



Magic of Millets- For Sustainable Agriculture

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Abstract

Traditional sustainable agriculture has a long history of using millets. Ancient diets relied heavily on these grains, which have been grown for thousands of years. They were essential to early agricultural societies because of their capacity to thrive in a variety of difficult conditions. Millets' timeless importance and adaptability are demonstrated by the generations-old sustainable farming methods that have been practiced around them. Millets' resilience to climate change and low water consumption make them a shining example of sustainable agriculture. This sustainability is further improved by using natural farming practices. Crop rotation and using natural predators to control pests are two important organic millet farming practices that support soil health and biodiversity. Adopting sustainable innovations in agriculture is essential to promoting millet farming as a sustainable practice. High-yielding, disease-resistant millet varieties are being developed using technological solutions like genome editing and artificial intelligence. In order to increase output and secure the future of sustainable farming, these developments are crucial.

Introduction :

Millets are a group of small-seeded grains cultivated for thousands of years in many parts of the world. They are a great source of nutrition, high in fibre and rich in vitamins, minerals and proteins. They have gluten-free properties, which makes them ideal for those with celiac disease or other gluten sensitivities. Millets can be cooked whole as porridge or ground into flour to make bread, cakes and pasta. Millets, being grown in more than 130 countries, have been considered an integral part of the diet of over half a billion people across Asia and Africa for centuries. In India, Millets were among the first crops to be domesticated. In addition to many health benefits, millets are also good for the



environment with low water & input requirement. Recognising the enormous potential of Millets to generate livelihoods, increase farmers' income and ensure food & nutritional security worldwide, the Government of India (GoI) has prioritised Millets. The United Nations declared 2023 as the International Year of Millets (IYM 2023), following a proposal by India to promote these “nutri-cereals” for health, sustainability, and climate resilience. The initiative aimed to raise awareness, boost production, and encourage consumption globally, positioning millets as a smart food for the future.

Millets are highly nutritious, gluten-free, small-seeded grasses, classified into major (larger grain) and minor (smaller grain) varieties. Top types include Pearl (Bajra), Sorghum (Jowar), Finger (Ragi), Foxtail (Kakum), Little (Kutki), Barnyard (Sawan), Proso (Chena), and Browntop (Korale) millets. These are packed with fiber, protein, and minerals. Millets are highly sustainable, climate-resilient crops ideal for sustainable farming due to their low water requirement, drought tolerance, and minimal need for fertilizers or pesticides. As short-duration crops (70–120 days) that thrive in poor soil, they boost farmer income, enhance soil health, and strengthen food security, supporting UN SDGs like Zero Hunger and Climate Action.

Types of millets :-

Major Millets:-

These are the most commonly grown and consumed varieties:

- Pearl Millet (Bajra/Kambu): Rich in iron and high in protein.
- Sorghum (Jowar/Jowari): A staple gluten-free grain, rich in antioxidants and fiber.
- Finger Millet (Ragi/Mandua): Known for exceptionally high calcium content, crucial for bone health.

Minor Millets

These smaller grains are nutrient-dense and often used as rice substitutes:

- Foxtail Millet (Kangni/Thinai): High in protein and iron, often used for upma or rice dishes.
- Little Millet (Kutki/Samai): Rich in fiber and magnesium.
- Barnyard Millet (Sawan/Sanwa): High in fiber and iron, known for being easy to digest.
- Proso Millet (Chena/Varagu): High in protein and complex carbohydrates.



- Browntop Millet (Korale): High in fiber and minerals.
- Kodo Millet (Kodra/Varagu): Rich in fiber and antioxidants.
- Pseudomillets : Though not technically grass, these are often grouped with millets due to similar nutritional profiles and uses: Amaranth (RRajgira), Buckwheat (Kuttu)

Key Benefits:-

1. Resource Efficiency: Millets require significantly less water than rice or wheat and can thrive in poor, less fertile soil.
2. Climate Resilience: As Plants, they are drought-tolerant and adapted to high temperatures, making them ideal for changing climate conditions.
3. Environmental Benefits: They require minimal pesticides/fertilizers and have lower greenhouse gas emissions compared to other grains, supporting sustainable agriculture and enhancing soil health.
4. Biodiversity and Soil Health: Their deep root systems help prevent soil erosion and improve soil structure.
5. Economic and Nutritional Value: They are highly nutritious (high in protein, fiber, and minerals) and offer a lower cost of production, improving livelihoods for farmers in dryland areas.

Conclusion :

There is an urgent need for Indian agriculture to rethink its practices in pursuit of sustainability and move away from intensive paddy production to millet production. It is possible by providing cash incentives to farmers through initiatives like a DBT system, making it a win-win situation for all – farmers, the government, and the economy. Such incentives would not only encourage farmers to adapt to new practices, but they would also lead to greater agricultural sustainability.

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