

INTERNATIONAL YEAR OF MILLETS 2023

MILLETS FOR SUSTAINABLE HEALTH & AGRICULTURE

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NUTRITION security, according to the FAO (2009), involves physical, economic and social access for every person to a balanced meal, clean drinking water, a secure environment, and health care. The Sustainable Development Goals (SDGs) established by the UN

acknowledge the connection between agriculture, food security, and the other social determinants of health. Scientific advancements in agriculture have today ensured a sufficient supply of food. Yet, there is a huge population of resource-poor people who experience under-nutrition, especially

micronutrient deficiencies (sometimes known as "hidden hunger"). Undernourishment is defined as the failure to meet the minimal nutritional requirements stated in terms of daily caloric intake.

State-wise malnutrition data indicates that there is a drastic increase

Nutritional Status of India

States	Nutritional Status							
	Underweight BMI ≤ 18.5 Kg/m ² (% Population)				Overweight (BMI ≥ 25 Kg/m ²) (% Population)			
	2015-16		2019-2020		2015-16		2019-2020	
	Men	Women	Men	Women	Men	Women	Men	Women
Andhra Pradesh	14.8	17.6	16.5	14.8	33.5	33.2	31.1	36.3
Arunachal Pradesh	8.3	8.5	4.9	5.7	20.6	18.8	27.6	23.9
Assam	20.7	25.7	13.4	17.6	12.9	13.2	16.2	15.2
Bihar	25.4	30.4	21.5	25.6	12.6	11.7	14.7	15.9
Chhattisgarh	24.1	26.7	17.4	23.1	10.2	11.9	14.9	14.1
Delhi	14.9	17.7	9.1	10.0	24.6	33.5	38.0	41.3
Goa	2.7	1.5	4.7	3.6	32.6	33.5	32.5	36.1
Gujarat	24.7	27.2	20.9	25.3	19.7	23.7	19.9	22.6
Haryana	11.3	15.8	14.5	15.1	20.0	21.0	28.3	33.1
Himachal Pradesh	18	16.2	11.8	13.9	22.0	28.6	30.6	30.4
Jammu & Kashmir	11.5	12.1	5.2	4.3	20.5	29.1	31.6	29.3
Jharkhand	23.8	31.5	17.1	26.2	11.1	10.3	15.1	11.9
Karnataka	16.5	20.7	14.3	17.2	22.1	23.3	30.9	30.1
Kerala	8.5	9.7	10.0	10.1	28.5	32.4	36.4	38.1
Madhya Pradesh	28.4	28.4	20.8	23.0	10.9	13.6	16.6	15.6
Maharashtra	19.1	23.5	16.2	20.8	23.8	23.4	34.7	23.4
Manipur	11.1	8.8	8.0	7.2	19.8	26.0	30.3	34.1
Meghalaya	12.3	12.1	9.0	10.8	10.1	12.2	13.9	11.5
Mizoram	7.3	8.4	5.1	5.3	20.9	21.0	31.9	24.2
Nagaland	11.5	12.3	7.5	11.1	13.9	16.2	23.9	14.4
Orissa	19.5	26.5	15.3	20.8	17.2	16.5	22.2	23.0
Punjab	10.9	11.7	12.5	12.7	27.8	31.3	32.2	40.8
Rajasthan	22.7	27.0	14.0	19.6	13.2	14.1	15.0	12.9
Sikkim	2.4	6.4	4.9	5.8	34.8	26.7	36.3	34.7
Tamil Nadu	12.4	14.6	12.1	12.6	28.2	30.9	37.0	40.4
Telangana	21.5	22.9	16.2	18.8	24.2	28.6	32.3	30.1
Tripura	15.7	18.9	12.4	16.2	15.9	16.0	23.4	21.5
Uttar Pradesh	25.9	25.3	17.9	19.0	12.5	16.5	18.5	21.3
Uttarakhand	28.4	30.0	16.2	13.9	17.7	20.4	27.1	29.7
West Bengal	19.9	21.3	15.1	14.8	14.2	19.9	16.2	22.7

Source: National Family Health Survey Report 4&5

Nutritional Status State-wise men and women malnutrition data in all forms i.e., underweight and overweight % population in FY 2015-16 and FY 2019-2020

in the population who are overweight from 2015-16 to 2019-2020, especially in women. For example, Andhra Pradesh showed 3% increase in the women population who are overweight from 2015-16 to 2019-2020. Similarly, in Delhi, 24.6% men population was overweight but it increased to 38% in 2019-2020. In Tamil Nadu, 37% of women population was overweight in 2015-16 but this percent jumped to 40% in 2019-2020.

Changes in eating patterns, including the elimination of millets from the diet, are partially to blame for this gloomy scenario. Millets are nutritious. They are a rich source of macro and micronutrients — they are high in minerals, B vitamins, and antioxidants and have a low glycemic index. They also contain gluten-free protein (calcium, iron, copper, magnesium, and so on).

Millets can thrive in challenging conditions like drought, and some wild varieties can even grow in flooded and swampy areas. People in hot, humid countries frequently eat millets as part of their staple diets. They are preferred over other cereals because of their lower dependence on the environment and capacity to withstand harsh circumstances. They are perfect for addressing the inadequacies of malnutrition and accomplishing the main sustainable development goal in terms of good health and well-being

A cooked cup of millet contains 26.4 % of the daily magnesium requirement and 24 % of the daily phosphorus requirement (desikachar 1875)

due to their nutritional, economical, and other food security-related features.

Throughout human history, especially in Asia and Africa, millets have been significant dietary mainstays. However, over the past three decades, there has been a dramatic decrease in the consumption of sorghum and other millets as direct food. In India, millets production has significantly decreased as a result of the reduction in demand. India's sorghum production decreased from 7 million tonnes in 2010–11 to 4.2 million tonnes in 2015–16, while bajra production decreased from 10.4 million tonnes to 8.1 million tonnes, ragi production decreased from 2.2 million tonnes to 1.8 million tonnes, and small millets production decreased from 0.44 million tonnes to 0.39 million tonnes over the same time period.

Nutritionally Abundant

Millets play a crucial role in the global food and nutrition sector. Potassium, phosphorus, and calcium are abundant in sorghum, as are iron, zinc, and sodium. It is being targeted as a way to minimize worldwide malnutrition and also aids in the management of heart disease, obesity, and arthritis.

Pearl millet has cholesterol-lowering phytochemicals. Folate, magnesium, copper, zinc, and vitamins E and B-complex are also present. When compared to other millets, it has a high energy level. It also contains calcium and unsaturated fats, both of which are beneficial to health.

Finger millet has ten times the calcium content of rice or wheat. It is an important component of baby food since it is high in calcium and iron. It also has a high protein content. It is also a good food for diabetics because it has been shown to lower blood glucose levels and hyperglycemia.

Proso millet is a short-season crop that thrives in locations with limited rainfall. It contains considerable amounts of glucose and fatty acids and is gluten-free. It is a less expensive source of manganese than other traditional sources such as spices and nuts. It has high calcium content,

The coarse grains, hard seed coat, coloured seeds, acidic or bitter taste, and short shelf life of the processed products are the key limiting factors for the use of millets as ready-to-use value-added products.

which is necessary for bone formation and maintenance. It has been proven to lower cholesterol levels as well as the risk of heart disease. It also helps to avoid diseases like breast cancer.

Foxtail millet helps to keep blood sugar and cholesterol in check. It is a good food for those with diabetes and gastrointestinal problems because it boosts disease resistance capacity. It is high in minerals and is one of the most digestible and allergy-free grains on the market. It is high in dietary fibre and minerals like copper and iron, which help the body stay strong and healthy.

The mainstay of the dietary nutritional requirements is Kodo Millet. It has a high protein level (11%) and a low-fat content (4.2%), as well as a high fibre content (14.3%). It is easy to digest, has a lot of lecithins, and is great for boosting the nervous system's strength. It contains B vitamins, particularly niacin, B6, and folic acid, as well as minerals like calcium, iron, potassium, magnesium, and zinc.

Little millet is said to offer the largest amount of dietary fibre, or nutraceutical, among grains, at 37 per cent to 38 per cent. It is a complete food ingredient and can be used on a broad scale in processed foods, snacks, and infant foods, and it plays an important

role in promoting food security in underdeveloped and emerging countries.

Barnyard millet is an essential crop in terms of nutrition. It has a fantastic supply of protein that is easy to digest. It is also a decent source of dietary fibre with both soluble and insoluble components. Barnyard millet is a natural designer food because of its low carbohydrate content and delayed digestion.

Millet Agricultural Scenario in India

Millet is an ideal crop to meet the challenges of climate change because of their high resilience to a variety of ecological situations. In addition to being farmer-friendly, millets are referred to as "nutria-cereals" due to their special nutritional qualities, which include high fibre, excellent protein, and mineral content. The farmers' income might rise dramatically as a result of increased demand for dry-land crops like millets.

Despite these benefits, millets are slipping in India's production and consumption rankings. Even though India has been the world's top producer of millets, between 1961 and 2012, the area dedicated to millet farming was drastically reduced. Although millets were among the earliest foods consumed by humans, urbanisation and industrialisation led to their abandonment in favour of wheat and rice.

Production & Consumption of Millets

India is the leader in the production of millets accounting for 37.5% of global output. Millet output in India peaked in the 1980s and then rapidly declined due to a dramatic loss in cultivated land. The ongoing decline in Indian millet area can be linked to area shifting for other crops, changed diet choices, assured irrigation facilities and guaranteed returns from main commercial crops.

The production of millets decreased or increased at a slower rate after the 1960s because India's Green Revolution promoted the introduction of high-yielding rice and wheat varieties in order to enhance

food production and eliminate hunger and poverty. Low pay, a lack of input and pricing incentives, and subsidised supplies of quality cereals through the public distribution system are the main causes of the fall.

India's Policy Initiatives

In recent years, the country has taken several initiatives to bring millets back into the reckoning as a favoured agricultural crop.

- Nutrihub-Technology Business Incubator Start-ups Confederation (TBISC) is an existing TBI since 2017 hosted by ICAR-Indian Institute of Millets Research (IIMR) for identifying, nurturing and promoting nutri-cereal start-ups across the country.
- Odisha launched its millet mission in 2017, making it a standout instance. The state saw the results of its efforts, increasing millet yield per hectare by 119.8% and nearly tripling the value of production per hectare from \$9,447 to \$20,710 in the first year.

- Government has launched Central Sector Scheme namely "Production Linked Incentive (PLI) Scheme for Food Processing Industry" with the prime objective of creating global food manufacturing champions and support Indian brands of food products including millet-based products in the international markets.
- Honourable PM Shri Modi called upon the scientific community to come up with technological solutions to increase new varieties of millets to improve the yield and also the nutritional content at the CSIR Society Meeting on 15th October 2022. At his initiative, the United Nations declared 2023 as the International Year of Millets (IYOM) 2023.

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SEVEN SUTRAS OF IYOM 2023 *Go Level Launch Themes*

1. Enhancement of Production/Productivity
2. Nutrition & Health Benefits
3. Value-addition, Processing & Recipe Development
4. Entrepreneurship/Start-up & Collective Development
5. Awareness creation: Branding, Labeling & Promotion
6. International Outreach
7. Policy Interventions for Mainstreaming