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Impact of PM-KISAN and State Agricultural Schemes on Farmers in Bihar

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Abstract : Agriculture is the primary source of livelihood for nearly two-thirds of Bihar's population, with small and marginal farmers constituting more than 95% of operational landholders. Despite significant agricultural potential, farmers in Bihar continue to face numerous challenges, including fragmented landholdings, inadequate irrigation, climate variability, low farm mechanization, and limited access to institutional credit and markets. To address these issues and enhance farmers' income, the Government of India and the Government of Bihar have implemented several farmer-centric schemes since 2018, including the Pradhan Mantri Kisan Samman Nidhi (PM-KISAN) and various state agricultural support programmes. These initiatives aim to provide direct income support, subsidized agricultural inputs, irrigation facilities, farm mechanization, crop insurance, quality seeds, and digital services, thereby promoting sustainable agricultural development and improving rural livelihoods. This paper examines the impact of PM-KISAN and major state agricultural schemes on the socio-economic conditions of farmers in Bihar. It evaluates their contribution to agricultural productivity, input use, farm income, technology adoption, climate resilience, and overall agricultural sustainability. The study based on descriptive and analytical approach based on secondary data collected from government reports, Bihar Economic Surveys, publications of the Ministry of Agriculture and Farmers' Welfare, NITI Aayog, NABARD, research articles, and other authentic sources. The paper concludes that greater convergence among central and state programmes, improved digital governance, expansion of Farmer Producer Organizations (FPOs), and enhanced extension services are essential for maximizing the benefits of agricultural support policies in Bihar.

Keywords: PM-KISAN, Agricultural Schemes, Bihar, Farmers' Income, Sustainable Agriculture, Agricultural Development, Farm Mechanization, Rural Livelihoods, Agricultural Policy.

1. INTRODUCTION

Agriculture are the backbone of Bihar's economy, contributing significantly to employment, food security, and rural development. Nearly two-thirds of the state's population depends directly or indirectly on agriculture for their livelihood. Bihar possesses fertile alluvial soils, abundant groundwater resources, and favorable agro-climatic conditions suitable for cultivating cereals, pulses, oilseeds, fruits, vegetables, and cash crops. Despite these advantages, the agricultural sector has long been characterized by low productivity, fragmented landholdings, recurrent floods and droughts, inadequate irrigation infrastructure, limited mechanization, and poor market access. Recognizing these challenges, the Government of India and the Government of Bihar have introduced several agricultural support schemes aimed at improving farmers' income, enhancing productivity, reducing production risks, and promoting sustainable agricultural development. Among these initiatives, the Pradhan Mantri Kisan Samman Nidhi (PM-KISAN), launched in December 2018, represents one of the largest direct income support programmes for farmers. Under the scheme, eligible farmer families receive Rs. 6,000 annually in three equal installments through Direct Benefit Transfer (DBT), enabling them to purchase quality seeds, fertilizers, pesticides, and other agricultural inputs. In addition to PM-KISAN, Bihar has implemented various state-specific agricultural programmes through the Agriculture Road Maps, including subsidies for farm mechanization, quality seed distribution, irrigation development, crop diversification, soil health management, horticulture promotion, and digital agriculture. These initiatives collectively seek to improve agricultural productivity, strengthen climate resilience, and increase the income of farmers.

2. Objectives of the Study

The objectives of this study are:

- Examine the objectives and implementation of PM-KISAN and major agricultural schemes in Bihar.
- Assess their impact on farmers' income, productivity, and livelihood.
- Analyze the contribution of these schemes to sustainable agricultural development.
- Identify implementation challenges and policy gaps.

3. Research Methodology

The study is descriptive and analytical in nature. The study is based on secondary sources of Data. The main source of the study are : Bihar Economic Survey, Report of Directorate of Economics and Statistics, Report on Ministry of Agriculture & Farmers Welfare, Reports on Government of Bihar Agriculture Department, NABARD Reports and Research journals.

4. Overview of PM-KISAN and State Agricultural Schemes

The Government of India and the Government of Bihar have rolled out a suite of agricultural support initiatives aimed at bolstering farmers' incomes, boosting productivity, and fostering sustainable rural development. Among these, the Pradhan Mantri Kisan Samman Nidhi (PM-KISAN) stands out as a flagship direct income support mechanism. Launched on 24 February 2019 (with retrospective effect from 1 December 2018), the scheme disburses ₹6,000 annually to eligible landholding farmer families in three equal installments of ₹2,000 each, routed through the Direct Benefit Transfer (DBT) architecture. By providing assured and timely financial assistance, PM-KISAN seeks to enable farmers to meet essential agricultural input costs, curtail reliance on high-interest informal credit, and facilitate prompt investment in cropping activities. The DBT modality has notably enhanced transparency, minimised leakages, and advanced financial inclusion in rural areas. For small and marginal farmers in Bihar, who constitute the bulk of the agrarian population, PM-KISAN has emerged as a critical supplementary income stream, enabling the procurement of quality seeds, fertilisers, pesticides, and other vital inputs during key cropping phases.

Complementing this central intervention the Government of Bihar has pursued an ambitious agenda through its successive Agriculture Road Maps (ARMs), initiated in 2008. These multi-year policy frameworks adopt an integrated approach to agricultural development, encompassing crop husbandry, horticulture, livestock, fisheries, irrigation, marketing, and rural infrastructure. The ARMs prioritise productivity enhancement, income augmentation, climate-resilient practices, expanded irrigation coverage, farm mechanisation, strengthened extension services, and value addition via agro-processing units.

In tandem with the Road Maps, the state has operationalised several targeted schemes to promote sustainable agriculture and farmers' welfare. Notable among these are the Seed Subsidy Programme, which incentivises the adoption of certified and high-yielding varieties; the Agricultural Mechanisation Scheme, offering subsidies on tractors, power tillers, seed drills, and allied equipment; and the Soil Health Card Scheme, which promotes site-specific, balanced fertiliser application grounded in scientific soil analysis. Bihar also implements key centrally sponsored schemes, including the Pradhan Mantri Krishi Sinchai Yojana (PMKSY) for micro-irrigation and water-use efficiency, the Pradhan Mantri Fasal Bima Yojana (PMFBY) for crop risk mitigation, the Paramparagat Krishi Vikas Yojana (PKVY) for organic farming promotion, and the National Mission for Sustainable Agriculture (NMSA) for building climate resilience. Digital interventions—such as online farmer registration portals, DBT platforms, weather advisories, and mobile applications—have further streamlined service delivery and improved access to timely agricultural information.

Collectively PM-KISAN and the array of state and central schemes form a multi-layered support ecosystem for Bihar's farmers. While PM-KISAN furnishes direct, unconditional income support to enhance financial autonomy, complementary state-level interventions focus on productivity gains, risk reduction, resource-use efficiency, market linkages, and ecological sustainability. The synergistic implementation of these programmes has contributed meaningfully to raising agricultural output, reinforcing rural livelihoods, and advancing the broader objectives of sustainable agricultural transformation in the state. As a new researcher examining these dynamics, this integrated policy landscape offers fertile ground for empirical investigation into their on-ground efficacy, equity implications, and long-term developmental outcomes.

5. Impact of PM-KISAN on Farmers in Bihar

The Pradhan Mantri Kisan Samman Nidhi (PM-KISAN) has become one of the most important income support programmes for farmers in Bihar, where agriculture is dominated by small and marginal landholders. Introduced in 2019 (with effect from 1 December 2018), the scheme provides Rs. 6,000 per year to eligible farmer families through the Direct Benefit Transfer (DBT) system in three equal installments. Although the amount is modest, it offers timely financial support during critical stages of crop cultivation. For many farmers, the assistance helps meet immediate expenses such as purchasing seeds, fertilizers, pesticides, and hiring labour, particularly at the beginning of the sowing season when cash requirements are highest. In a state where fragmented landholdings and limited financial resources often restrict agricultural investment, PM-KISAN has provided a reliable source of supplementary income.

An important contribution of the scheme has been its role in improving farmers' access to working capital. Before the introduction of PM-KISAN, many small farmers relied on local moneylenders or informal credit sources to finance cultivation, often at high interest rates. The direct transfer of funds into farmers' bank accounts has reduced this dependence to some extent and enabled beneficiaries to meet short-term agricultural expenses without borrowing. At the same time, the DBT mechanism has increased transparency, reduced delays and leakages in fund distribution, and encouraged greater participation in the formal banking system, thereby promoting financial inclusion in rural areas.

The scheme has also supported agricultural productivity by ensuring that farmers can purchase quality inputs at the appropriate time. Timely access to certified seeds, fertilizers, pesticides, and other essential inputs improves crop management practices and contributes to better yields. When combined with other government initiatives such as subsidized farm machinery, improved irrigation facilities, soil health management, and quality seed distribution, PM-KISAN has encouraged the adoption of improved farming practices and helped farmers make more productive investments in agriculture.

Beyond agricultural production, PM-KISAN has strengthened the economic security of rural households. While the annual assistance is not sufficient to cover the full cost of cultivation, it provides a stable supplementary income that helps families manage both farming and household expenses. During periods of crop failure, floods, droughts, or fluctuations in market prices, the financial support offers temporary relief and reduces economic stress. The scheme has also accelerated the use of digital financial services by linking farmers' Aadhaar numbers with bank accounts, making the transfer of benefits more efficient and transparent.

Despite these achievements, several implementation challenges continue to affect the effectiveness of PM-KISAN in Bihar. Since eligibility is based on land ownership, tenant farmers, sharecroppers, and landless agricultural labourers are generally excluded from the scheme even though they actively engage in farming. In some cases, outdated land records, errors in beneficiary databases, Aadhaar authentication issues, and delays in verification have affected the timely release of installments. Moreover, the annual assistance of ₹6,000 has become relatively less significant due to rising prices of agricultural inputs, reducing its capacity to support larger investments in farming.

Major Impacts of PM-KISAN on Farmers in Bihar

Area of Impact	Contribution of PM-KISAN
Farm Income	Provides assured annual income support of ₹6,000 per eligible farmer family
Purchase of Agricultural Inputs	Facilitates timely purchase of quality seeds, fertilizers, pesticides, and other inputs
Access to Working Capital	Improves liquidity during sowing seasons
Financial Inclusion	Strengthens DBT-based banking and digital transactions
Dependence on Informal Credit	Reduces reliance on moneylenders for short-term credit
Agricultural Productivity	Supports timely farm operations, contributing to higher crop yields

Risk Mitigation	Provides supplementary income during crop failures and adverse weather conditions
Technology Adoption	Encourages investment in improved farming practices and modern technologies
Household Welfare	Supplements family income and supports essential household expenditures
Rural Development	Contributes to income security and inclusive agricultural growth

6. Impact of State Agricultural Schemes on Farmers in Bihar

Since 2005, the Government of Bihar has introduced a number of agricultural development programmes to improve farm productivity, enhance farmers' income, strengthen rural infrastructure, and promote sustainable agriculture. The successive Bihar Agriculture Road Maps (ARMs) have served as the foundation for these initiatives by integrating crop production, horticulture, animal husbandry, fisheries, irrigation, agricultural mechanization, and marketing into a comprehensive development strategy. In addition, state-level programmes implemented in convergence with centrally sponsored schemes have improved farmers' access to quality inputs, modern technology, irrigation facilities, and institutional support. These interventions have contributed significantly to transforming Bihar's agricultural sector over the last two decades.

One of the major achievements of the state agricultural schemes has been the improvement in crop productivity. The government has promoted the use of certified and high-yielding seed varieties through subsidized seed distribution programmes and seed replacement initiatives. Farmers have also benefited from scientific cultivation practices, balanced fertilizer use under the Soil Health Card Scheme, and better access to agricultural extension services. These measures have contributed to higher productivity in major crops such as rice, wheat, maize, and pulses. Increased agricultural productivity has not only improved food security but has also enhanced farm incomes and reduced the gap between Bihar and the national average in crop yields.

The expansion of irrigation infrastructure has been another important outcome of government intervention. Through programmes such as the Pradhan Mantri Krishi Sinchai Yojana (PMKSY), minor irrigation projects, tube well schemes, and solar-powered irrigation pumps, the state has increased irrigation coverage and reduced farmers' dependence on uncertain monsoon rainfall. Improved irrigation has enabled farmers to cultivate more than one crop annually, increase cropping intensity, and diversify into high-value crops such as vegetables, fruits, and flowers. Better water management has also strengthened the resilience of agriculture against droughts and irregular rainfall.

Farm mechanization has also witnessed significant progress due to government subsidies on agricultural machinery. Financial assistance for tractors, power tillers, seed drills, rotavators, combine harvesters, and irrigation pumps has enabled farmers to adopt modern farming techniques. Mechanization has reduced labour costs, improved operational efficiency, ensured timely agricultural operations, and minimized post-harvest losses. Although the adoption of machinery remains relatively low among small and marginal farmers because of fragmented landholdings, custom hiring centres and subsidy programmes have improved access to farm equipment in many districts.

State agricultural schemes have further encouraged crop diversification and the development of allied agricultural sectors. The promotion of horticulture, dairy farming, fisheries, poultry, and beekeeping has created additional income opportunities for rural households. Bihar has emerged as a leading producer of crops such as maize, litchi, makhana, vegetables, and bananas due to targeted government support for high-value agriculture. Diversification has reduced farmers' dependence on traditional cereal cultivation, increased resilience against market and climatic risks, and generated year-round employment in rural areas.

Government initiatives have also contributed to improving soil health and promoting sustainable farming practices. Programmes focusing on soil testing, balanced fertilizer application, organic farming, integrated nutrient management, and water conservation have encouraged the efficient use of natural resources. Schemes such as the Soil Health Card Scheme, Paramparagat Krishi Vikas Yojana (PKVY), and the National Mission for Sustainable Agriculture (NMSA) have increased awareness about environmentally sustainable farming and supported the adoption of climate-resilient agricultural practices.

Another notable achievement has been the growing use of digital technologies in agriculture. Online farmer registration, Direct Benefit Transfer (DBT) of subsidies, digital soil records, mobile-based advisory services, and weather forecasting systems have improved transparency and made government services more accessible. These digital initiatives have reduced administrative delays, strengthened financial inclusion, and enabled farmers to receive timely information regarding weather conditions, market prices, crop management, and government schemes.

Major Impacts of State Agricultural Schemes on Farmers in Bihar

Area	Major State Initiatives	Impact on Farmers
Crop Productivity	Agriculture Road Maps, Seed Subsidy Programme	Higher yields and improved food production
Irrigation	PMKSY, Minor Irrigation Schemes, Solar Pumps	Increased irrigation coverage and cropping intensity
Farm Mechanization	Subsidies on tractors, power tillers, harvesters	Reduced labour costs and timely farm operations
Soil Health	Soil Health Card Scheme	Balanced fertilizer use and improved soil fertility
Crop Diversification	Horticulture and allied sector programmes	Higher farm income and reduced production risk
Sustainable Agriculture	PKVY, NMSA	Promotion of organic farming and climate-resilient agriculture
Digital Agriculture	DBT, Online Farmer Registration, Mobile Advisory	Better access to government services and information
Rural Livelihoods	Dairy, Fisheries, Poultry, FPO promotion	Additional employment and income opportunities

7. Socio-Economic Impact of PM-KISAN and State Agricultural Schemes on Farmers in Bihar

The implementation of PM-KISAN and various state agricultural schemes has had a significant socio-economic impact on farmers in Bihar. These programmes have not only supported agricultural production but have also contributed to improving rural livelihoods, enhancing financial security, increasing agricultural investment, and promoting inclusive rural development. By providing direct income support, subsidized agricultural inputs, irrigation facilities, farm mechanization, crop insurance, and extension services, the Government of India and the Government of Bihar have strengthened the economic resilience of farming households. Although the magnitude of the benefits varies across regions and farm categories, these schemes have positively influenced the overall socio-economic conditions of farmers.

One of the most notable impacts has been the improvement in farmers' income and financial stability. PM-KISAN provides a fixed annual income of Rs.6,000 to eligible farmer families, while state schemes reduce production costs through subsidies on seeds, fertilizers, irrigation equipment, and agricultural machinery. These interventions have increased farmers' purchasing power and enabled them to invest more in productive agricultural activities. As a result, many farmers have experienced greater financial security and reduced dependence on informal sources of credit.

Agricultural schemes have also contributed to increasing agricultural productivity and profitability. The availability of certified seeds, scientific nutrient management, improved irrigation facilities, and mechanization has enabled farmers to achieve higher crop yields and better returns from cultivation. Crop diversification programmes promoting horticulture, dairy farming, fisheries, and poultry have created additional income opportunities and reduced dependence on traditional cereal cultivation. These changes have improved the economic sustainability of farming households by generating multiple sources of income throughout the year.

Another important socio-economic outcome has been the strengthening of financial inclusion in rural areas. Through the Direct Benefit Transfer (DBT) system, government assistance is transferred directly into beneficiaries' bank accounts, reducing leakages and ensuring greater transparency. The increased use of banking services, Aadhaar-linked accounts, and digital payment systems has encouraged farmers to participate in the formal financial sector. Improved access to institutional credit and government subsidies has further supported agricultural investment and rural development.

The schemes have also enhanced farmers' resilience to production and income risks. Crop insurance under the Pradhan Mantri Fasal Bima Yojana (PMFBY), improved irrigation facilities, and climate-resilient agricultural practices have helped reduce the adverse effects of floods, droughts, and other climatic shocks. Although challenges remain in insurance coverage and claim settlement, these interventions have strengthened farmers' capacity to cope with natural disasters and market uncertainties.

Employment generation has been another significant benefit of government agricultural programmes. The expansion of horticulture, dairy farming, fisheries, food processing, and other allied sectors has created additional employment opportunities in rural areas. Increased demand for agricultural machinery, transportation, storage, and marketing services has also generated indirect employment, contributing to rural economic growth and reducing seasonal unemployment.

Socio-Economic Impact of PM-KISAN and State Agricultural Schemes

Socio-Economic Indicator	Situation Before Implementation	Situation After Implementation
Farm Income	Limited and uncertain	Improved through income support and higher productivity
Access to Agricultural Inputs	Constrained by financial limitations	Timely purchase of quality inputs through subsidies and DBT
Dependence on Informal Credit	High	Reduced due to direct financial assistance and institutional support
Agricultural Productivity	Moderate	Improved through better seeds, irrigation, and mechanization
Technology Adoption	Low	Increased adoption of modern agricultural technologies
Financial Inclusion	Limited banking access	Expansion of DBT, Aadhaar-linked accounts, and digital payments
Employment Opportunities	Seasonal and limited	Increased through allied agricultural activities and agro-processing
Risk Management	Weak	Improved through crop insurance and climate-resilient practices
Household Economic Security	Vulnerable to income shocks	Strengthened through supplementary income and government support
Rural Livelihoods	Dependence on traditional farming	More diversified and resilient livelihood opportunities

8. Conclusion

The Pradhan Mantri Kisan Samman Nidhi (PM-KISAN) and the various agricultural schemes implemented by the Government of Bihar have made a significant contribution to improving the socio-economic conditions of farmers and promoting sustainable agricultural development in the state. By providing direct income support, subsidized agricultural inputs, irrigation facilities, farm mechanization, crop insurance, quality seeds, and scientific advisory services, these initiatives have strengthened the agricultural production system and improved the livelihoods of rural households. PM-KISAN, in particular, has enhanced the financial security of small and marginal farmers by ensuring timely availability of working capital for purchasing essential agricultural inputs, thereby reducing dependence on informal credit sources. At the same time, state agricultural programmes implemented through the Bihar Agriculture Road Maps have promoted crop diversification, efficient resource management, improved irrigation, mechanization, and climate-resilient farming practices.

Despite these positive outcomes, several structural and institutional challenges continue to affect the effectiveness of agricultural support programmes in Bihar. The predominance of small and fragmented landholdings, exclusion of tenant farmers and sharecroppers from certain schemes, delays in updating land records, inadequate agricultural marketing infrastructure, insufficient storage and processing facilities, weak extension services, and uneven adoption of modern technologies limit the overall impact of these initiatives. Furthermore, the financial assistance provided under PM-KISAN, although valuable, is relatively modest in comparison with the increasing cost of agricultural inputs and cultivation.

To enhance the effectiveness of these programmes, greater emphasis should be placed on improving institutional coordination, strengthening digital governance, modernizing land records, expanding the coverage of eligible beneficiaries, and promoting Farmer Producer Organizations (FPOs). Increased investment in agricultural research, climate-smart technologies, value-chain development, food processing, post-harvest infrastructure, and market linkages will further improve farmers' income and agricultural competitiveness. Strengthening extension services and integrating digital advisory systems with field-level support can also accelerate the adoption of sustainable agricultural practices.

In last concluding remarks PM-KISAN and the agricultural schemes implemented by the Government of Bihar have emerged as important policy instruments for promoting inclusive agricultural growth, reducing rural poverty, and improving the welfare of farmers. While considerable progress has been achieved in enhancing productivity, income support, and agricultural sustainability, the long-term success of these initiatives will depend on effective implementation, continuous policy innovation, stronger institutional support, and greater participation of farmers in the agricultural development process. A coordinated approach that integrates income support, technological advancement, climate resilience, market reforms, and sustainable resource management will be essential for building a resilient, productive, and environmentally sustainable agricultural sector in Bihar.

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