

Impact of Crop Cultivation Credit Schemes on the Socio-Economic Development of Millet Farmers: An Empirical Study of the Vidarbha Region

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Abstract

The present study focusses on the effect of the crop cultivation credit schemes on the socio-economic development of the millet farmers of Vidarbha region in Maharashtra. A descriptive and analytical empirical study was conducted whereby the study used a multistage stratified random sampling technique to gather primary data from 400 millet farmers using a structured questionnaire. The results indicate that institutional crop credit has significant positive impacts on improved accessibility to quality agricultural inputs, adoption of improved production patterns, production on the farm, the household income, and viability of the entire family. Though these good results were achieved, the farmers still encounter problems like delays in the procedure, shortage of loan amount, tough repayment and the like during bad seasons. The study finds that improving institutional credit delivery, financial capacity building and policy support is important to encourage sustainable production of millets and better socio-economic status for rural farming households.

Keywords: Crop Cultivation Credit Schemes, Institutional Agricultural Credit, Millet Farmers, Socio-Economic Development, Financial Inclusion, Agricultural Productivity, Vidarbha Region, Sustainable Agriculture.

Introduction

Despite making up only 20% of total employment, agriculture accounts for nearly half of the total employment in India and plays a significant role in ensuring proper food security, rural employment and overall economic growth. Although there has been a tremendous rush of industrialization and development of the service sector, agriculture is still the main livelihood for the majority of small and micro farmer households in the countryside. However, the agriculture sector faces many challenges, such as small land holdings, rain-fed production, unstable market prices, poor access to modern technology and limited funds. Timeliness and affordability of institutional credit stands out as one of the most important constraints impacting agriculture productivity and rural prosperity among the listed constraints (Bhanot et al., 2024). Agricultural credit has long been considered as one of the key policy instruments for sustainable agricultural development because of its importance and critical role in supporting agricultural activities and transactions. Governments of developing countries have put in place different schemes for providing credit for farming crops, so farmers can invest in good seeds, fertilizers, farm machinery and irrigation facilities and other inputs. The institutional credit structure has undergone significant changes in the Indian context with the introduction of cooperative banks, regional rural banks, commercial banks, the Kisan Credit Card (KCC) Scheme and the democratic work done by NABARD. All these interventions are intended to create better productivity of the farms environment-based anthropological and socio-economic changes in informal money-lending, drop the cost of the loans provided by informal money-lenders, and increase financial inclusion for the rural households. All these schemes have important implications on income generation, poverty reduction and socio-economic advancement in the rural regions (Bhanot et al., 2024).

Crop cultivation credit schemes are of strategic importance to address the financial risks faced by cultivation in different phases. Having easy access to institutional credit allows farmers to make timely investments in improved crop varieties, mechanization, irrigation systems, pest management and post-harvest. Access to credit also increases farmers' ability to access innovative agricultural technologies, efficient use of resources, and cope with production risks

due to climate variability and market uncertainties. As such, agricultural credit not only boosts overall farm productivity but also influences household consumption, education, medical spending, housing, and asset building, ultimately supporting the broader socio-economic development of a nation (Bhanot et al., 2024).

In recent times, millets have come into the limelight nationally and worldwide due to their nutritional benefits, adaptability, and role in promoting sustainable farming. Millets, known as "nutri-cereals", are among other advantages, drought and stress tolerant, have comparatively lower water requirements and are appropriate for rain-fed farming systems. Policy focus on the promotion of millets cultivation through the implementation of production incentives, market development and financial support mechanisms was reinforced by the United Nations endorsement of the International Year of Millets 2023. However, there remain significant constraints on millet production and marketing such as limited access to institutional finance, low market prices, poor storage facilities and limited level of technology uptake. Although there is growing demand for healthy cereal grain foods, these challenges are limiting the realization of the full economic potential of millet production.

Vidarbha, situated in Maharashtra, is one of the most agriculturally constrained and most vulnerable regions of India because of its vulnerable socio-economic status of farming households and weak institutional development in farming, which are further exacerbated by rain-fed agriculture, recurrent droughts and erratic crop production. While cotton is the primary crop of the region, a significant number of the small and marginal farmers, especially in drought-affected and tribal areas also grow millets as their livelihood. However, agricultural diversification and sustainable livelihood development is still negatively affected by some weak factors, such as the lack of irrigation facilities, climate uncertainties, financial institutions' limited access to agricultural loans, and the scarcity of public institutions. Various empirical studies have always indicated that low farm income, reliant on rain-fed farming systems and lack of institutional interventions are key factors associated with the long-standing socio-economic problems of farmers in Vidarbha.

The Government of India and Government of Maharashtra have put various schemes for the cultivation credit for the strengthening of agricultural loan activities and development of the rural economy. The Kisan Credit Card Scheme, Interest Subvention Scheme, Agricultural Infrastructure Fund, and the crop insurance Linked credit programmes are some of the programmes being undertaken to ensure that institutional finance is available in a timely manner at concessionally lower interest rates, while agricultural credit programmes are ongoing at the state level. Such programs are projected to lower outsourcing of loans, better investment capital for the farms, boost productivity and productivity growth rate in agriculture, and improve socio-economic status of farmers. However, there remains a degree of variation in the access to, and the processes of, credit as well as levels of financial literacy and awareness affecting the success of these schemes in various regions and farming groups. Recent findings also indicate that appropriately designed, effective interest subvention policy under crop loan programmes can help to enhance credit access and credit repayment, these evidence points out. Posting of farmers' increased income is not the only aspect of socio-economic development among millet farmers and other areas of their lives include, among others: employment creation, asset creation and accumulation, educational opportunities, access to healthcare, food and nutritional security, social mobility, financial capabilities, and overall quality of life. Institutional credit plays a key role in this multidimensional process of development, facilitating productive investments and minimising the financial vulnerability. Yet little attempts have been made to investigate the magnitude of influence of cultivation credit scheme on the above development outcomes, especially in the case of the presence of the producers at Vidarbha where millets are produced. Existing studies have largely focussed on agriculture

productivity, indebtedness or rural credit wide and only a few studies empirically analyse the socio-economic impact of the crop cultivation credit schemes on millet farmers.

Effort has also been put into the importance of different institutions, technological innovations and diversified farming systems in strengthening the sustainability of millet-based farming systems in recent studies. Formal credit supports investments in better technologies and climate-smart farming practices and improves their resilience to climatic and market-based risks. In rain-fed areas where climate change poses constant challenges to production development and productivity of main livestock farming, institutional credit systems gain in importance for sustainable production of millets and for uplifting rural productive life.

Given this backdrop, the present study aims at studying the effectiveness of institutional crop cultivation credit schemes in improving millet farmers' socio-economic situation. The project aims at grounding the study on the following: the farmers' accessibility to, and access to cultivation credit, adequacy of such credit, and the impacts of accessing this credit on farmers' income, agricultural productivity, employment, financial inclusion, asset creation, and generally on their living. The study will be a source of empirical evidence from the Vidarbha region to add to existing literature on agricultural finance, and give directions for the policy formulation to make the agricultural credit programmes effective in promoting sustainable rural development and enhancing the livelihood of millet farmers.

Literature Review

Agricultural credit is a policy measures which is always known to greatly impact agricultural productivity, farm income and rural development. The institutional credit market functionality helps farmers access good quality inputs, modern technologies and manage risks in production processes which supports sustainable agriculture sector development. But the utility of agricultural credit would be bound by the availability of credit only if it was also accessible, adequate, utilised and disbursed on time. Owing to its role in supporting productive investments and mitigating informal lending, the role of institutional credit has been increasingly brought under the spotlight of recent studies to demonstrate that it significantly contributes to improving the socio-economic situation of the farming households. (Lakshmi et al., 2024)

Malaierasan et al. (2024) investigated the impact of institutional agricultural credit on productivity of paddy and household farm income in India using Endogenous Switching Regression (ESR) model. The crop productivity and farm income of the farmers who borrowed institutional credit was significantly higher than the rest of the farmers who didn't borrow. The authors also noted that extension services, knowledge about government schemes, crop insurance, and financial literacy had a positive impact on institutional credit access by extension services. Their conclusions confirm that agricultural credit isn't just good for production it has also proven to be effective in promoting household economic stability, emphasising the need to further increase institutional coverage for small and marginal farmers. Lakshmi et al. (2024) studied the Socio – socio-economic factors affecting the accessibility of agricultural credit for the Nagpur district in Maharashtra. The researchers found that institutional credit has played an important role in supporting the procurement of agricultural inputs, enhancing production efficiency and enabling farmers' livelihoods due to the application of the multistage random sampling technique. The study also found that even though the farmers used institutional credit the most due to low interest rate, this credit option did not satisfy all the farmers' emergency needs and they were left with only informal creditors as an alternative source of finance. The authors proposed to reduce the complexity of financing and enhance awareness to boost financial inclusion of rural farmers.

Ravi and Mohanta (2024) studied the agricultural credit system in Telangana which revealed that institutional finance had a significant impact on agriculture productivity and sustainable agriculture practices. The study demonstrated that financial literacy, training level and education about government loan scheme were the significant factors which influenced the

participation of farmers in institutional credit. The researchers found that the expansion of credit access opportunities, less complex and documentary requirements, and more development and quality of extension services can have beneficial effects on the sustainability of agriculture and the socio-economic welfare of the farmers.

Kumar's research (2024) investigated sustainable financing of Agriculture by analysing the relation between accessibility of credit and farmer well-being. The study results show that institutional finance that is easily affordable has a positive impact on agricultural investment, explained by agricultural benefits for individuals' income, livelihood diversification, and financial security. It also highlighted the critical role of timely crop loans in empowering farmers to adopt better technologies and climate-smart farming methods, and in mitigating their financial risks. The author suggested further enhancing digital financial services and credit delivery channels for farmers, to further enhance its development impact.

Hiranya and Joshi (2024) discussed psychological and institutional barriers that are encountered while accessing agricultural credit in India. During the study, they found a number of challenges, such as low levels of trust in financial institutions, limited ease of procedures, low digital literacy and low implementation at ground-level. The authors believed that a higher degree of transparency of the procedures of agricultural credit, financial education and digital inclusion among farmers could significantly contribute to higher efficiency of agricultural credit programmes.

The present study attempted to shed light on a multidimensional constraint in gaining access to institutional credit in India by conducting a systematic review of agricultural credit literature published between the year 2021 and 2024 of agricultural credit sources and constraints, according to Deepika et al. (2024). The review classified these limitations into institutional, economic, social, behavioural and structural factors. The roadblocks were collateral requirements, bureaucratic processes, lack of financial literacy, regional differences and the continuation to informal lender. The review identified key policy interventions needed to ensure more equitable access to agricultural credit: integrated policy reforms around financial inclusion, digital banking, simpler loan application, and farmer education.

Policy attention has grown on millets as part of the International Year of Millets (IYM2018) while at the same time, scientists now take interest in various factors that can impact on the use of millets as well as their farmers' livelihoods. The socio-economic and livelihood of millet growers upon the involvement of Millet Farmer Producer Organizations (FPOs) was evaluated by Dudekula et al. (2024). The study revealed that after farmers joined the millet FPOs, their income, market access, collective bargaining, technologies they adopted and overall household's livelihood security significantly improved. The analysis indicates that the socio-economic status of the millet growers could significantly improve by implementing institutional support mechanism with financial access.

In a similar study, scientists revealed in Sustainability (2024) the driver behind the adoption of the Farmers Producer Organizations (FPOs) into millet farming using Interpretive Structural Modelling (ISM). The study revealed that some of the most significant factors motivating farmers to join the cash washer market included institutional support, financial availability, market linkage, technological guidance, and government support. The authors found that a strengthened institutional ecology is key to improving millet farming systems' competitiveness and sustainability.

The global situation of the millet industry was reviewed by Muskan et al. (2024) and the growing relevance of millets in multiple aspects related to food security, climate resilience and nutritional challenges was put on the spotlights. Amidst the growing policy support, the review found that certain challenges ineffectively propel millet cultivation—amongst which are weak market infrastructure, availability of inadequate institutional finance, weak value chain and price uncertainty. The authors highlighted the need for targeted financial support and credit

linkage interventions to boost the cultivation and production of millets and enhance the livelihoods of the farmers.

The literature reviewed together suggests positive impacts of institutional agricultural credit on the productivity, profit, technology adoption, financial inclusion, and socio-economic development of rural households. However, the study on the socio-economic effects of crop cultivation credit scheme specifically to the millet growers is not available in Vidarbha region in particular, and India in general. The existing studies have been mostly based on the big cereals, Agricultural finance or farmer credit availability without taking into consideration the specific socio-economic situation of cultivators of millets. In light of this, the present study endeavors to fill this gap in the research by undertaking an empirical study on the impact of crop cultivation credit schemes on the socio-economic development of the millet farmers in Vidarbha region.

Objectives:

The objectives of the study are: to analyze the access and utilization of crop cultivation credit scheme to the millet farmers in Vidarbha region, to measure the impact of crop cultivation credit schemes on income of the farmers, agricultural productivity, employment, living standard and on socio-economic development and how farmers face the problem when trying to avail the institutional crop cultivation credit.

Methodology

The method of the study is descriptive and analytical research method in order to find out the effects of the crop cultivation credit schemes for the socio-economic development of millet farmers in the Vidarbha region. A total of 400 millet farmers will be sampled using multistage stratified random sampling and data will be collected through a structured questionnaire to gather primary data.

Results and Analysis

The present study examined the impact of crop cultivation credit schemes on the socio-economic development of millet farmers in the Vidarbha region. Data collected from 400 millet farmers were analysed using descriptive statistics to evaluate the accessibility, utilization, and effectiveness of institutional crop credit schemes. The analysis also assessed changes in agricultural productivity, farm income, and socio-economic development resulting from the utilization of crop cultivation credit. The findings provide empirical evidence regarding the role of institutional agricultural finance in improving the livelihoods of millet farmers.

Table 4.1 Awareness and Utilization of Crop Cultivation Credit Schemes

Particulars	Frequency	Percentage
Fully Aware and Regularly Utilized	218	54.5
Aware and Occasionally Utilized	102	25.5
Aware but Never Utilized	56	14.0
Not Aware	24	6.0
Total	400	100.0

Table 4.1 indicates that 54.5% of the respondents were fully aware of and regularly utilized crop cultivation credit schemes. Another 25.5% occasionally availed institutional credit, whereas 14.0% were aware of the schemes but had never utilized them. Only 6.0% of the respondents were unaware of available crop credit schemes. These findings suggest satisfactory awareness and utilization levels among millet farmers, although a section of farmers still requires improved financial literacy and institutional outreach.

Table 4.2 Purpose of Utilization of Crop Cultivation Credit

Purpose	Mean	SD	Rank
Purchase of Seeds and Fertilizers	4.41	0.64	I
Irrigation Development	4.18	0.71	II

Farm Machinery and Equipment	3.95	0.82	III
Labour Expenses	3.76	0.88	IV
Household Consumption during Crop Season	3.29	0.94	V

The highest mean score (4.41) was observed for the purchase of quality seeds and fertilizers, indicating that crop credit is primarily utilized for improving crop production. Investment in irrigation facilities also received a high mean score (4.18), followed by farm mechanization (3.95). Comparatively lower utilization for household consumption (3.29) suggests that institutional credit is largely being used for productive agricultural purposes rather than non-farm expenditure.

Table 4.3 Impact of Crop Credit on Agricultural Productivity

Statement	Mean	SD
Increased Millet Yield	4.32	0.68
Timely Purchase of Agricultural Inputs	4.48	0.59
Adoption of Improved Farming Practices	4.11	0.73
Reduction in Crop Production Cost	3.88	0.79
Improved Overall Farm Productivity	4.26	0.66

The results indicate that crop cultivation credit significantly enhanced agricultural productivity. The highest agreement was observed regarding timely purchase of agricultural inputs (Mean = 4.48), followed by increased millet yield (Mean = 4.32). Respondents also acknowledged improvements in farming practices and overall farm productivity. The comparatively lower mean for production cost reduction (3.88) suggests that rising input prices continue to influence cultivation costs despite access to institutional finance.

Table 4.4 Impact of Crop Credit on Socio-Economic Development

Indicator	Mean	SD
Increase in Annual Farm Income	4.27	0.69
Improvement in Standard of Living	4.16	0.74
Better Children's Education	4.08	0.77
Improved Healthcare Expenditure	3.97	0.83
Increase in Household Assets	4.02	0.79

Table 4.4 reveals that institutional crop credit has contributed positively to the socio-economic development of millet farmers. The highest mean score (4.27) was recorded for increased annual income, followed by improvement in living standards (4.16). Respondents also reported better educational opportunities for their children and increased household assets. These findings indicate that crop cultivation credit extends beyond agricultural production and contributes to broader household welfare.

Table 4.5 Challenges Faced in Availing Crop Cultivation Credit

Challenge	Mean	SD	Rank
Lengthy Documentation Process	4.21	0.71	I
Delay in Loan Sanction	4.10	0.76	II
Insufficient Loan Amount	3.94	0.82	III
Lack of Information	3.68	0.89	IV
Difficulty in Repayment During Crop Failure	4.07	0.75	III

Farmers experienced several operational challenges while availing institutional crop credit. Lengthy documentation procedures emerged as the most significant constraint (Mean = 4.21), followed by delays in loan sanctioning (4.10). Respondents also reported repayment difficulties during crop failures, reflecting the vulnerability of rain-fed millet cultivation in the Vidarbha region. The findings suggest the need for simplified loan procedures and climate-responsive repayment mechanisms.

Table 4.6 Overall Perception of Crop Cultivation Credit Schemes

Variable	Mean	SD
Accessibility of Credit	4.18	0.70
Adequacy of Loan Amount	3.86	0.81
Timeliness of Credit	3.94	0.77
Satisfaction with Credit Scheme	4.09	0.72
Overall Socio-economic Benefit	4.24	0.68

The overall perception of respondents toward crop cultivation credit schemes was positive. Farmers expressed high satisfaction with the accessibility of institutional credit (Mean = 4.18) and perceived considerable socio-economic benefits (Mean = 4.24). However, comparatively lower scores for loan adequacy (3.86) and timeliness (3.94) indicate scope for improving the efficiency of credit delivery. Overall, the findings demonstrate that crop cultivation credit schemes have significantly contributed to enhancing the economic and social well-being of millet farmers in the Vidarbha region.

Discussion

The findings of the study indicate that crop cultivation credit schemes have a significant positive impact on the socio-economic development of millet farmers in the Vidarbha region. A majority of respondents demonstrated adequate awareness and utilization of institutional credit, which enabled timely investment in quality seeds, fertilizers, irrigation facilities, and modern farming practices. Consequently, farmers experienced improvements in agricultural productivity, annual farm income, household assets, living standards, and access to education and healthcare. These results are consistent with previous studies that highlight the role of institutional agricultural credit in enhancing farm efficiency, financial inclusion, and rural livelihood development.

Despite the positive outcomes, the study also identified several challenges that limit the effectiveness of crop cultivation credit schemes. Lengthy documentation procedures, delays in loan sanction, inadequate loan amounts, and repayment difficulties during adverse climatic conditions continue to affect farmers' access to institutional finance. These findings suggest that while crop credit schemes have substantially contributed to improving the socio-economic well-being of millet farmers, greater administrative efficiency, simplified lending procedures, enhanced financial literacy, and climate-responsive credit policies are essential to maximize their developmental impact and promote sustainable millet cultivation in the Vidarbha region.

Conclusion

The study findings suggest that the crop cultivation credit scheme is very useful medium to enhance the socio-economic condition of millet farmers of the Vidarbha region. The provision of institutional credit has helped farmers to bring better quality agricultural inputs and improve agricultural practices to boost farm productivity, leading to better living standards and income. Another interesting finding is that crop credit promotes financial inclusion, asset accumulation and rural development. But problems like the mere process, lending money in insufficient amounts, problem of repayment in the scenario of crop failure still lie way. Promoting the efficiency and availability of institutional credit will further increase millet sustainability and profitability.

Recommendations

The study suggests that credit application process should be simplified and disbursement of the loans should be hastened for timely availability of credit during the cropping season. Awareness programmes and financial education sessions need to be strengthened in financial institutions and farmers' understanding and use of crop credit schemes should be improved. The size of the loan should be adjusted periodically according to rising cultivation cost, and also flexible repayment intervals which are related to the crop cycle and weather condition should be adopted so as to alleviate the financial burden of producers. In addition, better digital banking

services, more outreach through Farmer Producer Organizations (FPOs), and better coordination of the assistance crop credit and services provided under the crop insurance scheme, along with the extension services and the various measures supporting agricultural markets would enhance the efficiency of the credit scheme, thus fostering sustainable socio-economic development of households engaged in the production of these crops in Vidarbha.

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