5619	6408	6392	6952	6099	6208	5988	6584	9694	9615	1010	1136	9676	1082	1253	1066
Wheat Yield	1609	1617	1908	2058	2043	2084	1948	2206	2427	2358	1851	2244	2427	2905	2998	2595	2767	2780

Source: Directorate of Economics and Statistics, Ministry of Agriculture, Government of India

Figure 6: Rent (real) and yield of maize in Bihar, 2004-05 to 2021-22



	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Real Rent Maize	8742	7458	6692	6805	7151	5499	6495	5910	5530	5944	8984	8969	1037	1129	1158	1131	1139	1066
Maize Yield	2386	2098	2671	2274	2676	2341	2230	2386	3611	2884	3313	3571	3732	3476	3708	2975	3211	4026

Source: Directorate of Economics and Statistics, Ministry of Agriculture, Government of India

In the forward linkages, the weaker power position of farmers results in their compulsive involvement that further leads to surplus squeeze. The compulsive involvement of a certain class of farmers in the market is a result of respective embedded powers (Bharadwaj, 1974). Such transactions are possible because actors are abstracted from their social context and power asymmetries deriving from differential endowments in terms of economic, social and symbolic power (Harriss, 2006). Forced commerce may take place in the agricultural market as well as all other markets and exchanges. This is why the full scope of forced commerce cannot be captured by a single exchange or transaction. This impacts not only on the peasantry, but also the overall agrarian economy (Bhaduri, 1986). Forced commerce or compulsive involvement enables actors other than farmers to extract surplus through the price squeeze. The price squeeze is greater for the small and marginal farmers, who constitute the largest portion of the farming community in Bihar.

The following Tables 3, 4 and 5 offer a comprehensive overview of the agricultural landscape, specifically focusing on the sale of three major crops: Paddy, Wheat, and Maize. The data is organised by size class, providing valuable insights into the distribution of sales and pricing dynamics within each category.

Table 2: Paddy price dynamics in Bihar, 2018-19

Size Class	Total Sale ('000 Qtl)	Share of Size Class in Total Sale (%)	Share of Quantity Sold at less than MSP	Share of Quantity Sold at MSP/more than MSP
0 - 0.5 ha.	10716	20.4	99.5	0.5
0.5 - 1.0 ha.	18371	35.0	99.4	0.6
1.0 - 2.0 ha.	12945	24.6	99.7	0.3
2.0 - 3.0 ha.	5652	10.8	98.3	1.7
3.0 - 4.0 ha.	1031	2.0	99.3	0.7
4.0 - 5.0 ha.	424	0.8	100.0	0.0

5.0 - 7.5 ha.	225	0.4	100.0	0.0
7.5 - 10.0 ha.	105	0.2	100.0	0.0
More than 10.0 ha.	3068	5.8	100.0	0.0
All	52536	100.0	99.4	0.6

Source: Situation Assessment Survey of Agricultural Households, NSS, 2018-19

The total paddy sales amount to 52,536 thousand quintals in Bihar during 2018-19, with size classes ranging from 0 - 0.5 hectares to more than 10.0 hectares. The size classes play a crucial role in determining the distribution of sales, with the small and marginal farmers (0 – 2.0 hectares) accounting for 80 per cent of the total sales, and the largest class (more than 10.0 hectares) contributing 5.8 per cent. This indicates a diverse range of landholding sizes contributing to the overall Paddy sales. In terms of pricing, the data reveals that nearly all sales in the state, across size classes, occur below the Minimum Support Price (MSP).

Table 3: Wheat price dynamics in Bihar, 2018-19

Size Class	Total Sale ('000 Qtl)	Share of Size Class in Total Sale (%)	Share of Quantity Sold at less than MSP	Share of Quantity Sold at MSP/more than MSP
0 - 0.5 ha.	15777	38.5	94.0	6.0
0.5 - 1.0 ha.	8640	21.1	90.9	9.1
1.0 - 2.0 ha.	6891	16.8	89.3	10.7
2.0 - 3.0 ha.	4518	11.0	90.2	9.8
3.0 - 4.0 ha.	1022	2.5	93.9	6.1
4.0 - 5.0 ha.	190	0.5	98.5	1.5
5.0 - 7.5 ha.	103	0.3	100.0	0.0
7.5 - 10.0 ha.	81	0.2	100.0	0.0
More than 10.0 ha.	3750	9.2	100.0	0.0
All	40971	100.0	92.7	7.3

Source: Situation Assessment Survey of Agricultural Households, NSS, 2018-19

The total sales of wheat amount to 40,971 thousand quintals in Bihar during 2018-19. Similar to Paddy, the small and marginal size classes contribute significantly, accounting for 76.4 per cent of the total sales, while the largest size class (more than 10.0 hectares) represents 9.2 per cent. Examining the pricing dynamics, there is a noticeable trend of a higher percentage (92.7 per cent) of sales occurring below MSP in across size classes.

Table 4: Maize price dynamics in Bihar, 2018-19

Size Class	Total Sale ('000 Qtl)	Share of Size Class in Total Sale (%)	Share of Quantity Sold at less than MSP	Share of Quantity Sold at MSP/more than MSP
0 - 0.5 ha.	11377	38.6	64.7	35.3
0.5 - 1.0 ha.	7355	25.0	79.3	20.7

1.0 - 2.0 ha.	5600	19.0	74.0	26.0
2.0 - 3.0 ha.	3559	12.1	53.4	46.6
3.0 - 4.0 ha.	1241	4.2	60.5	39.5
4.0 - 5.0 ha.	70	0.2	100.0	0.0
5.0 - 7.5 ha.	265	0.9	100.0	0.0
7.5 - 10.0 ha.				
More than 10.0 ha.				
All	29468	100.0	69.0	31.0

Source: Situation Assessment Survey of Agricultural Households, NSS, 2018-19

Table 4 presents a distinct pattern compared to paddy and wheat. Out of total sale of maize in the state during 2018-19, 82.6 per cent was shared by small and marginal farmers. The share of semi-medium farmers (2-4 Ha) was 16.3 per cent and that of other classes was negligible. Unlike wheat and paddy, maize sale in Bihar received better price as a significant portion (31%) was sold on more or equal MSP price and 69% on less than MSP price.

Conclusion

The agricultural impasse in Bihar goes beyond the simplistic explanation offered by the technocratic thesis. Despite significant increases in the yield of major crops over the last two decades, there has been a clear gap between this improvement and the livelihoods of agricultural households. The crux of the issue lies in the complex web of agricultural relations that demands a more nuanced understanding. On examining the lagged relationship, it becomes clear that a large part of the surplus generated in agriculture is appropriated by landlords as rent. This phenomenon has intensified in Bihar, as in case of some crop yields growth are less or equal the rent growth. The increase in rents poses a significant hindrance to translating higher agricultural productivity into better living standards for those directly engaged in farming.

The situation has become even more serious in the forward linkage of the agricultural sector. Evidence suggests that prices of agricultural products are deliberately suppressed, leading to a reduction in the surplus available at the grassroots level. This suppression of prices reduces the potential profits from increased crop yields, destabilizing the economic situation of the agricultural households. Can this situation change without a fundamental restructuring of agrarian relations in Bihar? We do not think so. This approach includes a comprehensive examination of land rights and an overhaul of both backward and forward linkages. Land rights are important, because the concentration of surplus in the hands of landowners acts as a barrier to equitable development. To break free from the current impasse, a more equitable distribution of the benefits of increased agricultural productivity is necessary.

Furthermore, the need for public provision in both backward and forward linkages cannot be understated. Addressing issues of rents in backward linkages requires policies that ensure fair distribution of surplus, which directly promotes the economic well-being of those involved in farming. Additionally, improving agricultural product price in forward linkages requires interventions that enable farmers to receive fair compensation for their produce.

In short, the path of agricultural development in Bihar demands a holistic transformation of the existing agricultural structure. The focus must extend beyond technological progress and

production figures to include the complex socio-economic dynamics governing the distribution of benefits within the agricultural sector. Only through such fundamental restructuring can Bihar hope to unleash the true potential of its agricultural efforts and uplift the lives of its farming communities.

References

Aga Khan Development Network (2007). *Development in Bihar: Overview, Appraisal and Approach*, AKDN India.

Bandyopadhyay, D. (2009). Lost Opportunity in Bihar. *Economic and Political Weekly*, 44 (47), 12–14.

Barik, Radhakanta (1992). Tenancy Reforms Act in Bihar during the First Congress Government: 1937-39. *Social Scientist*, Vol. 20, No. 5/6, pp. 3-20.

Bharadwaj K. (1974). *Production condition in Indian agriculture*. Cambridge: Cambridge University Press.

Bhaduri A. (1986). Forced commerce and agrarian growth. *World Development*, 14(2), 267–272.

Bharti, Indu (1992). Bihar's Bane: Slow Progress on Land Reforms. *Economic and Political Weekly*, Vol. 27, No. 13, pp. 628-630.

--- (1988). Farce of Land Reforms in Jehanabad. *Economic and Political Weekly*, Vol. 23, No. 48, pp. 2519-2520.

Chadha, G. K. and M. R. Khurana (1989). Backward Agriculture, Unrewarded Labour and Economic Deprivation: Bihar's Contrast with Punjab. *Economic and Political Weekly*, Vol. 24, No. 47, pp. 2617-2623.

Das, Arvind N. (1983). *Agrarian Unrest and Socio-economic Change in Bihar, 1900-1980*, New Delhi: Manohar.

Dasgupta, C (2010). Unravelling Bihar's 'Growth Miracle'. *Economic and Political Weekly*, December 25.

Harriss J. (2006). *Power matters: Essays on institutions, politics and society in India*. New Delhi: Oxford University Press.

Jha, P. (1997). *Changing Conditions of Agricultural Labourers in Post-independent India: A Case Study from Bihar*. Thesis Submitted at Jawaharlal Nehru University, New Delhi.

Kishore, Avinash (2004). Understanding Agrarian Impasse in Bihar. *Economic and Political Weekly*, Vol. 39, No. 31, pp. 3484-3491.

--- (2013). The Paradox of Agrarian Stagnation in Bihar, India. *The IFFCO Foundation Bulletin*. Vol 1, No 1, April.

Kumar M. (2019). India's rice export: What is in it for farmers? *Agrarian South: Journal of Political Economy*, 8(1–2), 136–171.

Kumar, M. (2022). Power Asymmetry and Unequal Exchange in the Agricultural Value Systems: Case Study of Paddy. *Agrarian South: Journal of Political Economy*, 11(3), 308-332.

Mitra, Manoshi and Vijayendra, T. (1982). Agricultural Labourers and Peasant Politics: Rural Proletarianisation in Purnea, Bihar. *Journal of Peasant Studies*, Vol. 9, No. 3, pp. 88-118.

Nagaraj, R. and Rahman, A. (2010). Booming Bihar: Fact or Fiction. *Economic and Political Weekly*, Vol. 45, No. 8, pp. 10-11.

Robb, Peter (1992). Peasants' Choices? Indian Agriculture and the Limits of Commercialization in Nineteenth- Century Bihar. *The Economic History Review*, New Series, Vol. 45, No. 1, pp. 97-119.

Rodgers, Gerry and Janine Rodgers (2001). A Leap across Time: When Semi-Feudalism Met the Market in Rural Purnia. *Economic and Political Weekly*, Vol. 36, No. 22, pp. 1976-1983.

Shah, Tushaar (1999). Pump Irrigation and Equity: Machine-reform and Agrarian Transformation in Water-abundant Eastern India. Policy School Working Paper no 6: Anand.

Shah, Tushaar and Vishwa Ballabh (1997). Water Markets in North Bihar: Six Village Studies in Muzaffarpur District. *Economic and Political Weekly*, 32 (52), pp A-183-A-190.

Sharma, Alakh N. (1995). Political Economy of Poverty in Bihar. *Economic and Political Weekly*, Vol. 30, No. 41/42, pp. 2587- 2602.

Thakur, Jawahar, Manik L. Bose, Mahabub Hossain, A. Janaiah (2000). Rural Income Distribution and Poverty in Bihar: Insights from Village Studies. *Economic and Political Weekly*, Vol. 35, No. 52/53, pp. 4657-4663.

Thakur, M. (2013). Land Question in Bihar: Madhubani as a Metaphor. *Economic and Political Weekly*, 48 (19), 19–21.

Timberg, Thomas A. (1982). Bihari Backwardness: Does Feudalism Frustrate. *Asian Survey*, Vol. 22, No. 5, pp. 470-480.

Wilson, Kalpana (1999). Patterns of Accumulation and Struggles of Rural Labour: Some Aspects of Agrarian change in Central Bihar. *Journal of Peasant Studies*, Vol. 26, No. 2 &3, pp 316-354.

----- (2002). Small Cultivators in Bihar and 'New Technology': Choice or Compulsion. *Economic and Political Weekly*, Vol. 37, No. 13, pp. 1229-1238.

---- (2006). Who Are the 'Community'? The World Bank and Agrarian Power in Bihar. *Economic and Political Weekly*, Vol. 41, No. 1, pp. 23-27.