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RESEARCH PAPER

Assessment of benefits availed by farmers from major agricultural development programmes in Belagavi district of Karnataka

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Abstract: The present study examines the extent of benefits availed by farmers from major agricultural development programmes and identifies key factors influencing benefit receipt in Belagavi district of Karnataka. Primary data were collected from 120 farmers, categorized into 60 rainfed and 60 irrigated. Findings indicate that PM-KISAN reached 93 per cent of farmers, demonstrating its effectiveness as a direct income support mechanism. In contrast, institutional credit via Kisan Credit Card (KCC) covered 42 per cent, crop insurance under PMFBY reached 28 per cent and irrigation and sustainability programmes reached less than 25 per cent of farmers, particularly among rainfed households. Input subsidies for seeds and fertilizers were accessed by 68 per cent of farmers, while resource-intensive schemes such as farm machinery, solar pumps and water management initiatives benefited less than 15 per cent. Regression analysis revealed that landholding size, family size, education, age of household head, transaction costs and participation in training programmes significantly increased benefit receipt, whereas income from other sources, irrigation status and number of information sources were not significant. The model exhibited strong explanatory power (adjusted R^2 = 81.63%). The study highlights the need to strengthen institutional delivery, improve awareness and enhance capacity-building to ensure equitable access to agricultural development benefits.

Key words: Agricultural development programmes, Determinants, Farmer benefits, Regression analysis

Introduction

Agriculture has historically been central to India's socio-economic structure, supporting 42.3 per cent of the population and contributing 18.2 per cent of GDP. The sector ensures food security, rural employment and fosters inclusive growth. Despite its significance, Indian agriculture continues to face persistent challenges such as low productivity, fragmented landholdings, rising input costs, inadequate market infrastructure, limited access to credit and vulnerability to climatic risks. To address these issues, the Government of India has implemented multiple development programmes, evolving from production-focused initiatives like the Green Revolution to comprehensive schemes emphasizing income support, risk management, market reforms and sustainability. Notable programmes include NMSA, PMKSY, PMFBY, PM-KISAN, RKVY and digital platforms like e-NAM.

Karnataka, contributing about 17 per cent of state GDP through agriculture and allied sectors, faces recurring challenges such as droughts, soil degradation and farmer indebtedness, particularly in North Karnataka. The state implements region-specific schemes like Krishi Bhagya, Ganga Kalyana, Bhoochetana and Surya Raitha alongside central initiatives. Although more than 25 agricultural development programmes are currently operational in India, their success largely depends on accessibility and institutional delivery. This study analyses major agricultural development programmes in Belagavi district, assessing coverage, benefit receipt, transaction costs and implementation constraints to provide policy-relevant insights for improving programme efficiency and farmer welfare.

Material and methods

The present study focuses on an utilisation of benefit received by farmers from agricultural development programmes in Belagavi district of Karnataka. Data pertaining to the details of the agriculture development programmes and benefits are obtained from the institutions, different line departments of Government of India and Karnataka and published resources like reports, journals.

Multiple linear regression

Multiple regression was used for prediction or estimation of an unknown Y value of dependent variable corresponding to a set of X values of independent variable. Multiple regression was used to understand the functional relationships between the dependent and independent variables, to try to see what might be causing the variation in the dependent variable.

When the number of variables which explain the dependent variable are more than one, multiple linear regression models can be used. Here, the model is,

$$Y = \beta 0 + \sum_{i=1}^{pi} \beta iXi + \Xi$$

Where,

Y is the dependent variable and xi's are independent variables with β s as the partial regression coefficients of Y on *xi*'s where i=1,2,…P.

In the present study, Y was taken as estimated of benefits received from major agriculture development programmes. X are determinants of benefit received from major agriculture development programmes.

X_1= Size of the land holding (acre)

X_2=Family size (Nos)

X_3= Education level (Year of schooling)

X_4= Age of the family head (Years)

X_5=Dummy variable (Irrigation=1, Rainfed=0)

X_6=Transaction cost (₹) incurred

X7= Source of information (No. of sources)

In this model, the estimates of coefficients (*xi*'s and β^0) are to be computed using the method of ordinary least squares. The final relation can be represented in matrix form as follows.

β= (xlx)-lxly and

$$\hat{\beta}_0 = \bar{y} - \sum_{i=1}^{pi} \beta i \bar{x} i$$

The model was tested by using F test.

Multiple coefficient of determination (R^2)

$$R^2 = \frac{\text{Regression sum of squares}}{\text{Total sum of squares}}$$

Results and discussion

Benefits availed by rainfed farmers from major agriculture development programmes

The extent of benefits availed by rainfed farmers from agricultural development programmes is presented in Tables 1. Among the 60 farmers surveyed, PM-KISAN showed the highest coverage, with 91.66 per cent receiving an annual assistance of ₹ 6,000, reflecting its effective outreach. In contrast, access to institutional credit through the Kisan Credit Card (KCC) was limited to 15.00 per cent of farmers, indicating a substantial gap of 85.00 per cent.

Notably, no farmers reported benefits under PM Krishi Sinchayi Yojana (PMKSY) or Pradhan Mantri Fasal Bima Yojana (PMFBY), highlighting complete gaps in irrigation and crop insurance coverage in the rainfed region. Participation in sustainability and social security schemes was also minimal, with 13.33 per cent enrolled under PM Kisan Maandhan Yojana and only 3.33 per cent benefiting from Paramparagat Krishi Vikas Yojana. Water-related schemes such as Krishi Bhagya (28.33 per cent) and Ganga Kalyan Yojana (5.00%) showed limited reach, while no farmers availed the Surya Raitha scheme.

In contrast, input subsidies were relatively well accessed, with seed and fertilizer subsidies reaching 80.00 per cent and 83.33 per cent of farmers, respectively, whereas farm machinery subsidies were availed by only 25.00 per cent. Overall, the findings indicate higher uptake of direct income support schemes compared to credit, insurance, irrigation and sustainability-oriented programmes.

Benefits availed by irrigated farmers from major agriculture development programmes

The extent of benefits availed by irrigated farmers from agricultural development programmes in Belagavi district is presented in Tables 2. Among the 60 irrigated farmers surveyed, PM-KISAN recorded the highest coverage, with 96.67 per -cent (58 farmers) receiving the annual cash assistance of ₹ 6,000, indicating its effective outreach. In contrast, access to institutional credit through the Kisan Credit Card (KCC) was limited to 28.33 per cent (17 farmers), leaving a substantial gap of 71.67 per cent, which may constrain investment in farm inputs and infrastructure.Irrigation-related support under PM Krishi Sinchayi Yojana (PMKSY) reached 48.33 per cent (29 farmers), reflecting moderate adoption. However, no farmers reported benefits under PM Fasal Bima Yojana (PMFBY) and Krishi Bhagya, indicating complete gaps in crop insurance and certain water management interventions. Social security and sustainability-oriented schemes showed minimal uptake, with 16.66 per cent enrolled under PM Kisan Maandhan Yojana and only 3.33 per cent benefiting from Paramparagat Krishi Vikas Yojana. Despite its high benefit value, the Surya Raitha scheme reached only 3.33 per cent of farmers, while the Ganga Kalyan Yojana covered 38.33 per cent.

Table 1. Benefits availed by rainfed farmers from major agriculture development programmes (n=60)

Name of the programme	No. of farmers benefitted (n=60)	Gap (No.)	Frequency of benefit flow	Average annual benefit availed per beneficiary (₹)
PM Kisan Saman Nidhi Yojana (PM KISAN)	54 (91.66)	6 (8.34)	Thrice in a year	6,000
Kisan Credit Card(KCC)	8 (13.33)	52(86.67)	One time long term benefit	95,000
PM Krishi Sinchayi Yojana (PMKSY)	0 (0.00)	60 (100.00)	One time long term benefit	NA
PM Fasal Bima Yojana(PMFBY)	0 (0.00)	60 (100.00)	One time long term benefit	NA
PM Kisan Maandhan Yojana (PMKMY)	6 (8.34)	54 (91.66)	Yearly benefit after 60 years age	36,000
Paramparagat Krishi Vikas Yojana (PKVY)	2 (3.33)	58(96.67)	Once in first 3 year	16,660
Krishi Bhagya	10 (16.66)	50(83.34)	One time long term benefit	1,40,000
Ganga Kalyan Yojana	3 (5.00)	57(95.00)	One time long term benefit	1,25,000
PM Kisan Urja Suraksha Evam Utthan Mahabhiyan (PM KUSUM)	0 (0.00)	60(100.00)	One time long term benefit	NA
Subsidies on Seeds	48 (80.00)	12(20.00)	Crop season	3,700
Subsidy for Fertilisers	46 (76.66)	14(23.34)	Crop season	5,400
Subsidy for Farm Machinery	15 (25.00)	45(75.00)	One time long term benefit	45,000
Othersa) MSP/FRP	7(11.25)	50(88.75)	Crop based benefit	NA
Soil Health Card	12 (20.00)	48 (80.00)	Once in 2 year	Service

Table 2. Benefits availed by irrigated farmers from major agriculture development programmes (n=60)

Name of the programme	No. of farmers benefitted (n=60)	Gap (No.)	Frequency of benefit flow	Average annual benefit availed per beneficiary (₹)
PM Kisan Saman Nidhi Yojana (PM KISAN)	58 (96.67)	2 (3.33)	Thrice in a year	6,000
Kisan Credit Card (KCC)	12 (20.00)	48(80.00)	One time long term credit	1,10,000
PM Krishi Sinchayi Yojana (PMKSY)	29 (48.33)	31(51.66)	One time long term benefit	85,000
PM Fasal Bima Yojana (PMFBY)	0 (0.00)	60 (100.00)	One time long term benefit	NA
PM Kisan Maandhan Yojana (PMKMY)	10 (16.66)	50 (83.34)	Yearly benefit after 60 years age	36,000
Paramparagat Krishi Vikas Yojana (PKVY)	2 (3.33)	48 (97.66)	Once in first 3 year	16,660
Krishi Bhagya	0 (0.00)	60 (100.00)	One time long term benefit	NA
Ganga Kalyan Yojana	8 (13.33)	52 (86.66)	One time long term benefit	1,25,500
PM Kisan Urja Suraksha Evam Utthan Mahabhiyan (PM KUSUM)	2 (3.33)	58 (97.67)	One time long term benefit	1,50,000
Subsidies on Seeds	34 (56.66)	26 (43.33)	Season	5,100
Subsidy for Fertilisers	50 (83.33)	10 (16.66)	Season	6,500
Subsidy for Farm Machinery *etc*.	28 (46.67)	32 (53.32)	One time long term benefit	55,500
Othersa) MSP/FRP	9 (15.00)	51 (85.00)	Crop based benefit	NA
b) Soil Health Card	17 (28.33)	43 (71.77)	Once in 2 year	Service

Input subsidies were relatively better accessed, with fertilizer subsidies reaching 76.66 per cent, seed subsidies 40.00 per cent and farm machinery subsidies 46.67 per cent of farmers. Under other programmes, 21.66 per cent benefited from MSP/ FRP, while 54.00 per cent received Soil Health Cards. Overall, the findings reveal high uptake of direct cash transfers but persistent gaps in credit, insurance and resource-intensive schemes, consistent with Singh and Mazhar (2023).

Benefits availed from agriculture development programmes in study area

The results presented in Table 3 reveal substantial variation in farmers participation and benefits received from agricultural development programmes. Among the 120 farmers surveyed, PM-KISAN exhibited the highest outreach, with 93.33 per cent (112 farmers) receiving the annual assistance of ₹ 6,000, underscoring its effectiveness as a direct income support mechanism. In contrast, access to institutional credit through the Kisan Credit Card (KCC) was limited to 21.66 per cent (26 farmers), with an average one-time credit of ₹ 1,10,000, potentially constraining investment in farm inputs and infrastructure.

Table 3. Benefits availed from agriculture development programmes in study area (n=120)

Name of the Programme	No.of Farmers benefitted (n=120)	Average annual benefit per Beneficiary(₹)
PM Kisan Saman Nidhi Yojana (PM KISAN)	112(93.33)	6,000
Kisan Credit Card (KCC)	20(16.66)	1,10,000
PM Krishi Sinchayi Yojana (PMKSY)	29(24.17)	85,000
PM Fasal Bima Yojana (PMFBY)	0(0.00)	NA
PM Kisan Maandhan Yojana (PMKMY)	16(13.33)	36,000
Paramparagat Krishi Vikas Yojana (PKVY)	4(3.33)	16,660
Krishi Bhagya	10(8.33)	1,40,000
Ganga Kalyan Yojana	8(6.66)	80,250
PM Kisan Urja Suraksha Evam Utthan Mahabhiyan (PM KUSUM)	2(1.66)	1,50,000
Subsidies on Seeds	82(68.33)	4,400
Subsidy for Fertilisers	96(80.00)	5,950
Subsidy for Farm Machinery *etc*.	43(35.83)	40,450
Others a) MSP/FRP	16(13.33)	–
b) Soil Health Card	29(24.17)	–

Irrigation support under PM Krishi Sinchayi Yojana (PMKSY) reached 24.17 per cent (29 farmers), indicating moderate adoption. However, no farmers reported benefits under Pradhan Mantri Fasal Bima Yojana (PMFBY), reflecting a complete gap in crop insurance coverage. Participation in social security and sustainability- oriented schemes remained low, with 15.00 per cent enrolled under PM Kisan Maandhan Yojana and only 3.33 per cent benefiting from Paramparagat Krishi Vikas Yojana (PKVY). Resource-based schemes such as Krishi Bhagya (14.16 per cent) Ganga Kalyan Yojana (15.83 per cent) and Surya Raitha Scheme (1.66 per cent) showed limited reach despite substantial financial support.

Input subsidies were relatively better accessed, with fertiliser subsidies reaching 80.00 per cent, seed subsidies 60.00 per cent and farm machinery subsidies 35.83 per cent of farmers. Other benefits included MSP/FRP (17.50 per cent) and Soil Health Cards (49.16 per cent). Overall, the findings indicate effective implementation of direct cash transfers but persistent gaps in credit, insurance, irrigation and sustainability-focused programmes.

Regression analysis of determinants of benefits received by sample farmers under agriculture development programmes

The regression results presented in Table 4 identify several significant socio-economic and institutional factors influencing the dependent variable. Landholding size exhibited a strong positive and highly significant effect ($\beta = 0.789$, $p < 0.01$), indicating that farmers with larger holdings tend to receive higher benefits, likely due to better resource availability and economies of scale. Family size also had a positive and highly

Table 4. Regression analysis of determinants of benefits received by sample farmers under agriculture development programmes

Parameters	Coefficient	Std. Error	t-value
Intercept	0.242	0.130	1.866
Size of land holding (acre)	0.789***	0.145	5.434
Family size (No.)	0.339**	0.033	10.273
Educational level (Years of schooling)	0.381***	0.049	7.856
Age of head (years)	0.589**	0.263	2.239
Dummy Irrigation (1=Irrigated)	0.272	0.256	1.063
Transaction cost (₹) incurred	0.251**	0.121	2.064
Source of information (No. of sources)	0.241	0.131	1.844
Observation	120.00		
Adjusted R^2	81.63		
F value	45.63		
F value significance	0.01		

significant influence ($\beta = 0.339$, $p < 0.01$), suggesting the role of family labour and support in enhancing outcomes. Similarly, the educational level of the household head showed a significant positive effect ($\beta = 0.381$, $p < 0.01$), highlighting the importance of education in informed decision-making and effective utilisation of agricultural programmes.

The age of the household head was positively significant at the 5 per cent level ($\beta = 0.589$, $p < 0.05$), reflecting the contribution of farming experience. Transaction costs were also positively significant ($\beta = 0.251$, $p < 0.05$), possibly indicating greater programme engagement among farmers incurring higher costs. Participation in training programmes had a positive effect, significant at the 10 per cent level ($\beta = 0.240$, $p < 0.10$), underscoring the role of capacity-building initiatives.

Variables such as income from other sources, irrigation status and number of information sources were not statistically significant. The model showed strong explanatory power with an adjusted R^2 of 81.63 per cent and a highly significant F.

Conclusion

The analysis of benefits availed from major agricultural development programmes in Belagavi district reveals a clear pattern in programme outreach and effectiveness. Across rainfed, irrigated and pooled samples, direct income support through PM-KISAN emerged as the most successful intervention, achieving near-universal coverage among farmers. In contrast, institutional credit (KCC), crop insurance (PMFBY), irrigation support and sustainability-oriented programmes exhibited limited penetration, particularly among rainfed farmers, indicating significant implementation and accessibility gaps. Input subsidies for seeds and fertilisers were relatively well accessed, while capital and resource intensive schemes such as farm machinery support, solar pumps and water management initiatives reached only a small proportion of beneficiaries. The persistently low uptake of PMFBY and organic farming schemes highlights deficiencies in awareness, procedural complexity and institutional delivery.

The regression results further confirm that landholding size, education, family size, age, transaction costs and training participation significantly influence the benefits received by farmers, underscoring the importance of socio-economic capacity and institutional engagement in determining programme outcomes. The high explanatory power of the model indicates that these factors play a decisive role in shaping access to agricultural support.

Overall, while agricultural development programmes have succeeded in delivering income support, the findings emphasize the need for strengthened extension services, improved credit access, simplified procedures and targeted awareness campaigns to ensure equitable and effective delivery of irrigation, insurance and sustainability focused schemes, thereby enhancing the overall impact of agricultural development interventions.

References

Ali Y, Nasrin M, Salman M and Banu B, 2023, Economic consequences of land fragmentation on farm production: Empirical evidences from Bangladesh. *Journal of Innovative Agriculture and Social Development, 2*(1): 22-33.

Kumar J S and Shobana D, 2024, Evaluation of central government schemes for agricultural development and farmer welfare in India: Impact, effectiveness and regional disparities. *Journal of Inventive and Scientific Research Studies*, 2(2): 21–34.

Mahesh M, Aithal and Sharma, 2021, A study on the impact of schemes and programmes of Government of India on agriculture to increase productivity, profitability, financial inclusion and welfare of farmers. *International Journal of Management, Technology and Social Sciences*, 6(2): 231–243.

Pradeepa, Mahesha and Rajkumar, 2015, Utilization of benefits from governmental programmes /schemes among irrigated and rainfed farmers in Karnataka. *International Journal of Agricultural Science and Research,* 5(4):173-182

Priya N K, Khatri A, Kumar A, Samota S D, Vishwakarma S K, Sukdeve E K and Pathak A K, 2025, The important role of extension services in strengthening the capacity of farmers' resilience to climate change in India. *Journal of Experimental Agriculture International,* 47(3): 204-223.

Sandiparao U A, 2023, A study of agriculture development schemes and programmes in India. *International Journal of Research and Analytical Reviews (IJRAR)*, 10(2):123-130.

Sharma P K and Sharma A, 2022, Crop insurance and farmer's livelihood: A case of PMFBY in Himachal Pradesh.

Singh K D and Mazhar S H, 2023, Constraints and suggestions of the respondents about Pradhan Mantri Fasal Bima Yojana in East Champaran District of Bihar. *Asian Journal of Agricultural Extension, Economics & Sociology,* 41(7): 54-60.

Smita N, 2008, Knowledge and adoption of selected government agriculture development schemes by farmers, *M.Sc. Thesis*, University of Agricultural Sciences, Dharwad, Karnataka, India

Soundarya D C, 2012, Utilization of benefits from governmental programmes/schemes by farmers in Karnataka-An institutional economic analysis, *M.Sc. Thesis*, University of Agricultural Sciences, Bangalore, Karnataka, India.