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A Study On Millets (Pearl Millet And Sorghum) Grown In Taranagar Area Of Churu District (Rajasthan)

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Abstract - This study investigates the cultivation, productivity, and social and economic impact of millets grown in the Taranagar region of Churu district, Rajasthan. Millets, known for their drought resistance and nutritional value, play a significant role in the agrarian economy of arid and semi-arid regions like Taranagar. The research focuses on major millet varieties cultivated in the area, such as pearl millet (bajra), and evaluates factors influencing yield, including soil quality, irrigation practices, and traditional versus modern farming techniques. Data was collected through field surveys, farmer interviews, and local agricultural records. The study highlights the adaptability of millets to the region's adverse climatic conditions and their potential to enhance food security, farmer income, and climate resilience. Challenges such as market access, storage infrastructure, and awareness about millet-based diets were also explored. The findings underscore the need for targeted policy support and awareness campaigns to promote millet cultivation and consumption, thereby ensuring sustainable agricultural development in the region.

This study focuses on the cultivation and agronomic performance of two important millet crops—pearl millet (*Pennisetum glaucum*) and sorghum (*Sorghum vulgare*) in arid and semi-arid regions, with an emphasis on their adaptability, nutritional value, and role in sustainable agriculture. Both crops are staple cereals in regions with limited rainfall and poor soil fertility, making them crucial for food security and rural livelihoods. The research examines varietal characteristics, growth conditions, and productivity under traditional and improved agricultural practices. Data was gathered through field trials, farmer surveys, and soil and climatic analysis. Results indicate that both pearl millet and sorghum exhibit strong drought resistance, short growing periods, and significant resilience to pests and diseases. Additionally, their high fiber, protein, and micronutrient content position them as key crops in combating malnutrition. The study concludes that promoting the cultivation of these millets, supported by better market access, extension services, and processing infrastructure, can contribute to climate-resilient and nutrition-sensitive farming systems in dryland areas.

Key words: Pearl millets, Sorghum, Taranagar, Churu, Rajasthan.

Introduction: Millets often referred to as "nutri-cereals," have gained renewed interest in recent years due to their resilience to adverse climatic conditions and their significant nutritional value. These ancient grains are particularly well-suited to arid and semi-arid regions, making them an essential crop for ensuring food security and sustainable agriculture. The Taranagar area of Churu district in Rajasthan, characterized by its hot desert climate and low rainfall, presents a unique agro-ecological setting for millet cultivation.

This study aims to examine the types of millets grown in the Taranagar region, their patterns of cultivation, yield performance, and the socio-economic impact on local farmers. By analyzing traditional practices alongside modern agronomic methods, the research seeks to identify opportunities to enhance productivity, promote millet-based farming systems, and support rural livelihoods in this water-scarce region. Additionally, the study highlights the potential role of millets in climate-resilient agriculture and their contribution to dietary diversity in local communities. Pearl millet (*Pennisetum glaucum*) and sorghum (*Sorghum vulgare*) are two of the most important cereal crops cultivated in arid and semi-arid regions of India. Known for their ability to thrive in harsh climatic conditions with minimal water requirements, these crops play a vital role in ensuring food security and supporting rural livelihoods in drought-prone areas. Both grains are rich in essential nutrients such as iron, calcium, and dietary fiber, making them valuable not only as staple foods but also for their nutritional benefits. Pearl millet, often referred to as "bajra" in local terms, is well-adapted to sandy soils and high temperatures, making it a predominant crop in the desert regions of Rajasthan. Sorghum, locally known as "jowar," is equally significant, valued for its multipurpose use as food, fodder, and industrial raw material. These crops form a staple part of the diet for local populations and are deeply integrated into the agrarian economy. In the context of the Taranagar area of Churu district, where climatic conditions pose significant challenges to conventional agriculture, pearl millet and sorghum stand out as resilient crop choices. This study focuses on examining the cultivation patterns, yield trends, and agronomic practices associated with these crops, while also assessing their socio-economic impact and future potential in the region.

Study area: The present study was conducted in the Taranagar tehsil of Churu district, located in the north-eastern part of Rajasthan, India. The region experiences an extreme desert climate characterized by hot summers, cold winters, and erratic, scanty rainfall. The average annual rainfall in this area ranges between 250 to 300 mm, with the majority of precipitation occurring during the monsoon months from July to September. Soil in the Taranagar region is predominantly sandy, with low organic content and poor water retention capacity, which poses challenges for conventional crop cultivation. However, these conditions are particularly favorable for drought-resistant crops such as pearl millet and sorghum, which form a crucial part of the local agricultural system. Agriculture in Taranagar is largely rain-fed, and farming practices are primarily traditional. The majority of the rural population is dependent on agriculture and livestock for their livelihood. Millets, especially pearl millet and sorghum, are widely cultivated due to their adaptability, short growing seasons, and importance as both food and fodder crops. This area serves as a representative region for studying millet cultivation under arid conditions, making it an ideal location to explore the agronomic performance, farmer practices, and sustainability potential of these climate-resilient crops.

Methodology: The present study was carried out using a combination of field surveys, interviews, and secondary data analysis to assess the cultivation practices, production trends, and socio-economic relevance of pearl millet and sorghum in the Taranagar region of Churu district.

Primary data was collected through structured interviews using a pre-tested questionnaire. Focus group discussions and informal interviews were also conducted to gather qualitative insights from local farmers and agricultural extension workers. Secondary information was gathered from government reports, agricultural department records, and research publications to supplement and validate field findings. Quantitative data were analyzed using basic statistical tools.

Materials: Measuring Tape, Mobile GPS Apps, Digital Camera and Smartphone Camera used by researcher.

Result and Discussion : The findings of the study highlight key aspects of pearl millet (*Pennisetum glaucum*) and sorghum (*Sorghum vulgare*) cultivation in the Taranagar region, covering cropping practices, yield performance, input use, and challenges faced by farmers.

1. Cropping Patterns and Practices:

The majority of farmers in Taranagar follow conventional rainfed farming systems, with pearl millet and sorghum sown at the onset of the monsoon season (July). Intercropping with legumes such as moth bean and cluster bean was also observed in some fields. Farmers preferred local or regionally adapted varieties for their better drought tolerance.

2. Yield and Productivity:

Average yield for pearl millet was found to be approximately 8–10 quintals per hectare, while sorghum yields ranged between 6–8 quintals per hectare. These figures are slightly below the national average, largely due to erratic rainfall, poor soil fertility, and limited access to quality seeds and inputs.

3. Input Usage:

Most farmers reported minimal use of chemical fertilizers and pesticides, relying instead on organic practices or low-input methods. Irrigation was scarce and limited to emergency watering in a few fields. A lack of awareness and access to modern agricultural practices was evident among many respondents.

4. Economic and Nutritional Significance:

Pearl millet was primarily grown for household consumption and fodder, with surplus sold in local markets. Sorghum was similarly used as dual-purpose (grain and fodder) crop. Farmers acknowledged the high nutritional value of these crops, especially in terms of dietary fiber and iron content.

5. Challenges Identified:

The study revealed several constraints affecting millet cultivation in the region:

- Low and erratic rainfall
- Poor access to improved seed varieties
- Lack of awareness of scientific farming techniques
- Limited market access and price fluctuations
- Soil degradation and declining fertility

6. Farmer Perceptions and Adaptation Strategies:

Despite challenges, farmers recognized millets as “climate-resilient” crops well-suited to their environment. Some had begun experimenting with improved varieties and organic inputs. There was growing interest in value addition and government millet promotion schemes (e.g., under the International Year of Millets 2023 initiative), although outreach was limited.

Conclusion: The study on millets grown in the Churu area highlights the significance of these resilient crops in sustaining agricultural livelihoods in arid and semi-arid regions. Millets such as bajra (pearl millet), which dominate cultivation in this region, have proven to be highly adaptable to the harsh climatic

conditions, poor soil fertility, and limited water availability typical of the Churu district. The findings underscore the importance of preserving traditional millet farming practices while encouraging improved techniques and market linkages to boost productivity and farmer income. Promoting millet cultivation not only supports food and nutritional security but also contributes to climate-resilient agriculture. Therefore, policy interventions, farmer awareness, and research support are essential to sustain and scale up millet farming in the Churu area for long-term agricultural sustainability.

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