Millets: The Smart Grain for a Sustainable Future

Sonali Naik[1]*, Sushmita Toppo[2] and Jeebanjyoti Behera[3]

[1,2]M.Sc. Scholar, [3]Assistant Professor, Department of Agricultural Extension Education, College of Agriculture, OUAT, Bhubaneshwar, Odisha, India-751003.

Corresponding Author
Sonali Naik
Email: naiksonali.sng@gmail.com

OPEN ACCESS

Keywords

Millets, Odisha Millet Mission, Nutri-Cereals, Productivity, Glycemic Index

How to cite this article:

Naik, S., Toppo, S. and Behera, J. 2025. Millets: The Smart Grain for a Sustainable Future. *Vigyan Varta* 6 (5): 88-91.

ABSTRACT

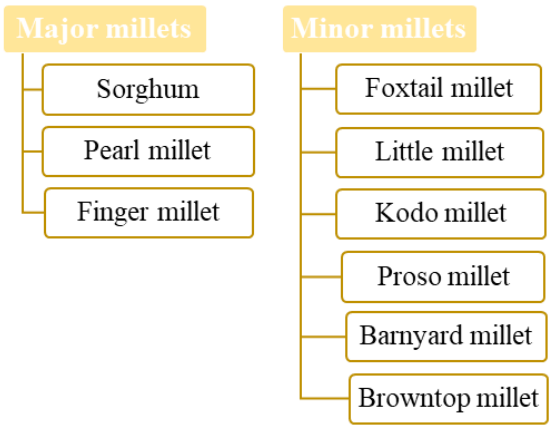
Millets, sometimes referred to as "nutri-cereals," are small-seeded, ancient grains that are appreciated for their exceptional nutritional content and capacity to flourish in arid, rainy environments. Due to their high fiber, iron, calcium, and antioxidant content, as well as their advantages in diabetes management, heart health, and digestive wellness, millets—once an essential component of traditional Indian diets—are currently seeing a revival in popularity. India, the greatest producer of millet in the world, cultivates it in over 21 states, with Odisha playing a significant role in this comeback. Millets have long been an essential part of the regional culinary tradition in Odisha, where a significant tribal population makes their living from agriculture. Their cultivation ultimately did drastically fall as a result of the Green Revolution. To combat this, the Odisha government started the Odisha Millet Mission (OMM) in 2017 with the goal of reintroducing millets into diets and farming practices. With over 11 lakh farmers involved and the mission currently operating in 19 districts, it supports farmer-producer associations, fosters market connections, and promotes for sustainable agriculture methods. In order to position millets as future-ready grains essential for maintaining ecological balance, nutritional security, and resilient rural livelihoods, this study examines the health benefits, agricultural relevance, and revival initiatives around them.

INTRODUCTION

Millets are small seeded grass crop that has been grown for thousands of years in a variety of agroclimatic zones. The word millet comes from the French word “Mille” which means "thousand", meaning that a handful of millet can hold up to a thousand grains (Dayakar Rao *et al*., 2022). Millets are warm-weather, annual, small-grained cereals that are members of the Poaceae or Gramineae family. One of the first crops to be domesticated was millets. Millets, often known as "coarse grains," have the ability to be used as both food and fodder. Despite unfavorable climatic conditions, these hardy crops provide a respectable quantity of production and are highly resistant to both biological (biotic) and environmental (abiotic) challenges. Millets are cultivated in the dry areas in tropical, sub-tropical, and temperate regions of the country. Millets are rainfed, hardy grains which have low requirement for water and fertility. They are nutrient-rich and drought-resilient grains cultivated for centuries. Millets are used in Maharashtra, Karnataka, Andhra Pradesh, and Madhya Pradesh.

Millets are known as nutri-cereals as they provide most of the nutrients required for normal functioning of the body (Singh *et al*., 2023). Millets are rich in nutrition and dietary fibre, non-glutinous, and non-acid-forming foods. They are a good source of phytochemicals, minerals, and protein and essential micronutrients like iron, calcium, and B-vitamins. The millet comprises 15-20% nutritional fiber, 65-75% carbohydrate, 2-5% fat, and 7-12% protein. Compared to other grains like maize, millet protein has a superior essential amino acid composition.

Millets are broadly classified into major and minor types, with the major millets including Sorghum (*Sorghum bicolour*), pearl millet (*Pennisetum glaucum*), finger millet (*Eleusine coracana*) and minor millets include foxtail millet (*Setaria italica*), little millet (*Panicum sumatrense*), kodo millet (*Paspalum scorbiculatum*), proso millet (*Panicum miliaceum*), barnyard millet (*Echinochloa Frumentacea*) and browntop millet (*Brachiaria ramosa*).



HEALTH BENEFITS

Millets are nutritionally rich and healthy and can contribute to a healthy diet. Millets are highly nutritious, non-acid forming, with low glycemic index and easy to digest. Because of its high fiber content, abundance of minerals including iron, magnesium, phosphorus, potassium, and calcium, as well as their antioxidant value, millets are referred to as "nutri-cereals." By hydrating our gut, millet helps us avoid constipation. High levels of tryptophan in millet make serotonin, which elevates our moods. Millet contains niacin, or vitamin B3, which can help decrease blood cholesterol. Consuming millet lowers C-reactive protein and triglycerides, which lowers the risk of cardiovascular disease. In addition to preventing breast cancer, millet helps treat respiratory conditions like asthma and gets rid of issues like cramps, bloating, and excess gas. Millets improve the immune system, liver, and kidneys. According to the Indian Institute of Millets Research's Vision

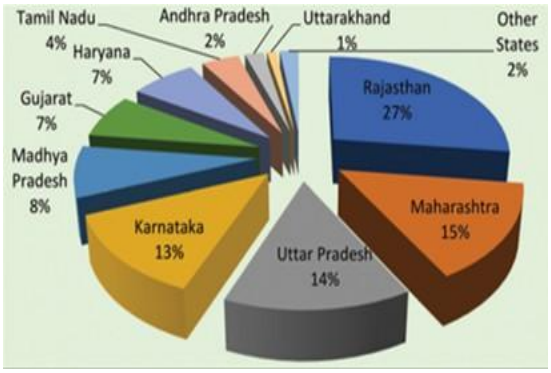
2050, these grains are therefore "harbingers for evergreen revolution" and for the future (Vision 2050, Indian Institute of Millet Research). According to Kumar *et al*. (2018), millets have a mineral concentration of 1.7 to 4.3 g/100 g, which is several times more than that of traditional staple grains like rice (0.6%) and wheat (1.5%) (Kumar *et al*., 2018). Since millets are gluten-free, those with celiac disease or gluten intolerance can include them in their diet. Additionally, because of their low glycemic index (GI), they lower the risk of type 2 diabetes (diabetes mellitus).

INDIA'S CURRENT MILLET PRODUCTION SCENARIO

India is the world's largest producer of millet (Gowri & Shivakumar, 2020). In India, millets are grown in more than 21 states. Tamil Nadu, Kerala, Telangana, Uttarakhand, Jharkhand, Madhya Pradesh, Haryana, Gujarat, Maharashtra, Karnataka, Andhra Pradesh, and Rajasthan are all experiencing notable growth. It is interesting that, over an area of 8.87 million hectares, India produces the most Barnyard (99.9%), Finger (53.3%), Kodo (100%), Small millet (100%) and Pearl millet (44.5%).

In India, millets are cultivated on 13.63 million hectares, producing 18.02 million tons at a yield of 1256 kg/ha. Maharashtra, Karnataka, and Rajasthan are the top three Indian states for millet farming. Madhya Pradesh is the state with the largest percentage of tiny millets (32.4% of the total area), followed by Tamil Nadu (3.9%), Chhattisgarh (19.5%), Uttarakhand (8%), Maharashtra (7.8%), and Gujarat (5.3%). Uttarakhand leads Gujarat (1056 kg per hectare) and Tamil Nadu (1067 kg per hectare) in production, with 1174 kg per hectare.

State-wise millet production data



(Image source: nutritional_and_health_benefits_of_millets__a.2.pdf, Retrieved on 18.04.2025, 12:45PM)

ODISHA'S CURRENT MILLET PRODUCTION SCENARIO

Tribes constitute the majority in the Odisha region. It is residence to the third-largest Indian tribal group. The state is home to 62 indigenous settlements and 13 at-risk tribal groups. Approximately 70% of people in Odisha make their living from agriculture. In these circumstances, the millet production in Odisha is significant (Mishra *et al*., 2023). It is typically grown in rural locations even though it has long been regarded as a staple meal by people across the globe. Additionally, more millets are produced in the districts of Koraput, Malkangiri, Rayagada, Nabarangpur, and Kand Hamal that are under tribal sovereignty. Millets are widely farmed because they need minimal labor or resources to produce (Mishra *et al*., 2023).

Millets are an essential part of the traditional diet in Odisha. In Odisha, millets are a staple grain that may be found in a wide variety of dishes. Beginning in 1960, the green revolution led to a sharp decline in productivity. In the tribal areas of Odisha, millets are still grown. The Odisha regions with the highest productivity are where finger millet is cultivated.

ODISHA MILLET MISSION (OMM)

The Department of Agriculture and Farmers' Empowerment, Government of Odisha, established the Odisha Millet Mission (OMM) in 2017 with the goal of reviving millet consumption and cultivation, especially among rainfed and tribal farming groups (Rajasri, 2023). The initiative addresses climate resiliency, sustainable livelihoods, and nutritional security.

In 2017, the Mission began with 30 Blocks (7 Districts). However, because of the farmers' enthusiastic response and demand, it was extended to 55 Blocks (11 Districts) in 2018 and to 142 Blocks (19 Districts) at present.

Millets are being cultivated in 54495.83 hectares, with ragi occupying almost 86% of area. More than 11 lakhs farmers have taken up millet production with enhanced agronomic procedures. OMM has purchased 3,23,000 quintals (3,2300 MT) of millets from 41,286 farmers during the Kharif marketing season of 2021–2022 (Nanda & Pradhan, 2024). OMM has registered over 76 Farmer Producer Organizations. In 45 Participatory Varietal Trails, Odisha has found 14 distinct enhanced varieties and 103 unique traditional kinds.

CONCLUSION

The revival of millets is an important step in creating a more robust, sustainable, and healthful Indian food system (Singh *et al*., 2023; Lokesh *et al*., 2022). With their minimal input needs and great adaptability, millets provide a tried-and-true answer to the problems facing modern agriculture from climate change, soil erosion, and water scarcity. They are an important weapon in the fight against lifestyle illnesses and malnutrition because of their high nutritional content, particularly among rural and tribal populations. In addition to reviving ancient agricultural methods, the Odisha Millet Mission is a model effort that supports biodiversity, improves farmer livelihoods, and reintroduces millets into the daily diet. With increased knowledge, encouraging legislation, and community involvement, millets are truly becoming the grains of the future rather than merely the grains of the past. In addition to being an agricultural necessity, reviving and mainstreaming millets is a cultural and nutritional movement that will lead to a more just and food-secure India.

REFERENCES

Directorate of Economics and Statistics. (2017). Agricultural statistics at a glance 2019.

Gowri, M. U., & Shivakumar, K. M. (2020). Millet scenario in India. *Economic Affairs*, *65*(3), 363-370.

Lokesh, K., Dudhagara, C. R., Mahera, A. B., & Kumar, S. (2022). Millets: The future smart food. *The Pharma Innovation Journal*, *11*(4), 75-84.

Mishra, A., Misra, B., Mukesh, S. M., Padhi, C., Chandra, V., Suman, S., & Nanda, C. (2023). The status of millets in Odisha: A review.

Nanda, S. R., & Pradhan, D. D. (2024). Millet Production in Odisha: An Approaching Overview.

Prashanthi, A., & Reddy, R. G. (2023). Millet status in India-Production and consumption. *World*, *73*(86.96), 70-75.

Rajasri, S. Shree Anna Abhiyan/Odisha Millet Mission: A cornerstone of Odisha Pride.

Singh, S., Yadav, R. N., Tripathi, A. K., Kumar, M., Kumar, M., Yadav, S., ... & Yadav, R. (2023). Current status and promotional strategies of millets: a review. *Int J Environ Clim Change*, *13*(9), 3088-3095.