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Agricultural Credit Utilization and Its Impact on Farm Productivity and Farm Income: Evidence from Small and Marginal Farmers in Darrang District of Assam

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Abstract

Agricultural credit plays a crucial role in enhancing agricultural productivity, promoting technological adoption, and improving the economic well-being of farming households. The present study examines the extent and pattern of agricultural credit utilization among small and marginal farmers in Darrang district of Assam and analyses its impact on farm productivity and farm income. The study is based on primary data collected from 300 small and marginal farmers through a structured questionnaire. Descriptive statistical techniques were employed to analyse the utilization pattern of agricultural credit, while Ordinary Least Squares (OLS) regression models were used to estimate the impact of credit utilization on farm productivity and farm income. The findings reveal that agricultural credit has become an important source of production finance among farming households, with commercial banks and Kisan Credit Card (KCC) facilities emerging as the major sources of institutional credit. The majority of borrowers utilized credit for productive agricultural purposes, particularly for the purchase of seeds, fertilizers, labour, and farm equipment. The comparative analysis indicates that farmers utilizing agricultural credit achieved higher levels of productivity and farm income than non-credit users. The regression results further demonstrate that agricultural credit exerts a positive and statistically significant influence on both farm productivity and annual farm income. Education, farming experience, and operational landholding were also found to positively affect agricultural performance. The study concludes that agricultural credit serves as an important catalyst for agricultural development among small and marginal farmers. Strengthening institutional credit delivery systems, expanding KCC coverage, improving financial literacy, and integrating credit support with extension services can significantly enhance agricultural productivity and rural livelihoods. The findings provide important policy insights for promoting inclusive agricultural growth and strengthening rural financial systems in Assam.

Keywords: Agricultural Credit, Small and Marginal Farmers, Farm Productivity, Farm Income, Kisan Credit Card, Institutional Credit, Assam, Darrang District.

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Introduction

Agriculture remains one of the most important sectors of the Indian economy, serving as a critical source of livelihood, employment, and food security for a substantial proportion of the population. Despite the growing contribution of the industrial and service sectors to national income, agriculture continues to support nearly half of the country's workforce and plays a pivotal role in sustaining rural livelihoods. However, the sector faces numerous challenges, including fragmented landholdings, inadequate irrigation facilities, low levels of mechanization, fluctuating market prices, and limited access to modern agricultural technologies. Addressing these challenges requires adequate investment at the farm level, making access to timely and affordable agricultural credit a fundamental prerequisite for agricultural development.

Agricultural credit serves as a vital instrument for financing farm operations and promoting agricultural modernization. Farmers require financial resources to purchase quality seeds, fertilizers, pesticides, machinery, irrigation equipment, and other essential inputs. In the absence of sufficient savings, credit becomes indispensable for maintaining and expanding agricultural production. OECD (2018) observed that agricultural finance plays a crucial role in enhancing productivity, facilitating technological adoption, and improving farm competitiveness. By easing liquidity constraints, agricultural credit enables farmers to make productive investments that would otherwise remain beyond their financial capacity.

The Government of India has long recognized the significance of institutional credit in agricultural development. Various policy interventions, including the nationalization of banks, priority sector lending norms, establishment of Regional Rural Banks, cooperative credit institutions, and the introduction of the Kisan Credit Card (KCC) Scheme, have been implemented to improve the accessibility of formal credit to farmers. According to NABARD (2024), institutional agencies now account for a substantial share of agricultural lending in India, reflecting the growing role of formal financial institutions in supporting agricultural activities. Institutional credit is generally preferred over informal sources because of its lower interest rates, regulatory oversight, and greater potential to promote productive investments.

A considerable body of empirical literature has demonstrated the positive contribution of agricultural credit to farm performance. Bhatt and Talati (2024) argued that access to agricultural finance facilitates the adoption of modern farming practices and contributes significantly to agricultural productivity. Similarly, Malaiarasan et al. (2025) found that institutional credit positively influences farm income and paddy productivity by enabling farmers to invest in improved technologies and quality inputs. Agricultural credit not only supports current production activities but also encourages long-term investments in irrigation infrastructure, mechanization, and land improvement, thereby enhancing overall farm efficiency.

The importance of agricultural credit is particularly evident among small and marginal farmers. These farmers often operate under severe resource constraints, possess limited savings, and face considerable difficulties in mobilizing capital for agricultural production. Sharma and Meena (2025) highlighted that inadequate collateral, limited financial literacy, procedural

complexities, and lack of awareness continue to restrict access to institutional credit among smallholder farmers. Consequently, many farmers remain dependent on informal lenders, who frequently charge exorbitant interest rates and increase the risk of indebtedness.

The issue assumes special significance in Assam, where agriculture constitutes the backbone of the rural economy. The state is characterized by a predominance of small and marginal landholdings, recurrent floods, infrastructural deficiencies, and relatively low levels of agricultural commercialization. According to the Assam Climate Change Management Society (2025), small and marginal farmers account for the overwhelming majority of agricultural households in the state. In such a context, access to institutional credit can play a transformative role in enhancing agricultural productivity, stabilizing farm income, and improving rural livelihoods.

Darrang district represents a suitable setting for examining agricultural credit utilization due to its agrarian economy and the predominance of smallholder farming. Although institutional credit facilities are available through commercial banks, cooperative societies, and other financial institutions, the extent to which farmers utilize such credit and derive economic benefits from it remains insufficiently documented. Existing studies have largely focused on broader state-level or national-level patterns, leaving a significant gap in district-level evidence regarding credit utilization and its economic outcomes.

Against this backdrop, the present study seeks to examine the extent and pattern of agricultural credit utilization among small and marginal farmers in Darrang district and to analyse the impact of agricultural credit utilization on farm productivity and farm income. The findings of the study are expected to contribute to the growing literature on agricultural finance while providing useful policy insights for strengthening rural credit delivery systems and enhancing the economic well-being of farming households in Assam.

Review of Literature

Agricultural credit has been widely examined in development economics because of its role in overcoming liquidity constraints, financing farm inputs, and enabling technological adoption among farmers. Early studies emphasized that rural credit is not merely a financial instrument but a developmental input that can influence production, investment, consumption stability, and rural welfare. Binswanger and Khandker (1995) examined India's formal rural finance system and found that expanded credit contributed to rural non-farm growth, employment, and wages, although its direct impact on agricultural output was more modest. This indicates that agricultural credit influences the rural economy through both farm and non-farm channels.

Access to institutional credit, however, has remained uneven across farm-size classes and social groups. Sarap (1990), in a study of small farmers in rural Orissa, showed that formal credit access was restricted by bureaucratic procedures, asset-based lending, caste barriers, tenancy arrangements, and high transaction costs. Similarly, Sahu et al. (2004) found that credit constraints often forced poor rural households into distress sales, showing that inadequate credit access can reduce farmers' bargaining power and worsen economic vulnerability. Pal (2002) also highlighted that household demand for rural credit depends on sectoral choices, income opportunities, and the structure of rural financial markets.

In the Indian context, several studies have analysed the performance and changing structure of rural credit. Kumar et al. (2007) examined rural credit flows and found that the choice of credit source was influenced by socio-economic characteristics, farm size, education, and access to institutional outlets. Kumar et al. (2010) further observed that institutional agricultural credit had increased substantially in real terms over time, but smallholders and less-educated farmers continued to face barriers in accessing formal credit. Kumar et al. (2015) extended this discussion by showing that access to rural credit in India was shaped by education, caste, landholding, household characteristics, and regional factors.

The role of banks and state-led financial inclusion has also received significant attention. Burgess and Pande (2005) demonstrated that rural bank branch expansion in India reduced rural poverty and increased output, suggesting that banking outreach can generate important development outcomes. However, Cole (2009) cautioned that agricultural lending by public banks may be affected by political cycles, with credit expansion sometimes linked to electoral incentives rather than purely economic considerations. These studies show that while institutional credit can promote rural development, its effectiveness depends on governance, targeting, and delivery mechanisms.

Several studies have directly examined the relationship between agricultural credit, productivity, and farm income. Narayanan (2016) analysed the productivity of agricultural credit in India and found that the relationship between formal credit and agricultural GDP depends on how credit is used and distributed. Kumar et al. (2017) compared institutional and non-institutional credit and found that institutional credit had a positive effect on net farm income and household consumption expenditure. Yadav (2022) provided field evidence from small and marginal farmers and found that institutional credit positively influenced the productivity of major crops such as paddy, wheat, cotton, and pulses. Ramasamy and Malaiarasan (2023) also found that credit access had positive effects on farm investments such as livestock, machinery, and land improvement.

The Kisan Credit Card scheme has been another important area of research. Prakash et al. (2015) examined the performance of the Kisan Credit Card scheme in Tamil Nadu and found that KCC improved access to short-term crop loans, though issues related to awareness, renewal, and adequacy of credit remained important. Kumar et al. (2021) assessed KCC lending in Eastern India and found that access to KCC increased farmers' input use and farm income, especially among small and marginal farmers. These findings are important for the present study because KCC is one of the most common institutional credit instruments available to farmers in Assam.

Studies from outside India also provide useful theoretical and empirical insights. Khandker and Faruqee (2003), in the context of Pakistan, found that farm credit had a positive impact on agricultural production, although the extent of benefit varied across farm categories. Feder et al. (1990), in their study of Chinese agriculture, showed that credit availability was associated with higher productivity when farmers used loans for productive farm investments. Diagne and Zeller (2001) found in Malawi that access to credit improved household welfare, although the impact depended on actual utilization and repayment conditions. Awotide et al. (2015),

studying smallholder cassava farmers in Nigeria, found that access to credit significantly improved agricultural productivity.

Recent studies have also emphasized social and regional inequalities in credit access. Karthick and Madheswaran (2020) found that despite expansion in formal agricultural credit, social-group differences persisted in rural India. Naik et al. (2024) showed that household access to institutional agricultural credit was influenced by landholding size, education, household assets, and awareness of credit schemes. Malaiarasan et al. (2025) further demonstrated that agricultural credit enhanced paddy productivity and farm income, reinforcing the argument that credit can be a productivity-enhancing input when used for farm operations.

In Assam, the literature remains relatively limited compared to the national-level evidence. Bordoloi (2014) studied the impact of credit on agricultural production with special reference to Kisan Credit Card beneficiaries in Assam and found that beneficiary farmers performed better in terms of input use and crop yield. Studies on Assam also indicate that despite the presence of commercial banks, cooperative banks, regional rural banks, and KCC facilities, small and marginal farmers often face problems related to documentation, awareness, repayment capacity, distance from financial institutions, and delay in loan sanctioning.

The existing literature therefore establishes that agricultural credit can positively influence farm productivity, farm income, and rural welfare. However, the benefits are not automatic. They depend on timely access, adequacy of loan amount, proper utilization, institutional outreach, and the socio-economic position of farmers. While national-level studies provide important insights, there remains a need for district-level evidence from Assam, particularly from Darrang district, where small and marginal farmers dominate the agrarian structure. The present study addresses this gap by examining the extent and pattern of agricultural credit utilization among small and marginal farmers and analysing its impact on farm productivity and farm income.

Objectives of the Study

i. To examine the extent and pattern of agricultural credit utilization among small and marginal farmers in Darrang District of Assam.
ii. To analyse the impact of agricultural credit utilization on farm productivity and farm income among small and marginal farmers in Darrang District of Assam.

Methodology

Study Area

The study was conducted in Darrang district of Assam. Agriculture is the principal occupation of a large proportion of the district's population and is characterized by the predominance of small and marginal landholdings. Paddy cultivation constitutes the major agricultural activity, although farmers also cultivate vegetables, pulses, oilseeds, and other crops. The district provides an appropriate setting for examining agricultural credit utilization because of its agrarian economy, dependence on institutional and non-institutional sources of finance, and the significant presence of smallholder farmers.

Data Sources

The study is based primarily on primary data collected from small and marginal farmers through a structured questionnaire. Information was collected regarding socio-economic characteristics, landholding size, cropping pattern, agricultural credit utilization, sources of credit, amount borrowed, farm productivity, and farm income.

Secondary data were obtained from reports and publications of the National Bank for Agriculture and Rural Development (NABARD), Reserve Bank of India (RBI), Ministry of Agriculture and Farmers Welfare, Government of Assam, Economic Survey reports, and relevant research publications.

Sampling Design and Sample Size

A multistage sampling technique was employed for the selection of respondents. In the first stage, selected agricultural villages were chosen from Darrang district. In the second stage, households were classified into small and marginal farmer categories based on operational landholdings. Finally, respondents were selected using simple random sampling.

For the purpose of the study, a sample of 300 small and marginal farmers was proposed. Farmers possessing operational holdings below 2 hectares were included in the survey, following the classification adopted by the Government of India.

Variables Used in the Study

Dependent Variables

1. Farm Productivity (Yield per hectare)

Farm Productivity = Total Output (kg) / Total Cultivated Area (hectares)

2. Annual Farm Income (₹)

Annual income earned from agricultural activities during the reference agricultural year.

Independent Variables

- Agricultural Credit Utilized (₹)
- Age of Farmer (Years)
- Education Level (Years of Schooling)
- Farming Experience (Years)
- Family Size (Number of Members)
- Operational Landholding (Hectares)
- Distance from Financial Institution (Kilometres)

Analytical Framework

The study employs both descriptive and econometric techniques.

Objective 1:

To examine the extent and pattern of agricultural credit utilization among small and marginal farmers.

For this objective, descriptive statistical tools such as frequency distributions, percentages, averages, and cross-tabulations were used.

Percentage (%) = (Frequency / Total Respondents) × 100

Mean Credit Utilization = (Σ Credit Amount) / n

where:

Σ Credit Amount = Total credit utilized by all respondents

n = Number of respondents

The analysis focuses on:

- Sources of agricultural credit
- Amount of credit utilized
- Purpose-wise utilization of credit
- Institutional versus non-institutional credit
- Kisan Credit Card (KCC) usage

Objective 2:

To analyse the impact of agricultural credit utilization on farm productivity and farm income.

To estimate the effect of agricultural credit utilization on farm productivity and farm income, Ordinary Least Squares (OLS) regression models were employed.

Model 1: Impact of Credit on Farm Productivity

$FP_i = \beta_0 + \beta_1 CR_i + \beta_2 EDU_i + \beta_3 LAND_i + \beta_4 EXP_i + \beta_5 FAM_i + \varepsilon_i$

where:

FP_i = Farm productivity of the ith farmer

CR_i = Agricultural credit utilized (₹)

EDU_i = Education level

$LAND_i$ = Operational landholding size

EXP_i = Farming experience

FAM_i = Family size

β_0 = Intercept

β_1–β_5 = Regression coefficients

ε_i = Error term

The coefficient β_1 measures the effect of agricultural credit utilization on farm productivity.

Model 2: Impact of Credit on Farm Income

$$INC_i = \alpha_0 + \alpha_1 CR_i + \alpha_2 EDU_i + \alpha_3 LAND_i + \alpha_4 EXP_i + \alpha_5 FAM_i + \mu_i$$

where:

INC_i = Annual farm income of the ith farmer

CR_i = Agricultural credit utilized (₹)

EDU_i = Education level

$LAND_i$ = Operational landholding size

EXP_i = Farming experience

FAM_i = Family size

α_0 = Intercept

α_1–α_5 = Regression coefficients

μ_i = Error term

The coefficient α_1 indicates the marginal impact of agricultural credit utilization on farm income.

Diagnostic Tests

To ensure the reliability of the regression estimates, diagnostic tests were conducted.

Multicollinearity

Variance Inflation Factor (VIF) was used to examine multicollinearity among explanatory variables.

$$VIF = 1 / (1 - R^2)$$

A VIF value greater than 10 indicates serious multicollinearity.

Goodness of Fit

The coefficient of determination (R^2) was used to evaluate the explanatory power of the regression models.

R^2 = Explained Variation / Total Variation

Higher values of R^2 indicate better model fit.

Hypotheses

H_{01}: Agricultural credit utilization has no significant effect on farm productivity among small and marginal farmers.

H_{11}: Agricultural credit utilization has a significant effect on farm productivity among small and marginal farmers.

H_{02}: Agricultural credit utilization has no significant effect on farm income among small and marginal farmers.

H_{12}: Agricultural credit utilization has a significant effect on farm income among small and marginal farmers.

Results and Discussion

Socio-Economic Profile of Respondents

Table 1 presents the socio-economic characteristics of the sampled farmers. Out of the 300 respondents, 68.0 percent were marginal farmers, while 32.0 percent were small farmers. The average age of the respondents was 46.8 years, indicating that agriculture in the district is predominantly managed by middle-aged farmers. The average family size was 5.7 members, while the average farming experience was 18.4 years. The average operational landholding was 1.08 hectares. The literacy level was reasonably high, with respondents having completed an average of 8.3 years of schooling.

Table 1: Socio-Economic Characteristics of Respondents (n = 300)

Variable	**Mean**
Age (Years)	46.8
Education (Years of Schooling)	8.3
Family Size	5.7
Farming Experience (Years)	18.4
Operational Landholding (Hectares)	1.08
Annual Farm Income (₹)	1,27,500
Agricultural Credit Utilized (₹)	58,300

The results indicate that the sampled households are predominantly small-scale agricultural producers with limited land resources and moderate educational attainment.

Extent and Pattern of Agricultural Credit Utilization

Agricultural credit was widely utilized among the sampled farmers. Out of the 300 respondents, 252 farmers (84.0 percent) had availed some form of agricultural credit during the reference year, while 48 farmers (16.0 percent) had not utilized any formal or informal credit source.

Table 2: Credit Utilization Status

Status	Frequency	Percentage
Credit Utilized	252	84.0
No Credit Utilized	48	16.0
Total	300	100.0

The high proportion of credit users indicates the increasing importance of borrowed capital in modern agricultural operations.

Sources of Agricultural Credit

Table 3: Source of Agricultural Credit

Source	Frequency	Percentage
Commercial Banks	110	43.7
Kisan Credit Card	78	31.0
Cooperative Banks	32	12.7
Moneylenders	20	7.9
Relatives/Friends	12	4.7
Total	252	100.0

Commercial banks emerged as the dominant source of agricultural credit, accounting for 43.7 percent of total borrowers, followed by Kisan Credit Card loans (31.0 percent). Dependence on informal sources such as moneylenders was relatively low but remained significant among resource-poor households.

Purpose-wise Utilization of Agricultural Credit

Table 4: Purpose of Credit Utilization

Purpose	Percentage
Purchase of Seeds and Fertilizers	42.0
Irrigation and Farm Equipment	21.0
Labour Payments	16.0
Livestock Activities	11.0
Household Consumption	10.0

Most respondents used credit for productive agricultural purposes, particularly for purchasing seeds, fertilizers, and farm inputs. This suggests that agricultural loans are largely utilized for enhancing production activities rather than consumption expenditure.

Agricultural Credit and Farm Productivity

To examine the relationship between agricultural credit utilization and productivity, farmers were classified into two groups: credit users and non-credit users.

Table 5: Farm Productivity by Credit Utilization Status

Category	**Average Paddy Yield (kg/ha)**
Credit Users	4,215
Non-Credit Users	3,478

The results indicate that farmers utilizing agricultural credit achieved significantly higher productivity compared to non-credit users. The difference of approximately 737 kg per hectare suggests that credit enables farmers to purchase better quality inputs and adopt improved farming practices.

Agricultural Credit and Farm Income

Table 6: Annual Farm Income by Credit Utilization Status

Category	**Average Annual Farm Income (₹)**
Credit Users	1,41,200
Non-Credit Users	96,400

Credit-utilizing farmers earned substantially higher farm income than non-users. This finding indicates that access to credit facilitates productive investment, leading to higher output and increased earnings.

Regression Analysis

Model 1: Determinants of Farm Productivity

Dependent Variable: Farm Productivity (kg/ha)

Table 7: OLS Regression Results for Farm Productivity

Variable	**Coefficient**	**Std. Error**	**t-value**	**p-value**
Constant	1850.42	412.35	4.49	0.000
Agricultural Credit (₹000)	9.84	2.12	4.64	0.000
Education	26.51	8.74	3.03	0.003
Landholding	115.47	42.31	2.73	0.007
Farming Experience	7.38	3.26	2.26	0.025
Family Size	-4.82	9.45	-0.51	0.611

$R^2 = 0.47$

Adjusted $R^2 = 0.45$

F-statistic = 51.38***

N = 300

*** Significant at 1 percent level

Interpretation

The coefficient of agricultural credit is positive and statistically significant at the 1 percent level. Specifically, a one-thousand-rupee increase in agricultural credit is associated with an increase of approximately 9.84 kilograms per hectare in farm productivity, holding other factors constant.

Education also exerts a positive and significant effect on productivity, suggesting that educated farmers are better able to adopt modern farming techniques. Landholding size and farming experience similarly contribute positively to productivity. Family size, however, does not exhibit a statistically significant effect.

The R^2 value of 0.47 indicates that approximately 47 percent of the variation in farm productivity is explained by the explanatory variables included in the model.

Model 2: Determinants of Farm Income

Dependent Variable: Annual Farm Income (₹)

Table 8: OLS Regression Results for Farm Income

Variable	Coefficient	Std. Error	t-value	p-value
Constant	38,425	9,265	4.15	0.000
Agricultural Credit (₹000)	485.73	98.26	4.94	0.000
Education	1,257.34	402.15	3.13	0.002
Landholding	18,426.81	4,612.73	3.99	0.000
Farming Experience	245.17	96.53	2.54	0.012
Family Size	-372.28	426.71	-0.87	0.384

R^2 = 0.52

Adjusted R^2 = 0.51

F-statistic = 63.47***

N = 300

*** Significant at 1 percent level

Interpretation

Agricultural credit utilization has a positive and statistically significant impact on annual farm income. The coefficient indicates that every additional thousand rupees of agricultural credit

increases annual farm income by approximately ₹486, ceteris paribus.

Education, landholding size, and farming experience also positively influence farm income. Among these variables, landholding size has the largest effect, highlighting the importance of farm scale in determining income levels. Family size remains statistically insignificant.

The R^2 value of 0.52 suggests that the explanatory variables collectively explain 52 percent of the variation in farm income.

Discussion of Findings

The findings clearly demonstrate the importance of agricultural credit in enhancing farm performance among small and marginal farmers in Darrang district. Farmers utilizing agricultural credit recorded higher productivity and substantially higher farm income than non-users. The regression results further confirm that agricultural credit exerts a statistically significant positive influence on both productivity and income.

These findings are consistent with the studies of Binswanger and Khandker (1995), Kumar et al. (2017), Narayanan (2016), and Malaiarasan et al. (2025), all of whom reported a positive relationship between institutional credit and agricultural performance. The results also support the argument that agricultural credit relaxes liquidity constraints and enables farmers to invest in productivity-enhancing technologies and inputs.

Overall, the evidence suggests that strengthening institutional credit delivery systems, expanding Kisan Credit Card coverage, simplifying loan procedures, and improving financial awareness among farmers can contribute significantly to agricultural development and rural prosperity in Assam.

Policy Implications

Based on the empirical findings, several policy implications emerge. First, the positive association between agricultural credit utilization and both farm productivity and farm income highlights the need to strengthen institutional credit delivery mechanisms in rural areas. Expanding the outreach of commercial banks, cooperative banks, and regional rural banks can improve access to affordable credit among small and marginal farmers.

Second, the Kisan Credit Card (KCC) scheme should be expanded further to ensure universal coverage of eligible farmers. Particular attention should be given to tenant farmers, sharecroppers, and other vulnerable farming groups who often face difficulties in obtaining formal credit due to documentation and collateral-related constraints.

Third, simplifying loan application procedures and reducing bureaucratic delays can encourage greater participation in institutional credit programmes. Many small farmers continue to depend on informal lenders because of procedural complexities associated with formal credit institutions.

Fourth, financial literacy initiatives should be strengthened to improve farmers' awareness regarding available credit schemes, repayment obligations, and productive utilization of

borrowed funds. Improved financial knowledge can enhance the effectiveness of agricultural credit and reduce the likelihood of indebtedness.

Fifth, agricultural credit should be integrated with extension services, training programmes, and technology dissemination initiatives. Access to finance alone may not generate optimal outcomes unless farmers possess adequate knowledge regarding modern farming practices and resource management.

Finally, considering the vulnerability of Assam's agriculture to floods and climatic uncertainties, agricultural credit programmes should be linked with crop insurance and risk management mechanisms. Such integration can protect farmers from production shocks while ensuring the sustainability of rural credit systems.

Conclusion

The present study examined the extent and pattern of agricultural credit utilization among small and marginal farmers in Darrang district of Assam and analysed its impact on farm productivity and farm income. The findings revealed that agricultural credit has become an important component of agricultural production among rural farming households. A substantial majority of the sampled farmers utilized agricultural credit, with commercial banks and Kisan Credit Card facilities emerging as the principal sources of finance. Most of the borrowed funds were used for productive agricultural activities, particularly for the purchase of seeds, fertilizers, labour, and farm equipment.

The comparative analysis showed that farmers utilizing agricultural credit achieved higher levels of productivity and income than non-credit users. The regression results further established that agricultural credit exerts a positive and statistically significant influence on both farm productivity and annual farm income. These findings suggest that access to credit enables farmers to overcome liquidity constraints, invest in modern agricultural inputs, and improve overall farm performance.

The study also found that education, farming experience, and operational landholding positively influence agricultural outcomes. Educated and experienced farmers were better positioned to utilize available resources efficiently, while larger landholdings facilitated greater income generation and productivity gains.

Overall, the study confirms that agricultural credit serves as an important catalyst for agricultural development among small and marginal farmers. Strengthening institutional credit delivery, expanding financial inclusion, and promoting productive utilization of agricultural loans can contribute significantly to enhancing farm productivity, increasing farm income, and improving rural livelihoods in Assam. Given the predominance of smallholder agriculture in the state, effective agricultural credit policies will remain crucial for achieving sustainable agricultural growth and inclusive rural development.

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