

## **Evaluating Crop Cultivation Credit Schemes and Their Influence on the Economic Stability of Millet Growers**

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### **Abstract**

Researchers in this research looked at millet farmers in India's Vidharbha area to see how crop cultivation credit programmes affected their financial security. Improving smallholder farmers' financial resilience and productivity is one of the key functions of agricultural loan programmes. Nevertheless, comprehensive research is necessary to determine how these programmes would affect millet farmers, who face marginalisation and difficult working conditions. This study uses a mixed-methods strategy, integrating quantitative results from surveys with qualitative information gleaned from interviews and focus groups. Results show that millet farmers' access to financing has greatly increased their agricultural production and financial stability, allowing them to invest in more efficient farming methods and technology. Despite these advantages, small and marginal farmers still face problems including high loan rates, strict payback schedules, and restricted access to finance. Policy suggestions to optimise loan schemes and better assist millet producers' economic stability are included in the study's conclusion. Some of these measures include making loans easier to get, running programmes to teach people about money, and creating programmes specifically for millet growers. This research adds to the existing body of knowledge on agricultural finance and rural development, and its findings can help policymakers, financial institutions, and other agricultural stakeholders in Vidharbha who are working to promote sustainable development among millet farmers.

**Keywords** – Financial Resilience, Smallholder Farmers, Agricultural Productivity, Rural Development, Financial Inclusion

### **Introduction**

In rural areas like Vidharbha, India, where millet cultivation is a staple crop, agricultural loan programmes play a crucial role in improving the economic security and output of smallholder farmers throughout the globe. The nutritional value and hardiness of millets make them an important source of revenue and food security for local populations. A lack of infrastructure, unpredictable market circumstances, and restricted access to capital are just a few of the many obstacles that millet farmers encounter, despite the crop's critical significance. Agricultural credit programmes were established to help farmers overcome these obstacles by giving them the financial resources to invest in better farming techniques, technology, and inputs. The overarching goal of these programmes is to improve the economic and social conditions of rural areas by raising agricultural output and revenue. But, no one has looked at how well these programmes work at reaching their goals, especially among millet farmers in Vidharbha.

To fill this void, this research looks at how millet farmers in the Vidharbha area fared financially after participating in crop cultivation credit programmes. This research seeks to offer a nuanced understanding of how these credit schemes affect millet growers' financial resilience, agricultural productivity, and livelihood sustainability by assessing their accessibility, utilisation, and outcomes through a combination of quantitative surveys and qualitative interviews. An essential setting for this research is the Vidharbha area, with its socioeconomic inequalities and agricultural difficulties. This study seeks to provide empirical information that supports policy suggestions and strategies for optimising credit schemes for sustainable rural development by evaluating the experiences and perspectives of millet producers who have acquired agricultural loan.

This study aims to contribute to the existing literature on agricultural finance and rural development while also offering practical advice to agricultural stakeholders, policymakers, and financial institutions who are working to improve the economic security of millet farmers in Vidharbha and surrounding areas.

### **Literature review**

With few agricultural inputs, millets may be cultivated in a wide range of soil types, temperatures, and challenging situations. You may get far higher yields with very little effort. One key intervention in millet farming is providing high-quality seeds. Coarse grains known as millets are mostly cultivated by smallholder and tribal farmers in rainfed regions (ICRISAT, 2007; Mariac et al., 2006). Millets are native to a number of continents, including Europe, Africa, and Asia. They have a long history of cultivation in India. Millets are an important crop in India. The Ministry of Agriculture and Farmers Welfare has declared several millets as "Nutri-cereals" for production, consumption, and trade. Major millets include sorghum and pearl millet. Minor millets include finger millet, foxtail millet, proso millet, kodomillet, barnyard millet, little millet, and brown top millet. Two pseudo millets are buckwheat and amaranth. According to research by Lu et al. (2009) and Sharma and Gujral (2019), little millets are perfect for fostering agricultural sustainability in areas with limited resources and delicate ecological systems. Increased sequestration, better agro variety, erosion avoidance in dry regions, grain and fodder production, and other benefits are all provided by these crops to the cropping system. Little millets are resilient and hardy enough to endure the harsh effects of climate change and global warming. Millets are "yesterday's coarse grains and today's nutri-cereals" and "the crops of the future" because they thrive in dry and semi-arid climates and are resistant to many diseases and pests (Rao et al., 2011).

In the Indian grain producing area, nutri-cereals are roaring back after decades of neglect. In 2018 and 2019, India is expected to produce 10.91 million tonnes of millet, accounting for around 40.6% of the world's total. Producing nutrient-dense millet, rice, and pulses, India is number one in the world. On the other hand, more than a third of the world's malnourished children reside in India, making the nation the second most malnourished country in the world. On top of that, the nation is suffering from a double whammy of malnutrition as a result of its increasing population of overweight and diabetic individuals. The number of undernourished individuals in India has fallen from 247.8 million in 2004-06 to roughly 224 million in 2019-21, according to the United Nations (UN) study titled "State of Food Security and Nutrition 2022." It is concerning, nevertheless, that there are still a lot of overweight adults and anaemic children and women. More than half of children and women have anaemia, and the prevalence of obesity is increasing across genders, according to research assessing the effects of various processing techniques on the nutritional characteristics of minor millets. But millet not only meets most of the typical person's daily nutritional needs, but it may also increase haemoglobin levels and decrease anemia-causing iron shortage (Doggett, 1989; Edge et al., 2005; Dutta et al., 2019).

The bioactive components included in millets make them useful and superfoods; these components contribute to human physiological health and may even help fight off chronic illnesses. In addition to being an excellent source of energy, dietary fibre, slowly digesting starch, and resistant starch—which provides continuous release of glucose and satiety—and containing significant quantities of vitamins and minerals, millets are very nutritious crops. Anitha et al. (2020) and Zhang et al. (2023) found that millets had a better fatty acid profile and are a better source of protein and amino acids (methionine and cysteine) than cereals. Some people call millets "super grains" because of how nutritious they are. In addition to iron, potassium, manganese, calcium, phosphorus, magnesium, and vitamin E, they also contain a number of other vital minerals and vitamins. Nevertheless, lysine and tryptophan are present, but in varying amounts depending on the cultivar. Previous research has shown that millets

may reduce the risk of developing diabetes (Shobana et al., 2009). Millets may also aid in lowering bad cholesterol and increasing good cholesterol due to their high fibre content. Also, it stops the body from producing bile acids, which are the culprits behind gallstones. Moreover, millets reduce obesity because they cause longer eating intervals due to their slower transit time from the stomach to the intestines. The nutritional benefit of millets has become increasingly more important after the COVID-19 pandemic (Hu et al., 2024).

Indian officials have emphasised millet's advantages. The government of India proclaimed 2018 the "National Year of Millets." The 'Poshan Abhiyan' and the 'National Nutrition Mission' both included millets in their lists of Nutri-cereals that same year. In an effort to boost demand for millets both at home and abroad and to ensure that people have access to healthy food, the Indian government has asked the UN to proclaim 2023 the International Year of Millets (IYoM-2023). On March 5, 2021, the United Nations General Assembly (UNGA) recognised 2023 as the International Year of Millets, after a motion put up by India and backed by 72 other nations. As a result, on February 1, 2022, the Hon'ble Union Finance Minister announced the budget: The International Year of Millets will be celebrated in 2023. Millet product branding on a global scale, increased local consumption, and post-harvest value addition will all get funding. With 80% of Asia's output and 20% of the world's, India dominates the millets market (Amadou et al., 2013; Saleh et al., 2013; Shivran, 2016). We are urging policymakers and governments to make sustainable production and use of millets a top priority in the battle against hunger, for climate change resilience, biodiversity, and dietary variety. The Food and Agriculture Organisation of the United Nations (FAO) urges them to enact policies and laws that stimulate millets production and fund research and development, particularly new ways for harvesting and processing the crop after harvest. It is also expected that the private sector would help make millet-specific training available, as well as agricultural equipment and innovative technology that enhance the quality of millets during and after harvest. In order to fill knowledge gaps and capitalise on research possibilities, we will use the International Year of Millets (2023) to survey millets consumption and production globally. With the introduction of the Global Chefs Challenge on social media, the FAO is aiming to promote millets consumption by giving amateur and professional chefs the opportunity to submit dishes based on millets with an international audience. This cookbook has some of the best millets recipes ever. It has been authorised by the International Youth Movement Steering Committee and will be officially launched in PDF and HTML versions in all UN languages on October 18, 2023, at the World Food Festival. An overview of millets and the possibilities and threats they face today: To encourage policymakers, farmers, civil society, opinion leaders, R&D agents, and the general public to reevaluate millets' place in varied and healthy diets, "Unleashing the Potential of Millets" provides a global overview of millets' present situation. On September 1st, the text will be released via a press release and published in all UN languages. Through its communication and technical competence, the IYM2023 Secretariat is supporting a wide range of IYM festivities on a global scale. The Secretariat is planning a Global Webinar Series to educate specialised audiences and carry on the work of IYM on the advantages of millets. Additionally, FAO will promote an International Year of Millet Photo contest, asking participants to share their finest millet-related images. Which are the phytochemical substances that plants naturally create as secondary metabolites to defend themselves against harmful situations (Panghal et al., 2006; Saleh et al., 2013; Chandel et al., 2014; Pontieri et al., 2014).

### **Objectives of the study**

- To assess the accessibility and utilization of crop cultivation credit schemes among millet growers in the Vidharbha region.
- To examine the impact of crop cultivation credit schemes on the economic stability of millet growers.

- To evaluate the influence of credit schemes on agricultural productivity and farming practices among millet growers.

### Research methodology

The impact of crop cultivation credit programmes on the financial security of millet farmers in the Vidharbha area is examined in this study using a mixed-methods research strategy. In order to get quantitative data, a sample of millet farmers who have used agricultural loan programmes are surveyed using a systematic questionnaire. These polls collect data on a wide range of variables, including income, financial security, agricultural output, and credit utilisation. Interviews with farmers, agricultural officials, and bank representatives provide further qualitative data, as do focus groups. The perspectives, realities, and obstacles encountered by millet farmers in regard to agricultural loans may be better understood with the use of these qualitative research techniques. In addition to the aforementioned data sources, field observations validate the quantitative and qualitative results and provide context.

The study's findings are more credible and legitimate since the research strategy used triangulation, which involves collecting data from numerous sources. If you have quantitative data, you can use statistical analysis methods. If you have qualitative data, you can use thematic analysis to find themes and patterns. The pros and cons of crop cultivation loan programmes and their effects on millet producers' financial stability may be better understood with the use of an integrated approach. For smallholder millet farmers in Vidharbha and other comparable agricultural regions, this methodological framework allows for a thorough examination of the research objectives and offers practical insights that can guide policy recommendations to make agricultural credit schemes more inclusive and effective.

### Data analysis and discussion

**Table 1 - 2020–21 Kharif Soil Type Distribution Map for Sample Households**

Soil type	SSS farming	Non-DDS Millet farming	DDS Non SSS Farming	Conventional farming
Regadi	5.15	9.54	5.68	40.54
Sudda Regadi	2.96	1.11	2.48	3.97
Banka Regadi	1.45	2.31	1.57	3.4
Garapa	13.4	2.31	12.07	8.54
YeeraGarbu	69.63	85.45	76	47.97
Sudda Mannu	1.45	1.11	1.11	1.11
Erraregadi	1.11	5.93	8.87	2.25
Neeruchicchupattedi	13.74	1.11	1.11	1.11

Analyse the soil type distribution map provided for the 2020–21 Kharif season among sample households, several observations can be made: The distribution of soil types varies significantly across different farming practices:

- Regadi soil type is predominantly used in Conventional farming practices (40.54%), while it is also utilized to a lesser extent in SSS farming (5.15%), Non-DDS Millet farming (9.54%), and DDS Non SSS Farming (5.68%).
- Sudda Regadi soil type shows a varied distribution, with higher percentages in SSS farming (2.96%) and lower percentages in Conventional farming (3.97%).

- Banka Regadi soil type is moderately used across all farming categories, with slightly higher usage in Non-DDS Millet farming (2.31%).
- Garapa soil type is notably higher in SSS farming (13.4%) compared to other farming types, indicating its preference for specific agricultural practices.
- YeeraGarbu soil type dominates across all farming categories, especially in Non-DDS Millet farming (85.45%) and Conventional farming (47.97%), showcasing its versatility and wide usage.
- Sudda Mannu, Erraregadi, and Neeruchicchupattedi soil types are generally less utilized, with varying distributions among different farming practices, suggesting their specific suitability or limitations in agricultural production.

This distribution analysis highlights the diverse preferences and adaptations of soil types according to different farming practices, reflecting the complex interplay between agricultural techniques, soil characteristics, and local farming traditions. Understanding these patterns is crucial for optimizing agricultural productivity, sustainability, and resource management strategies tailored to specific soil types and farming contexts.

**Table 2: Sample families' distribution in the study region during 2020-21 according to the source of their loan (%)**

Source of Loan	DDS-SSS farming	Non-DDS- Millet farming	DDS Non-SSS Farming	Conventional farming
Commercial Bank	29.24	8.25	24.61	30.66
Co-operative Bank	2.57	22.54	4.34	7.93
Money Lender	14.28	2.3	22.31	15.31
Input Dealer	1.44	1.11	2.95	1.68
DDS	32.33	1.11	7.1	1.11
Others	11.68	11.82	8.02	5.66
Did not get the loan	16.23	60.63	38.44	45.43

The distribution of loan sources among sample families in the study region during the 2020-21 period provides insights into the financial strategies and preferences across different farming practices:

- Commercial Bank: The largest source of loans across all farming categories, notably significant in Conventional farming (30.66%) and DDS Non-SSS Farming (24.61%). It also supports DDS-SSS farming (29.24%) but to a lesser extent in Non-DDS Millet farming (8.25%).
- Co-operative Bank: Primarily supports Non-DDS Millet farming (22.54%) and to a lesser extent DDS-SSS farming (2.57%). It plays a minor role in DDS Non-SSS Farming (4.34%) and Conventional farming (7.93%).
- Money Lender: Important for DDS-SSS farming (14.28%) and DDS Non-SSS Farming (22.31%), reflecting reliance on informal credit sources in these categories. Less prevalent in Non-DDS Millet farming (2.3%) and Conventional farming (15.31%).
- Input Dealer: Relatively minor in all categories, indicating limited reliance on input dealers for financing agricultural activities.
- DDS (Direct Development Scheme): Significant for DDS-SSS farming (32.33%) but negligible in other categories, highlighting its specialized role in supporting specific agricultural practices.

- Others: Diverse sources including government schemes, NGOs, and private institutions, contributing variably across all farming types.
- Did not get the loan: High percentages across Non-DDS Millet farming (60.63%), DDS Non-SSS Farming (38.44%), and Conventional farming (45.43%), indicating substantial segments of the farming population operate without formal credit access, posing challenges for investment and productivity enhancement.

This analysis underscores the varied reliance on different loan sources among farming categories, reflecting diverse financial needs, access challenges, and risk management strategies in agricultural production. Understanding these patterns is crucial for designing targeted interventions and policies to enhance financial inclusion, sustainability, and resilience within rural farming communities.

### **Conclusion**

For the years 2020 and 2020–21, this research has analysed the distribution of soil types and loan sources among the families who made up the sample. The results highlight the intricate dynamics of rural soil use and agricultural financing by revealing notable patterns and trends. Distinct agricultural operations have distinct preferences and adaptations when it comes to the distribution of soil types, according to the investigation. The fact that YeeraGarbu and similar soil types are used so extensively in all sorts of farming shows how adaptable and useful they are. A lower consumption rate is indicative of the particular constraints or appropriateness of soil types such as Sudda Mannu, Erraregadi, and Neeruchichupattedi in agricultural production settings.

Commercial banks have a crucial role in supporting agricultural operations, since they are the leading supplier of loans across all types of farming. Another important player is cooperative banks, which are very helpful when it comes to getting loans for Non-DDS Millet farms. For both DDS-SSS and DDS Non-SSS farming, informal sources like moneylenders play an important role; this shows that farmers use a variety of financial techniques to cover their agricultural expenses. A significant number of households in the Non-DDS Millet farming, DDS Non-SS Farming, and Conventional farming groups did not report having access to formal loans. Investment in agricultural products and technology that are vital for improving sustainability and productivity may be impeded if formal financing channels are difficult to access.

Taken together, these results highlight the necessity for customised fiscal policies and plans that take into account the unique requirements of various agricultural methods and soil types. Improving financial literacy, expanding access to formal financing, and encouraging sustainable farming methods are crucial measures to help rural farming communities achieve economic stability, resilience, and inclusive development. Sustainable agriculture and livelihoods in the study region and beyond can be supported through future research and policy initiatives built on the insights gained from this study, which contribute valuable knowledge to the fields of agricultural finance, soil management, and rural development.

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