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Popular Article

Millet is a priority cereal in present scenario and Sustainable development in India

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Abstract

Evaluating the impact of global climate changes and using new tools and strategies to lessen their effect is extremely important in order to maximize farming and produce enough food for the growing population. Millets are a type of grass that have small seeds. They are grown all over the world as crops for food for animals and people.

One of the earliest cultivated plants for human consumption, these small fragments were unearthed in the Indus civilization, providing the oldest evidence. Until 50 years ago, millets were the main type of grain grown in India. Millets are a group of cereal grains that belong to the *Poaceae* family, commonly known as the grass family. They constitute an important source of food and fodder for millions of resource-poor farmers and play a vital role in ecological and economic security of India. These millets are also known as "coarse cereals" or "cereals of the poor". Indian Millets are nutritionally superior to wheat and rice as they are rich in protein, vitamins and minerals. They are also gluten-free and have a low glycaemic index, making them ideal for people with celiac disease or diabetes. The Food and Agriculture Organization of the United Nations (FAO) has declared 2023 as

the International Year of Millets. Millets have special nutritive properties (they are high in protein, dietary fibre, micronutrients and antioxidants) and special agronomic characteristics (drought-resistant and suitable for semi-arid regions). In India, two types of millets are cultivated. Some important types of millets are sorghum, pearl millet, and finger millet. There are also some fewer common types of millets like foxtail, little millet, kodo, proso, and barnyard millet. It is grown in approximately 131 countries and it is the main food for around 600 million people in Asia and Africa. India's Millet Revolution is happening because more and more people are learning about the good things that millets can do for our health and the environment.

Government Efforts to Promote Millets Production in India

2018 was observed as the 'National Year of Millets' and The UN General Assembly adopted an India-sponsored resolution to mark 2023 as the "International Year of Millets". The National Food Security Mission (NFSM), launched in October 2007, includes the Millet Mission as a constituent, as designed by the Indian Government. The



government's Millet Mission will prioritize assisting farmers through product processing and the establishment of farmer groups. They will also work on adding value to the crops and combining them together.

International Year of Millets 2023: Initiatives taken and proposed activities

The Indian government had suggested to the united nation for declaring the year 2023 as the International Year of Millets (IYOM). India got the support of 72 other countries, on 5th March 2021, United Nations General Assembly (UNGA) declared 2023 as the International Year of Millets. The initiative of the Indian government is of celebrating IYOM 2023, it is done by making the population aware of the millet benefits and increasing the acceptability of the value added of millet across the country and world.

Types of millet

There are more than 20 different types of millet. Some of the more common varieties include

Pearl Millet (<i>Pennisetum glaucum.L.</i>)	Bajra is a type of millet and is one of the most cultivated crops in India. Bajra is a rich source of proteins, minerals, and vitamins and is a good source of energy. It is also a good source of dietary fibre.
Sorghum (<i>Sorghum bicolor</i>)	Sorghum, also known as jowar, is a cereal grain that is grown in India. Sorghum is a nutritious grain that is high in fibre and protein. It is one of the staple crops for millions of semi-arid residents, it's also known as the "KING OF MILLETS"
Finger Millet (<i>Eleusine coracana</i>)	Finger millet grains are rich in minerals, dietary fibre, polyphenols, and proteins. Finger millet, which is rich in calcium, plays an important role in growing children, pregnant women as well as people suffering from obesity, diabetes, and malnutrition. It contains high amount of potassium for the proper functioning of the kidneys and brains and allows the brain and muscles to work smoothly.
Small Millets:	
I. Foxtail Millet (<i>Setaria italica</i>)	It is rich in carbohydrates which helps in balancing the blood sugar level in the body. Iron content is high in it. Foxtail millet may also improve overall immunity, malnutrition. It contains high amount of potassium for the proper functioning of the kidneys and brains and allows the brain and muscles to work smoothly.
II. Barnyard Millet (<i>Echinochloa frumentacea</i>)	Barnyard Millet is popular in millets name list and also known as Sanwa. It is rich in calcium and phosphorus, which can

strengthen bone density. Barnyards are generally utilized as food for humans and as animal feed.

III. Kodo Millet (<i>Paspalum scrobiculatum</i>)	Kodo is a fantastic source of B vitamins, especially niacin, B6, and folic acid, among other vitamins and minerals. It contains calcium, iron, potassium, magnesium, and zinc minerals. Being a gluten-free millet, it is great for gluten-intolerant individuals. It can relieve cardiovascular disorders such as high blood pressure and cholesterol levels when eaten regularly by postmenopausal women.
IV. Proso Millet (<i>Panicum miliaceum L.</i>)	Proso millet is rich in minerals, dietary fibre, polyphenols, vitamins and proteins. It is gluten-free and therefore, ideal for the gluten intolerant people. It is rich in vitamins (niacin, B-complex vitamins, folic acid), minerals (P, Ca, Zn, Fe) and essential amino acids (methionine and cysteine).
V. Little Millet (<i>Panicum sumatrense</i>)	It is loaded with vitamin B and essential minerals such as Calcium, Iron, Zinc, and Potassium.

Important of millet

- a. Millets possess beneficial properties for addressing health concerns such as obesity, diabetes, and lifestyle issues due to their gluten-free nature, low glycaemic index, and abundance of dietary fibre and antioxidants.
- b. Millets are rich in nutrients and offer a multitude of health benefits, making them an excellent addition to your diet. They have protein, fat that your body needs, fibre, vitamins, and minerals like calcium, iron, zinc, potassium, and magnesium.
- c. By ensuring the availability of nutritious food, it prevents the risk of inadequate nutrient intake, particularly among children and women.
- d. Climate change initiatives will play a vital role, especially in regions with scarce water resources. Moreover, they will significantly impact small-scale and disadvantaged farmers in those areas. Hence, special attention must be given to climate change efforts targeting these communities.

Table -1 Nutrient composition of millets compared to fine cereals (per 100 g) Singh et al.,2019.

Food grain	Carbohydrate(g)	Protein(g)	Fat (g)	Energy (Kcal.)	Cru de fibre(g)	mineral matter (g)	Ca(mg)	P(mg)	Fe(mg)
Min or Millet									
Finger millet	72.0	7.3	1.3	328	3.6	2.7	344	283	3.9
Kodo millet	65.9	8.3	1.4	309	9.0	2.6	27	188	0.5
Proso millet	70.4	12.5	1.1	341	2.2	1.9	14	206	0.8
Foxtail millet	60.9	12.3	4.3	331	8.0	3.3	31	290	2.8
Little millet	67	7.7	4.7	341	7.6	1.5	17	220	9.3
Millet									
Sorghum	72.6	10.4	1.9	349	1.6	1.6	25	222	4.1
Bajra	67.5	11.6	5.0	361	1.2	2.3	42	296	8.0

(Source: Nutritive value of Indian foods, NIN, 2007)

Millet mission

Region of India & Odisha

India is a major hub for cultivating and trading millet, with numerous locations throughout the country where millet is harvested. In India, the main states where millet is grown are Rajasthan, Maharashtra, Karnataka, Andhra Pradesh, and Madhya Pradesh. Many farmers in these states cultivate millet for both domestic and international markets. These regions consist of Uttar Pradesh, Bihar, and Madhya Pradesh.

Table -2 Top 5 state in India cultivated millet crop

Top 5 state in Millet India	
Rajasthan	Bajra/Sorghum
Karnataka	Jowar/Ragi
Maharashtra	Ragi/Jowar

Uttar Pradesh

Bajra

Haryana

Bajra

In India, the amount of millet being grown has been increasing in the past few years. India is a big producer of millets. Indian farmers are planting more millets because they can survive dry conditions. The Indian government is encouraging the growth of millet as part of its National Food Security Mission. As a result of these factors, millet production in India is expected to continue to grow in the coming years. The graph (figure-1 & 2) below depicts the production trends of millets in India. In Odisha 11 district millet are Cultivated and high yields mainly Koraput and Kalahandi.

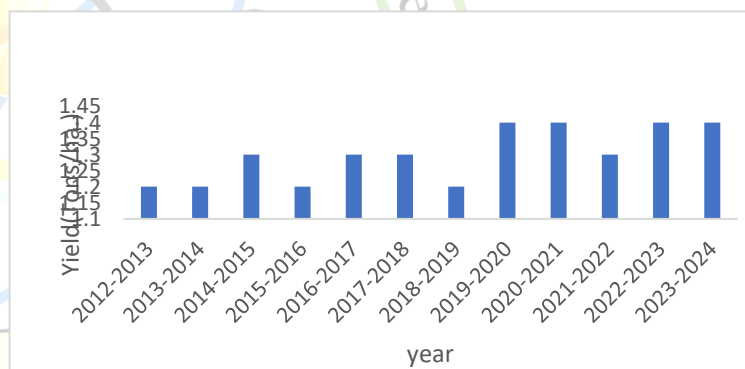


Figure-1 Yield (tons/ha.) of Millet in India in 2012-2024

source-PS&D Online updated on July 12, 2023

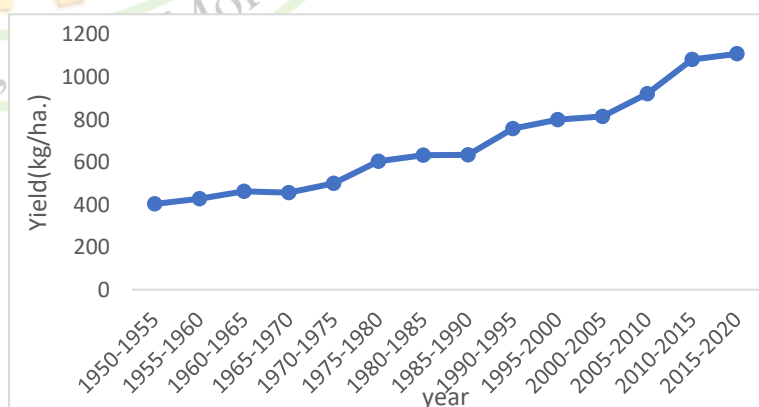


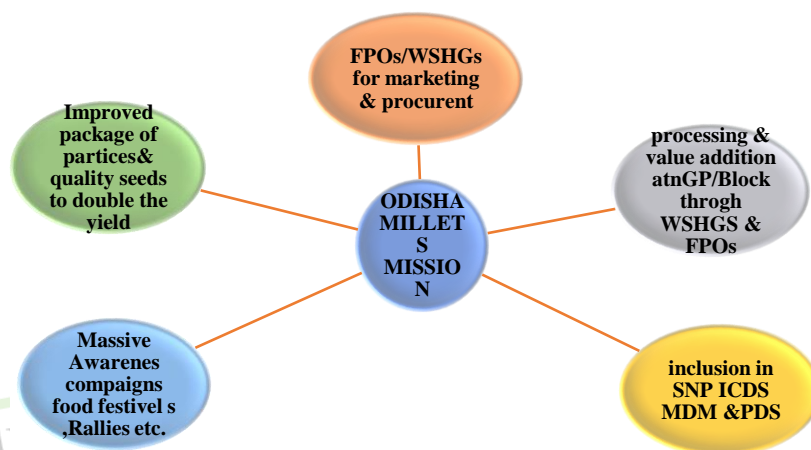
Figure-2 Yield (Kg/ha.) of Millet in India in 1950-2020

Odisha Millet Mission (OMM) was initiated in 2017 to promote Millets (Ragi) as a staple crop of the farming system. Emerging from a consultation between the State government, academia and civil society, it is the first project in the Agriculture and Farmers Empowerment Department with simultaneous focus on production, processing, consumption, marketing, and inclusion of millets in Government Schemes. The objectives of OMM (Figure 3) are as follows:

Figure-3 The objectives of OMM

Conclusion:

India's millet revolution can lead to good health as well as a good environment for which scientists are trying to bring back the old ways of farming that may help in economic development of the farmers. This can help in resolving two problems of the country: making people healthier and promoting farming that can last a long time. The Agriculture Ministry officially called millets "Nutri-Cereals" because they have a lot of good nutrients that may help people with diabetes. The Odisha government introduced the Odisha Millet Mission (OMM) as a distinct effort to foster the adoption of millets among tribal communities. In Odisha, there are new cafes called Millet Shakti Cafe. Mission Shakti SHGs have been trained on a range of delectable dishes that lead to empowerment of more than 70 lakh women who have been organized into 6 lakh groups in all blocks and urban local bodies of the State so far. Millets, which are considerably more nutritious than other cereals, have not been fully leveraged for economic gains. With the help of technological progress, we can now produce valuable items for household uses,



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Out of the total 1,47,181 square kilometers land area of Nepal, agricultural land is 28 percent (of which 21 percent is cultivated



and 7 percent uncultivated); forest area is about 40 percent and pasture covers 12 percent (CBS, 2013). Out of the total arable land in Nepal, Terai and Hill occupy around 56 percent and 36 percent respectively (CBS, 2013). But Nepal imported vegetables from other country to fulfill the requirement of the population. Mainly dried onions, cucumber and tomatoes are imported. In respect to export Nepal generally export tomatoes, cauliflower and pumpkin but the amount export is very less as compare to import. Growing of vegetables can fulfill the requirement and generate the income for country.

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