INTERNATIONAL YEAR OF MILLETS-2023:

AN INITIATIVE TO PROMOTE MILLETS FARMING AS THE NUTRITIOUS CEREAL

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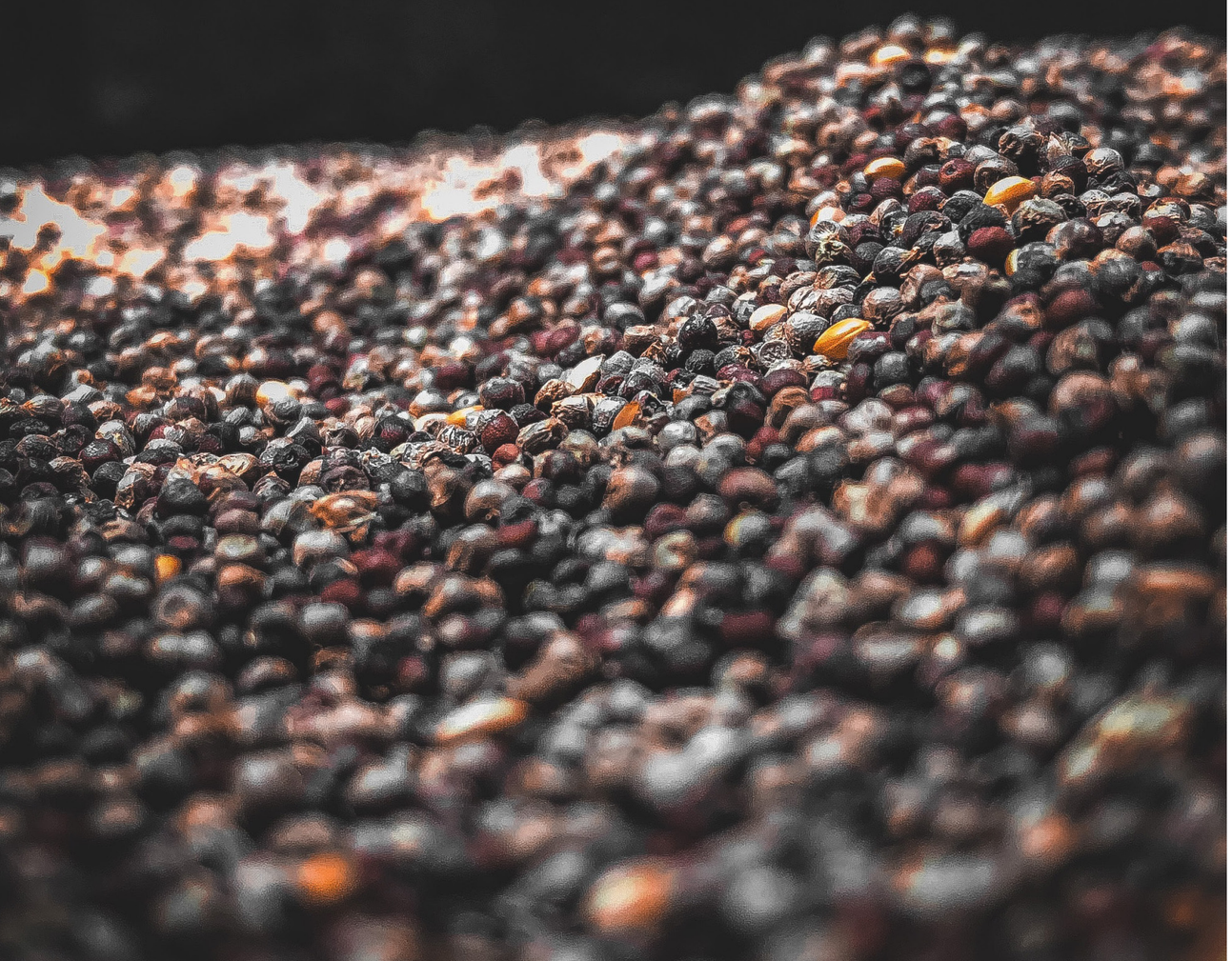
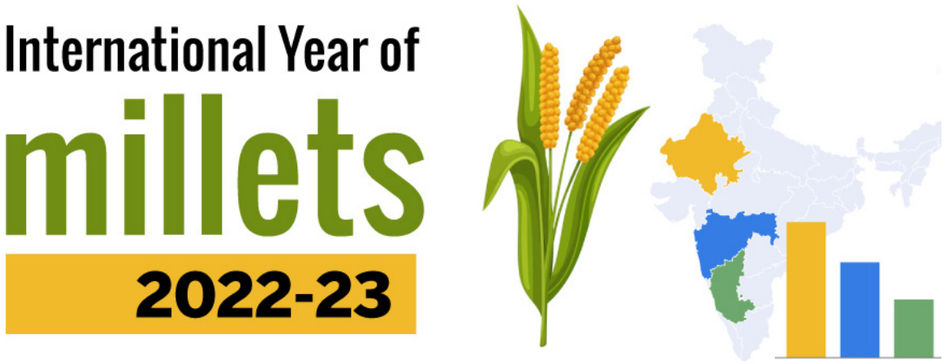


INTRODUCTION:

Millets are occasionally referred to as "famine crops" since they are the only ones that ensure harvests during times of famine. These crops were previously known as orphan crops since they are the last to be cultivated because there is less market demand for them and they also yield lower returns than other crops. However, these underutilized crops are significant because they help the poor in different regions of the world have access to food, nourishment, and a means of subsistence, as well as because they help us diversify our diet. Millets are a group of cereal food-grain crops that may be cultivated with low input and also have small seeds that are suitable for growth in a variety of tropical and subtropical regions. They were the first plants that humans domesticated in Asia and Africa and they later spread to other parts of the world as vital food sources for developing civilizations. They provide a variety of health advantages to the consumers and are nutrient-rich. Millets have recently assumed greater importance due to their high nutritional value, proven health advantages, adaptability to a wide range of environmental conditions. Millets are a significant contributor to sustainable agriculture and a healthy planet and represent the regional food system and culture in Asian and African countries.

CURRENT SCENARIO:

- The majority of millet grown worldwide, or 65% of all millets, is sorghum. Sorghum production between 60.18 and 58.70 million metric tonnes in 2010 and 2020, respectively.
- The world's largest producer of millets is India. About 21 States in India grow millets. Rajasthan, Maharashtra, Karnataka, Andhra Pradesh, Tamil Nadu, Kerala, Uttarakhand, Jharkhand, Madhya Pradesh, Haryana and Gujarat are all seeing significant momentum.
- Millets are grown on 12.45 million hectares in India, yielding 15.53 million tonnes. Sorghum is fourth in importance among food grains in India in terms of area and production (3.84 MH) (4.31 MT). More than 50% of the nation's territory is planted with millets.
- In 2020-21, India exported millets worth USD 26.97 million against USD 28.5 million in 2019-20. The top three importers of millets from India in 2020-21 were Nepal (USD 6.09 million), UAE (USD 4.84 million) and Saudi Arabia (USD 3.84 million).
- The FAO estimates that 89.17 million metric tonnes of millets will be produced globally from an area of 74.00 million hectares in 2020.



WHAT ARE MILLETS?

Millets are a type of small-grained cereal food crops that are extremely nutritional and cultivated under low fertile soils with low inputs. These crops make a significant contribution to the nation's food and nutritional security. The majority of millet crops are indigenous to India and are referred to be "Nutricereals" since they contain the majority of the nutrients needed for the body.

CLASSIFICATION OF MILLETS:

Millets are classified as two types Major millets and Miner millets. All the important millets crops are under described.

MAJOR MILLETS

1. **Sorghum Millet (Jowar)** ***Sorghum bicolor:***
2. **Pearl Millet (Bajra)** ***Pennisetum typhoides, P. glaucum:***
3. **Barley Millet** ***Hordeum vulgare:***
4. **Finger Millet (Madua/Ragi)** ***Eleusine coracana:***
5. **Proso Millet (Cheena)** ***Panicum miliaceum:***
6. **Barnyard Millet (Sawan)** ***Echinochloa frumentacea:***
7. **Kodo Millet (Kodo/Varagu/Haraka/ Arikalu)** ***Paspalum scrobiculatum:***
8. **Italian Millet (German Millet/Kakun/ Foxtail)** ***Setaria italica:***
9. **Little Millet (Kutki)** ***Panicum sumatrense:***
10. **Brown Top Millet** ***(Urochloa ramose):***
11. **Teff Millet** ***(Eragrotis tef):***
12. **Fonio Millet** ***(Digitaria exilis):***

1. SORGHUM MILLET (*Sorghum bicolor*):

It is also known as jowar in various states of India. Sorghum originated from North-eastern Africa and it was domesticated there between 5000-8000 years ago. With evidence of early cereal agriculture reaching back to 4,500 years, the Indian Subcontinent is the secondary center of origin for sorghum. In India, sorghum grains are mostly consumed as food for both humans and animals, Sorghum is a staple food for over 0.5 billion people and due to its many uses.

Value Added Products of Sorghum: Cake, Wada, Biscuits, Laddu, Dosa, Pasta, Upma, Idli, Whiskey and Breads etc.

2. BARLEY MILLET (*Hordeum vulgare*):

In India, barley, often referred to as Jau, is a type of whole grain cereal with a chewy texture and nutty flavour. It is cultivated on all over the world in temperate regions. It was one of the first grains to be farmed, especially in Eurasia 10,000 years ago. Globally, 30% of barley production is used as a source of fermentable material and 70% is used as animal feed.

Value Added Products of Barley: Cake, Toast, Biscuits, Laddu, Upma, Idli, Whiskey, breads etc.

3. PEARL MILLET (Bajra) (*Pennisetum typhoides, P. glaucum*):

Pearl millet (Pennisetum glaucum) is also known as Bajra. After rice and wheat, pearl millet is the crop that is most extensively grown in India. The origin of pearl millet is West Africa. Pearl millet provides food and financial assistance to more than 90 million people living in poverty.

Value Added Products of Pearl Millet: Cake, Dhokla, Biscuits, Laddu, Dosa, Whiskey, Noodles, Khichdi, Pongal and Chapati etc.

4. FINGER MILLET (Madua/Ragi) (*Eleusine coracana*):

Finger millet (Eleusine coracana) is also known as Madua and Ragi in various regions of the nation. Particularly for the rural inhabitants of Southern India and East and Central Africa, finger millet is a significant primary diet. It was first appeared on hills of Ethiopia or western Tanzania.

Value Added Products of Finger

Millet: Ambli, Dhokla, Biscuits Laddu, Chakli, Whiskey, Noodles, Halwa, Malt, Papad etc.

5. PROSO MILLET (Cheena) (*Panicum miliaceum*):

Proso millet (Panicum miliaceum) is also known as Cheena and Common millet. In drier regions of Asia, Africa, Europe, Australia and North America, proso millet is grown as a short-season crop. The hulled grain can be cooked or used as a tasty and nourishing cereal for unleavened bread.

Value Added Products of Proso Millet: Kheer, Biscuits, Noodles, Paneer Tikka etc.

6. BARNYARD MILLET (Sawan) (*Echinochloa frumentacea*):

Barnyard millet (Echinochloa frumentacea) is also known as Sawan in India. It provides a lot of nutrients. They are an excellent source of protein, fibre and iron. For both food and fodder, barnyard millet is mostly grown in India, China, Japan and Korea.

Value Added Products of Barnyard Millet: Idli, Murukku, Ribon pakoda, Paniyaram etc.

7. KODO MILLET (Varagu/Haraka/Arikalu) (*Paspalum scrobiculatum*):

Kodo millet is commonly known as Varagu, Haraka and Arikalu in the various regions of India. It was cultivated in India 3,000 years ago and is indigenous to South America's tropical and subtropical areas. In India, it is widely grown on the worst soils, although it is most likely not produced in any significant quantities elsewhere.

Value Added Products of Kodo: Biscuts, Laddu, Upma, Chapati etc.

8. ITALIAN MILLET (German Millet/Kakun/ Foxtail) (*Setaria italica*):

Italian millet (Setaria italica) is commonly known as German Millet, Kakun and Foxtail. In terms of grain structure, paddy rice and italian millet are highly similar. More than 8000 years ago, foxtail millet was domesticated in China and has since remained a staple cereal in dry and semi-arid areas, significantly assisting in the advancement of Chinese culture.

Value Added Products of Fox Millet: Noodles, Chapati, Upma, Dosa etc.

9. LITTLE MILLET (Kutki) (*Panicum sumatrense*):

Little millet (Panicum sumatrense), also known as Kutki. It is a significant part of the diet of tribal people in Sri Lanka, Nepal, and Myanmar, was domesticated in the Eastern Ghats of India.

Value Added Products of Little Millet: Pongal, Upma, Porridge, Idiyappam etc.

10. BROWN TOP MILLET (*Urochloa ramose*):

Brown top millet (Urochloa ramose), an indigenous to India, is cultivated only in a small portion of Karnataka and Andhra Pradesh, despite the fact that it grows as a weed in all of India's states. Brown top millet was most likely first domesticated in the Deccan region of South India, and it later spread to other regions of India throughout the prehistoric period.

Value Added Products of Brown top millet: Idli, Upma, Porridge, Dosa etc.

11. TEFF MILLET (*Eragrotis tef*):

Teff is a cereal grown mostly in the highlands of Ethiopia and Eritrea at high elevations (up to 2700 metres). It produces extremely tiny seeds, particularly those with a high protein content, that are exceedingly nutrient-dense. Tef is mostly used to produce injera, a spongy fermented flat bread that is a staple dish for most Ethiopians.

Value Added Products of Teff Millet: Idli, Dosa, Salad, Pizza etc.

12. FONIO MILLET (*Digitaria exilis*):

Fonio millet is grown, especially in West Africa on plateaus or intermediate elevations with heavier soils than the neighboring savannah and slightly more suitable rainfall. It is grown to a height of 30 to 80 cm, is extremely hardy, able to withstand periods of drought and matures in 70 to 150 days. Unlike other grains, the fonio proteins are high in the amino acid methionine.

Value Added Products of Fonio Millet: Kale balls, Upma, Acha, Jollof etc.

NUTRITIONAL IMPORTANCE OF MILLETS:

The important nutrients present in millets include resistant starch, oligosaccharides, lipids, antioxidants such as phenolic acids, flavonoids, lignans and phytosterols. Millets have potential health benefits, consumption of millets reduces risk of heart disease, cancer, diabetes, improves digestive system, detoxifies the body, increases immunity in respiratory health, increases energy levels and improves muscular and neural systems and are protective against several degenerative diseases such as metabolic syndrome and Parkinson's disease, cardiovascular diseases, diabetes mellitus metabolic disorder and gastrointestinal disorders etc.

- Sorghum has wide range of nutritional properties, its elements protect from celiac disease, obesity, diabetes, coronary, heart Disease, cancer and oxidative stress etc.
- Pearl millet beneficial in treating stomach ulcers, celiac disease, heart health, helps in bone growth development and repair, reduces cancer risk, helps in weight loss, reduce diabetes and preventing gall stones etc.
- Finger millet work as losing weight, fitness of bone health, decrease diabetes, repair the muscles, reduce blood cholesterol, reduce the risk of anemia, beneficial in conditions of anxiety, depression and insomnia (sleepless nights).
- Various types of millets reduce the risk of various diseases or disorders such as

IMPORTANCE OF MILLETS IN INDIA AND ABROAD:

- Millets are referred to as "miracle grains" or "crops of the future" since they not only thrive in challenging environments but also resist drought and demand few outside inputs.
- Millets are grown for both food and fodder, ensuring the food and livelihood security of millions of households and enhancing the profitability of farming.
- Millets assist in reducing the atmospheric carbon dioxide pressure, which helps to mitigate climate change.
- Synthetic fertilizers are not necessary for millets to be produced. The millet crops are unaffected by storage and do not attract pests.

OBJECTIVES OF INTERNATIONAL YEAR OF MILLETS- 2023:

- Raise awareness of millet's role in nutrition and food security.
- Motivate stakeholders to increase millets' quality and sustainable production.
- To fulfill the other two goals, draw attention to increased expenditure in research and development and extension services.

STEPS TAKEN TOWARDS PROMOTING MILLETS BY GOVERNMENT OF INDIA:

- The Department of Food and Public Distribution (DFPD)
- Millet Startup Innovation Challenge
- POSHAN Mission Abhiyan
- Mann Ki Baat
- National Nutri Cereals Convention 4.0

CONCLUSION:

Millets are the oldest foods consumed by humans, but due to industrialization and urbanization, rice and wheat were grown on a much larger scale, which diminished millets relevance and cultivation. Millets have re-emerged as a realistic possibility to maintain a healthy diet and can lower the incidence of certain metabolic disorders, which are growing more common due to newly adopted life-styles and eating habits including diabetes, hypertension, and cardiovascular disease. Millets offer a variety of nutritional, nutraceutical, and health-promoting qualities, particularly their high fiber content and starch-based nature, which have a significant role in lowering the risk of diabetes and other related disorders.