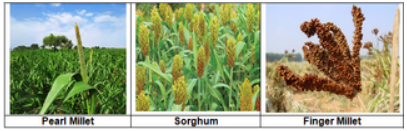
- **Sorghum (Sorghum bicolor):** Sorghum is an important cereal crop in India known for its resilience, versatility, and wide use in food, fodder, and industry. Its efficient C4 photosynthetic pathway ensures high water-use efficiency and strong biomass production even under moisture stress. Adapted to heat, drought, and saline soils, it is a cornerstone of dryland and sustainable cropping systems. As a dual-purpose crop, it provides both nutritious grain and quality fodder for mixed farming. Nutritionally, sorghum is rich in fibre, minerals, and antioxidants that aid digestion, strengthen immunity, and lower oxidative stress, while its low glycemic index supports metabolic health. Its excellent processing properties allow its use in flakes, popped grains, malt, syrups, and bioethanol, underscoring its growing relevance in food and industrial applications.
- **Finger Millet (Eleusine coracana):** Finger millet (Eleusine coracana), or ragi, is widely grown in southern and hilly regions of India and is prized for its strong nutritional profile and excellent storage stability. Known for having the highest calcium content among cereals, it supports bone health and provides essential amino acids, slow-digesting carbohydrates, fibre, and antioxidants that promote metabolic balance. Its good processing qualities make it suitable for porridges, malted drinks, bakery products, health mixes, and weaning foods, and it responds well to malting, fermentation, and extrusion for value-added products. Its long shelf life and resistance to spoilage further make it a reliable food security crop, especially in regions with limited storage facilities.



INTRODUCTION

Millets are among the oldest cultivated crops in the Indian subcontinent, valued for their resilience, adaptability, and low input needs, which allowed early farming communities to thrive across diverse agro-climatic zones. Over time, they became region-specific staples, especially in rainfed, tribal, hilly, and semi-arid areas where other cereals perform poorly. Even today, millets play a crucial role in sustaining agriculture in regions prone to drought, water scarcity, and climate variability. India's millet landscape includes major millets pearl millet, sorghum, and finger millet and minor millets such as kodo, barnyard, foxtail, little, proso, and browntop. While major millets dominate cultivation, minor millets provide exceptional nutritional and ecological benefits. Requiring far less water than conventional cereals, millets tolerate heat, salinity, and poor soils, making them ideal for climate-resilient farming. Nutritionally, they are rich in proteins, minerals, vitamins, antioxidants, and complex carbohydrates, with high fibre and low glycemic index supporting digestive and metabolic health. Growing interest in nutritious foods and supportive national initiatives has renewed attention toward millet-based diets and value chain development.

MAJOR MILLETS OF INDIA

- **Pearl Millet (Pennisetum glaucum):** Pearl Millet (Pennisetum glaucum): Pearl millet is one of India's most important millets, thriving in arid and semi-arid regions due to its exceptional tolerance to heat, erratic rainfall, and poor soils. Its deep, efficient root system allows it to utilize limited moisture, while modern high-yielding hybrids ensure stable productivity even under rainfed and degraded soil conditions. It fits well into multi-cropping and mixed farming systems, making it a dependable crop for resource-poor farmers. Nutritionally, pearl millet is rich in proteins, fibre, iron, calcium, and bioactive compounds that support bone health, immunity, and metabolic function. Its culinary versatility spans traditional foods like roti and porridge to modern products such as multigrain flours, bakery items, and ready-to-eat mixes. Beyond food, it is also an important fodder crop and has growing relevance in nutraceutical and value-added sectors, enhancing its overall economic value.

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एग्रीकल्चर फ़ोरम फॉर टेक्निकल एजुकेशन ऑफ़ फार्मिंग सोसायटी

कोटा, राजस्थान

Brief insight on millets grown in India

संकलन

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MINOR MILLETS OF INDIA

- **Kodo Millet (*Paspalum scrobiculatum*):** Kodo millet (Paspalum scrobiculatum) is a hardy, short-duration millet predominantly grown in drought-prone and tribal-dominated regions, where its remarkable resilience and low water requirements make it an essential food and livelihood crop. Maturing within 90–110 days, it thrives on marginal and nutrient-poor soils under purely rainfed conditions, supported by strong drought-escape mechanisms that enable it to survive erratic rainfall. Nutritionally, Kodo millet stands out for its exceptionally high dietary fiber content, rich antioxidant profile, and slow-digesting carbohydrates that contribute significantly to managing diabetes, improving digestive health, and maintaining metabolic stability.
- **Barnyard Millet (*Echinochloa spp.*)** Barnyard millet (Echinochloa spp.) is another fast-growing millet widely cultivated in hilly and tribal belts, valued for its short crop cycle of just 60–75 days and its suitability for intercropping with legumes. Its ability to perform well under low-input cultivation makes it a dependable crop for marginalized farmers relying on rainfed systems. Nutritively, barnyard millet is notable for its high iron content and abundant dietary fiber, making it ideal for gluten-free diets and particularly suitable for individuals requiring diabetic-friendly food options.
- **Foxtail Millet (*Setaria italica*)** Foxtail millet (Setaria italica), one of the most ancient cultivated millets, has earned long-standing recognition for its resilience, adaptability, and health-promoting properties. It flourishes even with minimal water inputs and displays a natural resistance to many pests due to its high silicon content, making it a preferred crop in dryland agriculture and rice-fallow systems. Its nutritional benefits are substantial, as it possesses one of the lowest glycemic indices among cereals and is packed with minerals, fiber, and antioxidants that support long-term health and wellbeing.
- **Little Millet (*Panicum sumatrense*)** Little millet (Panicum sumatrense) is a nutrient-rich minor millet extensively grown by tribal communities across India, valued for its adaptability and superior nutritional profile. It is an excellent source of protein, dietary fiber, and essential micronutrients, particularly zinc, which plays a crucial role in supporting growth, immunity, and metabolic functions. Agronomically, little millet performs well in mixed and intercropping systems and grows reliably under low soil fertility and limited management, making it a secure crop for smallholders.

- **Proso Millet (*Panicum miliaceum*)** Proso millet (Panicum miliaceum), a short-duration and extremely low-water-demanding cereal, is cultivated widely in temperate and semi-arid regions, including high-altitude areas. Its strong tolerance to drought and low temperatures enables farmers to cultivate it successfully even in challenging climatic conditions. The grain has a balanced amino acid profile and is increasingly incorporated into fitness-focused diets and high-protein food products, highlighting its emerging importance in modern nutrition.
- **Browntop Millet (*Brachiaria ramosa*)** Browntop millet (Brachiaria ramosa) is gaining recognition as a climate-resilient millet species with substantial potential for both food and fodder use. Agronomically, it exhibits natural weed-suppressing properties that reduce the need for chemical interventions, while its inclusion in crop rotations enhances soil health and overall farm sustainability. Highly drought tolerant, browntop millet offers consistent yields in water-scarce areas. Nutritionally, it is rich in dietary fiber, essential minerals, and antioxidants, contributing to improved gut health and playing a preventive role against a range of lifestyle-related diseases.
- **CULTIVATION CHALLENGES AND INNOVATIONS:** Cultivation of millets, especially minor varieties, continues to face key challenges, including poor access to quality seeds, inadequate post-harvest infrastructure, and labour-intensive processing such as dehusking, all of which limit productivity and farmer income. Market integration remains weak, and consumer preference for refined grains further reduces demand. However, innovations are helping revive the sector: small-scale machinery is easing labour needs, decentralized processing units are cutting post-harvest losses, digital traceability is opening premium markets, and improved breeding is yielding more resilient varieties. The rise of ready-to-cook and ready-to-eat millet products is also boosting consumer interest and expanding market opportunities.

CONCLUSION

The renewed focus on millets marks a significant shift toward sustainable agriculture, nutritional well-being, and cultural revival. While major millets continue to dominate production, minor millets hold immense untapped potential due to their superior nutrition, adaptability, and ecological benefits. Strengthening research, processing infrastructure, market systems, and consumer awareness will be essential for transforming millets into staple crops of the future. India's millet renaissance offers a pathway to resilient livelihoods, healthier diets, and environmentally sustainable food systems.