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Impact of PMKSY on Groundnut production in Vijayanagara District

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Abstract

This study investigates the impact of the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) on groundnut cultivation in the semi-arid region of Vijayanagara district, Karnataka. Groundnut, a key oilseed crop in South India, faces persistent challenges due to erratic rainfall and inadequate irrigation. PMKSY, launched in 2015, aimed to address these constraints through integrated irrigation infrastructure and micro-irrigation technologies. Using a primary survey of 180 randomly selected farmers across five taluks, supplemented by secondary data, this study employs descriptive statistical tools to assess changes in area, production, price, and input costs. Results show a statistically significant increase in yield—from 15 to 20 quintals per hectare—post-PMKSY implementation. Input cost analysis reveals a notable reduction in irrigation (19.6%) and labour (12.2%) costs, while machinery expenses rose marginally due to increased mechanization. Seed costs remained unchanged. Adoption analysis shows that 80% of farmers adopted at least one PMKSY component, with 63.9% opting for micro-irrigation. However, institutional support remains weak, with only 20% receiving formal training. Perception data indicates high satisfaction with productivity outcomes, but concerns persist over procedural delays and technical malfunctions. The study concludes that PMKSY has positively influenced groundnut productivity and farm income, while recommending policy interventions focused on capacity building, digital governance, and post-installation support to ensure long-term sustainability.

Keywords: *PMKSY, Impact, Production, Price and Perceptions*

Introduction

Groundnut occupies a pivotal position in the agrarian economy of South India, serving as a primary source of livelihood for a significant portion of the population. where it contributes significantly to farmers' incomes, rural employment, and oilseed self-sufficiency. Despite Karnataka's standing among the top three groundnut-producing states, yields in rain-fed regions have historically lagged the national average, owing largely to erratic rainfall and suboptimal water-management practices. Agriculture continues to play a vital role in the Indian economy. Among oilseed crops, groundnut holds considerable importance due to its economic value, nutritional content, and wide range of uses. However, groundnut production in India has traditionally faced challenges such as erratic rainfall, insufficient irrigation infrastructure, and low productivity levels. Recognizing the critical need for improving irrigation facilities and enhancing water use efficiency, the Government of India launched the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) in 2015 with the vision of achieving "Har Khet Ko Pani" and promoting "More Crop per Drop." The PMKSY aims to provide end-to-end solutions in irrigation supply chain, from water sources to distribution and on-farm applications. By integrating various irrigation schemes and promoting micro-irrigation techniques such as drip and sprinkler systems, the scheme is particularly relevant for crops like groundnut, which are sensitive to moisture availability. Improved irrigation access not only enhances yield and productivity but also supports sustainable farming practices, especially in semi-arid and rainfed regions where groundnut is predominantly cultivated.

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Objectives and Methodology:

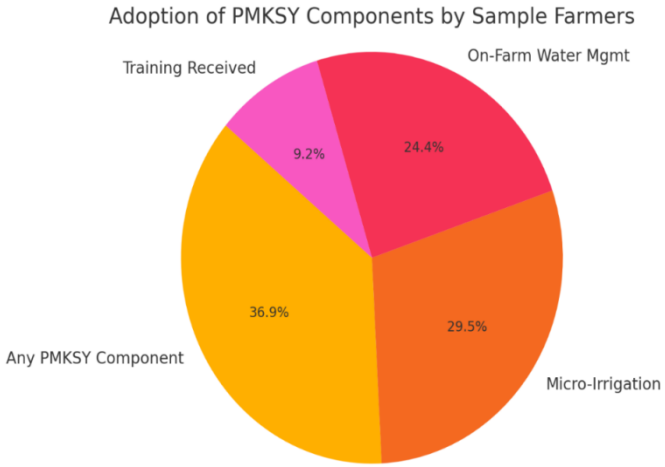
This study seeks to analyse the adoption of PMKSY, impact of PMKSY on groundnut production, focusing on key indicators such as area

By assessing the outcomes of PMKSY, the study contributes to the broader discourse on the effectiveness of irrigation-focused agricultural policies in boosting oilseed production and rural livelihoods in India. The study mainly based on primary data and uses secondary data where its required necessary. We have chosen 180 samples randomly from 5 taluks of Vijayanagara district. The structured questionnaire was prepared and met the respondents personally collected the Production, and Price trends before and after the implementation of the scheme and Perceptions of Outcomes and Challenges of PMKSY beneficiaries.

information. Descriptive statistical tools were used to analyse and interpret the data.

Adoption of PMKSY Components of Respondents:

The adoption analysis reveals a high degree of responsiveness among farmers toward PMKSY interventions, with 80% of the sample adopting at least one component. This suggests strong awareness and perceived utility of the scheme, especially in semi-arid regions like Vijayanagara.



The predominance of micro-irrigation adoption (63.9%) indicates that water-saving technologies are both accessible and appealing to groundnut cultivators. More than half of the respondents also implemented on-farm water management (OFWM) techniques, reinforcing the convergence approach of PMKSY. These practices collectively contribute to improved water-use efficiency and yield stability. However, a critical shortfall is observed in institutional support—only 20% of farmers reported receiving formal training. This highlights a significant gap in extension services, which could limit the optimal use and maintenance of installed systems. Lack of technical capacity among the majority may also lead to underperformance or misuse of assets. Bridging this extension gap is essential for ensuring the long-term sustainability of PMKSY outcomes. Therefore, future policy must prioritize capacity-building and follow-up services alongside infrastructure creation.

Impact of the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY):

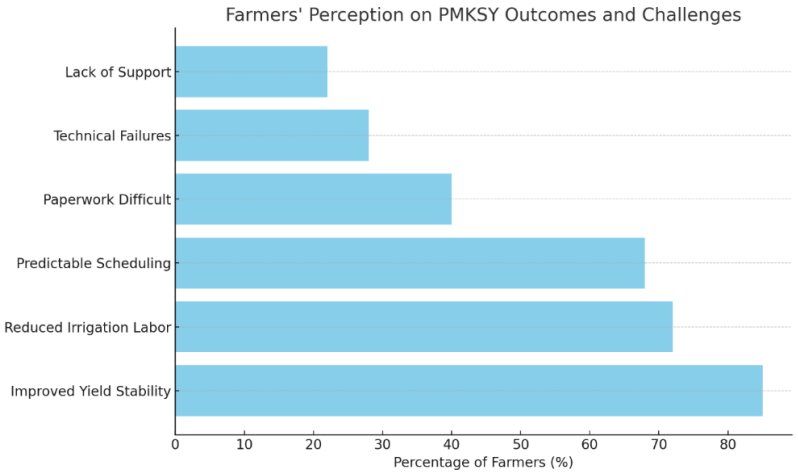
Impact of the Pradhan Mantri Krishi Sinchayee Yojana on the production, price structure and income of groundnut farmers per hectare can be elaborated as follows:

1. **Production:** The post-implementation analysis of PMKSY reveals a statistically significant increase in groundnut production per hectare from 15 quintal to 20 quintal. This indicating a positive impact of the scheme on agricultural productivity. The observed increase in output may be attributed to improved irrigation coverage, enhanced water-use efficiency through micro-irrigation techniques, and better scheduling of agronomic operations. The reduction in irrigation and labour costs, as evidenced by the input cost analysis, further supports the hypothesis that PMKSY interventions have led to more efficient resource allocation and enhanced crop performance.
2. **Irrigation Cost Efficiency**: The average irrigation expenditure for PMKSY beneficiaries is ₹7,800 per hectare, significantly lower than the pre-intervention level of ₹9,700. This 19.6% reduction indicates that PMKSY interventions—particularly micro-irrigation systems—have enhanced water-use efficiency, reduced groundwater

extraction costs, and improved irrigation infrastructure at the farm level.

3. **Reduction in Labour Expenses**: Labour cost per hectare has declined from ₹9,800 (pre-PMKSY) to ₹8,600 for beneficiaries, a 12.2% decrease. This points to enhanced operational efficiency, likely due to better water availability leading to optimal scheduling of farm operations and possibly greater use of labour-saving technologies.
4. **Seed Cost Neutrality**: Seed costs remain constant at ₹6,000 per hectare for both beneficiary and pre-scheme conditions. This suggests that PMKSY does not directly influence the seed input market and that price or quantity of seed use remains independent of irrigation-based interventions.
5. **Marginal Rise in Machinery Expenditure**: An observed increase in machinery-related costs from ₹4,100 to ₹4,900 (a 19.5% rise) among beneficiaries may be interpreted as a shift toward mechanized operations. This increase likely reflects positive behavioural change among farmers adopting precision farming or water-efficient technologies, which entail initial capital expenditure.
6. **Overall Input Cost Dynamics**: While total costs exhibit reallocation—decreasing in water and labour but increasing slightly in machinery—the net effect indicates improved resource-use efficiency. These dynamics are favourable to enhancing net farm income and sustainability.

Farmers Perception on PMKSY Outcomes and Challenges:



The perception analysis indicates that a significant majority of farmers positively evaluated the outcomes of PMKSY interventions. Specifically, 85% of farmers reported enhanced yield stability, reflecting the effectiveness of improved irrigation access in mitigating climatic variability. Labor efficiency gains were noted by 72% of respondents, likely due to the shift from manual to mechanized irrigation methods like drip and sprinkler systems. Predictable irrigation scheduling, appreciated by 68%, underscores the role of micro-irrigation in enhancing crop planning and reducing uncertainty. However, 40% of farmers faced difficulties with paperwork and subsidy disbursement, pointing to procedural inefficiencies in the implementation phase. Additionally, 28% encountered technical malfunctions, and 22% lacked post-installation maintenance support, revealing critical service delivery gaps. These negative perceptions suggest that while PMKSY has delivered agronomic benefits, its long-term success is contingent on robust institutional mechanisms for training, support, and grievance redressal. Bridging these gaps will be essential to maximize adoption and sustained usage of PMKSY technologies across rural India.

Suggestions:

Based on the above analysis and findings the following suggestions are recommended to improve the Pradhan Mantri Krishi Sinchayee Yojana in the study area.

1. Capacity Building Intervention: Propose structured extension services through KVKs and NGOs to improve the dissemination and adoption of PMKSY technologies among farmers.
2. Administrative Process Optimization: Recommend digital transformation of subsidy application and disbursal procedures to enhance efficiency, transparency, and beneficiary access.
3. Technical Support Infrastructure: Advocate for the creation of decentralized, district-level maintenance units to ensure timely repair and servicing of irrigation infrastructure.
4. Collective Resource Management: Suggest the development of community-based water management systems such as shared farm

ponds and recharge structures to foster participatory water governance.

5. Impact Assessment Mechanism: Recommend the deployment of a real-time, GIS-enabled monitoring and evaluation (M&E) dashboard to measure scheme effectiveness at micro-cluster levels.

Conclusion

The study finds that PMKSY has significantly improved groundnut production, both in terms of production and price, in Vijayanagara district. Economic returns have increased despite modest cost escalation, validating the scheme's relevance for semi-arid oilseed cultivation. High adoption of irrigation technologies shows the success of PMKSY's reach. However, low training participation and reported implementation issues highlight areas for policy and administrative strengthening.

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Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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