



## MILLETS: THE NUTRI CEREALS

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### ABSTRACT

The attention has shifted to millet grains as a sustainable and nutrient-dense food source as the globe struggles to provide food security, mitigate climate change, and improve public health. This article is a brief introduction to millets, a large group of small-seeded, drought-resistant grains that have long been an important component of many traditional diets all across the world. The potential of millets to address existing global food and environmental challenges is increasingly coming to light. This article discusses the millet grain's nutritional profile and emphasises its high protein, fibre, and mineral content as well as its low glycemic index, which make it a great option for preventing malnutrition and diet-related illnesses. Millets are a climate-smart crop that can help with sustainable agriculture and climate change mitigation because of its resilience to pests, capacity to adapt to harsh climates, and low water needs. Discussed is millets' significance in increasing food security, particularly in areas vulnerable to drought and unpredictable weather. The article further delves into the importance of integrating millets into global food systems, policy initiatives. We can significantly advance the development of a more sustainable and just food system by utilising the millet grains' positive effects on health, the environment, and the economy.

**Keywords:** Food security, Climate change, Sustainable agriculture, Climate change mitigation.

### INTRODUCTION

The term "Millet" comes from the Latin word "Milum," which signifies grain. The Poaceae family, also known as the grass family, includes a variety of grains collectively referred to as millet. The colour, texture, appearance, grain size, and species of the many different kinds of millet vary. Small-seeded grains known as millets have been grown for thousands of years in various regions of the world. They are a fantastic source of nourishment, being high in fibre and packed with vitamins, minerals, and proteins. They are suitable for those with celiac disease or other gluten sensitivity

since they are gluten-free. Millets can be consumed whole and prepared as porridge or processed into flour and used to create pasta, bread, and cake. On March 5, 2021, the United Nations adopted a resolution designating the year 2023 as the International Year of Millets, with backing from 72 nations. "Zero hunger" is the goal number two in the Sustainable Development Agenda. One of the UN's 17 Sustainable Development Goals, it was adopted in 2015. "End hunger, achieve food security, improve nutrition, and advance sustainable agriculture," is the phrase used in the official statement. To feed the 800 million people on the planet today, a significant overhaul in the food and agricultural systems is required. By concentrating on millet production, it may be feasible. Drylands make up over 40% of the earth's land surface. Millets are the most suitable crop for dryland agriculture.

## WHAT ARE THE MILLETS?

Climate-resilient millets are nutritious grains. It ensures people's availability of food, nourishment, and financial stability. Superfood millets are a great source of both macro and micronutrients. They are a good source of bioactive substances, non-starchy polysaccharides, gluten-free proteins, soluble fibre, antioxidants, and low glycemic index. It is an excellent source of B vitamins and beta-carotene.

### Types of millets

Sl. No.	Millet	Scientific Name
1	Pearl Millet	Pennisetum glaucum
2	Sorghum	Sorghum bicolor
3	Finger Millet	Eleusine coracana
<b>Small Millets:</b>		
4	Foxtail Millet	Setaria italica
5	Barnyard Millet	Echinochloa frumentacea
6	Kodo Millet	Paspalum scrobiculatum
7	Proso Millet	Panicum miliaceum L.
8	Little Millet	Panicum sumatrense
<b>Pseudo Millets:</b>		
9	Buck wheat (Kuttu)	Fagopyrum esculentum
10	Amaranthus (Chaulai)	Amaranthus viridis



## **GLOBAL DISTRIBUTION:**

Around 131 nations cultivate it, and 60 crore people in Asia and Africa eat it as their traditional cuisine.

With more than 55% of the world's millets produced, India, Nigeria, and China are the top three producers. India was a significant millets grower for a long time. However, Africa has seen a sharp rise in millet output in recent years.

### **Importance of Millets**

**Climate Resilient Staple Food Crops:** Millets can grow well in unfavourable soil conditions, use less water, and are drought-resistant. They are thus a good food crop for regions with erratic weather and limited water supplies.

**Rich in nutrients:** Fibre, protein, vitamins, and minerals are all present in millets in good amounts.

**Gluten-free:** Millets are excellent for those who have celiac disease or gluten sensitivity since they are inherently gluten-free.

**Adaptable:** Millets are a flexible crop choice for farmers since they can be cultivated in a range of soils and climates.

**Sustainable:** Millets are frequently farmed utilising conventional farming techniques, which are more ecologically responsible and environmentally sustainable than contemporary, industrial farming methods.

## **VALUE ADDED PRODUCTS**

<b>Ready to Eat Products</b>		
1	Puffs	Sorghum Puffs
		Foxtail Puffs
		Bajra Puffs
2	Extruded snacks	Sorghum Extruded snacks
		Foxtail Extruded snacks

		Finger millet Extruded snacks
3	Bakery Products	Sorghum cookies
		Pearl/foxtail/finger millet cookies
		Foxtail millet cake
		Muffines
		Cookies
4	Other products	Millet roti
		Millet laddu
Ready to Cook Products		
1	Instant Mixes	Instant Sorghum Idli Mix
		Instant Sorghum Upma Mix
		Multi Rawa Kesar
2	Millet vermicelli	Finger millet pasta
3	others	Jhangora ki kheer
		Himachal Style Pearl millet Khichdi
		Kodo ki roti

## CONSTRAINTS TO INCREASED MILLET CULTIVATION AND CONSUMPTION

- **Reduction in the Millet-Cultivated Area:** Low yields and time-consuming, hard chores performed by women in the processing of millets are factors contributing to a change in land use. Furthermore, relatively little grain was commercialised, and even less grain was used to create goods with value-added.
- **Low Productivity of Millets:** Sorghum (jowar) output has decreased, pearl millet (bajra) production has plateaued, and the production of other millets, notably finger millet (ragi), has decreased or stalled over the past ten years.



- **Lack of Awareness:** The low demand for millets in India is caused by the fact that many people are unaware of their health advantages.
- **High Cost:** Millets are less affordable for people with low incomes since their prices are frequently higher than those of typical cereals.
- **Perceived Taste:** Some individuals avoid eating millets because they think they have a dull or disagreeable flavour.
- **Competition from Rice and Wheat:** Millets find it challenging to compete in the market since rice and wheat, which are basic foods in India, are so readily accessible.

## INITIATIVES TAKEN DURING VEDIC AND POST VEDIC PERIOD

- Millets are the first known food in our heritage, according to several Vedic texts and historical facts. In the Vedic literature, millets are referred to as Trunadhanya or Kudhanya, where Bajra is referred to as "Nali", Proso Millet as "Chinaka", Foxtail Millet as "Kangu", Barnyard Millet as "Shyamaka", and Little Millet as "Nandimukhi".
- The "Millet in Your Meals" book, written by an NGO called Pristine and Sahaja Organics, makes clear that numerous millets were grown throughout the Harappan and Mohenjodaro civilizations based on archaeological data. The 'Hanging Gardens of Babylon' included millets among their prized plants, which made millets cultivation popular in the sixth century BC.

## STATE GOVERNMENT INITIATIVES

- **Uttar Pradesh Millets Revival Programme (UPMRP):** The Honourable Chief Minister of the State of Uttar Pradesh, Yogi Adityanath, addressed the cabinet on January 28, 2023 to request approval of the Uttar Pradesh Millets Revival Programme with an initial fund of 186.26 crore from 2022–2023 to 2026–2027 in order to promote the production and processing of millets.



- **Odisha Millet Mission:** The Odisha government developed an "Odisha Millet Mission" strategy in 2017 to bring millets back to farms and to dinner plates in every home due to the state's increasing demand for millets production. Additionally, the government has begun commemorating "Mandia Diwas," or Millet Day, on November 10, 2022, in order to encourage the cultivation and consumption of millet.
- **Rajasthan Millets Promotion Mission:** In order to create 11 schemes, including the Rajasthan Micro-irrigation Mission, Rajasthan Organic Farming Mission, Rajasthan Crop Protection Mission, Rajasthan Horticulture Development Mission, Rajasthan Millets Promotion Mission, Rajasthan Agri-tech Missions, and Rajasthan Food Processing Mission, among others, in the year 2022–2023, the Honourable Chief Minister of Rajasthan Ashok Gehlot announced a budget of Rs. 5,000 crores for the CM Krishak Saathi Yojna.

## CENTRAL GOVERNMENT INITIATIVES

- **Poshan Mission Abhiyan:** Prime Minister's Overarching Scheme for Holistic Nourishment (POSHAN Mission Abhiyan), a government initiative to combat malnutrition and undernutrition issues in pregnant women and newborns, has been put into place by the Ministry of Women and Child Development.
- **National Food Security Mission:** The Global Hunger programme seeks to increase the production of cereals and coarse grains while also popularising cutting-edge scientific techniques and new cereal types, among other things (Ministry of Agriculture, 2008).
- **Initiative for Nutritional Security through Intensive Millet Production-Rashtriya Krishi Vikas Yojna:** The Indian Government has launched an initiative for Nutritional Security through Intensive Millet Promotion (INSIMP) and is generously funding Rastriya Krishi Vikas Yojna to promote the production of millets as a nutri-cereal in order to increase the production of millets and related post-harvest methods.



## **GOVERNMENT INITIATIVES TAKEN FOR VALUE ADDED PRODUCTS OF MILLETS**

### **Production Linked Incentive Scheme for Food Processing Industry (PLISMBP):**

The "Production Linked Incentive Scheme for Food Processing Industry" has been authorised by the Ministry of Food Processing Industries. Its goal is to encourage Indian food brands in the international market with an average outlay of roughly Rs. 10900 crores. For the marketing of the four main food industry segments products processed from millets, fruits and vegetables-based goods, marine products, and mozzarella cheese. this scheme primarily focuses on processed food items as ready to cook or ready to eat.

### **CONCLUSION**

Millets will inescapably be a component of our contemporary agricultural systems, which must be more resilient and diversified to meet the country's dietary demands while ensuring the sustainable use of natural resources. These can not only give farmers a source of income but also improve the general health of the community. Millets' production and consumption will rise in India due to consumer demand for them and their value-added products, which will have a long-term impact on the sector. The farming systems that we need today have to be more resilient and diversified to meet the food and nutrition demands of the nation while ensuring sustainable use of natural resources hence the role of millets is inevitable.

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