Millets and Indigenous Food Systems in Indian Subcontinent: Revitalization, Resilience, and Sovereignty

Abstract

Millet serves as a nutritional powerhouse, brimming with minerals, protein, beneficial fats, calcium, and an array of vital nutrients. Of all the millet varieties, Ragi takes the lead with its remarkable calcium content. Millets play a pivotal role in promoting good health, exhibiting the capacity to combat a range of diseases, even including cancer. Furthermore, these grains are highly recommended for individuals dealing with diabetes, forming a valuable part of the diet for diabetic patients.Presently, millet cultivation spans across 131 nations, with India prominently positioned as a frontrunner, contributing 41% to the global millet production. Remarkably, India's stature extends further as it clinches the fifth spot among the world's millet exporters. Noteworthy is the fact that in December 2018, India's proposal for designating 2023 as the International Year of Millets was embraced by the FAO, subsequently declared in March 2023. This paper delves into a comprehensive exploration of millets, encompassing their definition, a nutritional juxtaposition with cereals, accrued health advantages, contribution of millet production to the attainment of SDGs, a comprehensive overview of millet's cultivation landscape concerning geographical extent, production, productivity, and export trends. Additionally, a substantial focus is dedicated to elaborating on the significance and implications of the International Year of Millets, reflecting India's proactive role in enhancing global awareness about these grains.

Keywords: Coarse Grain, Food Sovereignty, IYM-2023, Millet, SDGs, Shree Anna.

Introduction

Agriculture employs around 50% of the Indian population, either directly or indirectly and Share of GVA of agriculture and allied sectors in total economy (%) at current prices is 18.3% (PIB, 2023). Millet is a cereal grain that belongs to the Poaceae family, also known as grass family. Millet is a low-maintenance, drought-resistant grain that adjusts to a wide range of cultivation conditions with minimal fertiliser and pesticide requirements (Rao et al., 2018). Millet has traditionally been employed as livestock feed, yet there's a growing interest among consumers due to its various health benefits and versatile culinary applications. Millets hold

historical significance, with mentions in ancient Yajurveda texts in India. Foxtail millet (priyangava), Barnyard millet (aanava), and black finger millet (shyaamaka) were identified, indicating their common consumption dating back to 4,500BC in the Indian Bronze Age (Bhat et al., 2018). Until about half a century ago, millets constituted the primary grain crop in India, (ICRISAT, 2017). Most people think coarse grain and millet is both the same thing, but coarse grain is divided in two categoriesi.e. millets and non-millet group.

Millets are grown in 131 different nations and are traditional diet for 59 million people in Asia and Africa (Ministry of Agriculture & Farmers Welfare, 2022; India in Portugal [@IndiainPortugal], 2022). India is the world leader in millet production, accounting for around 41% of total global production in 2020 (Department of Commerce, GOI. [@DoC_GoI], 2022). India produces around 12 million MT of millets annually, according to Ministry of Agriculture and Farmers Welfare data (PIB, 2022). Rajasthan leads in coarse cereal production with a top position of 83.6 lakh tonnes, followed by Karnataka with 79.31 lakh tonnes, Maharashtra with 60.82 lakh tonnes, Madhya Pradesh with 49.53 lakh tonnes, and Uttar Pradesh with 46.04 lakh tonnes (PIB, 2022; Find Easy, 2023). Before the Green Revolution, millets accounted for roughly 40% of all cultivated grains (Indian Science Technology and Innovation, 2023). Agricultural production is a major emitter of GHGs, currently accounting for 18% of total GHG emissions in India (INCCA, 2010). This emission needs to be controlled. Millet is grown without fertilizer or pesticide, so if one grows millets then it could be controlled.

Millets are easy to digest and also contain a high percentage of minerals like magnesium, phosphorous and potassium apart from other nutrient like protein, fat and vitamins. **Ragi is rich source of Ca** (344 mg/100gm edible) as compare to cereals and other millets. Many other nutrients like protein and Fat are more in millets as compared to cereals (Table 2). Millets provide 14.37% DV(Daily Value) of Phosphorous (P), 10.92% DV of Magnesium (Mg), 4.60% DV of Floate and 3.45% DV of iron (Fe)from 100 gm cooked millet.

Since 2018, the Indian government has taken numerous steps to promote millets, including the Nutritional Year of Millet 2018, a sub-mission on millet under the Nutritional Food Security Mission, millet including under the POSHAN MISSION Abhiyan, and several state launched mission on millets viz., The Odisha Millet Mission (OMM) was established in 2018, aiming to enhance organic farming and bolster the promotion of millets. In Karnataka, the "Savayava Bhagya Yojana" was introduced to facilitate organic farming and advance the cultivation of

millets. Maharashtra embarked on a project focused on promoting millets through climate-resilient agriculture. Additionally, Telangana initiated the Raithu Bandhu Samithi to encourage millet cultivation, (Ministry of Agriculture & Farmers Welfare, 2022; ASSOCHAM, 2022). FAO accepted India's proposal in December 2018 and named 2023 the International Year of Millets in March 2021 at 75th session of the United Nations General Assembly. The Indian Resolution was endorsed by 72 countries. The International Year of Millets (IYM)-2023 focuses on initiatives to increase production, consumption, export, branding, and so on(FAO, 2022) (Fig. 1).

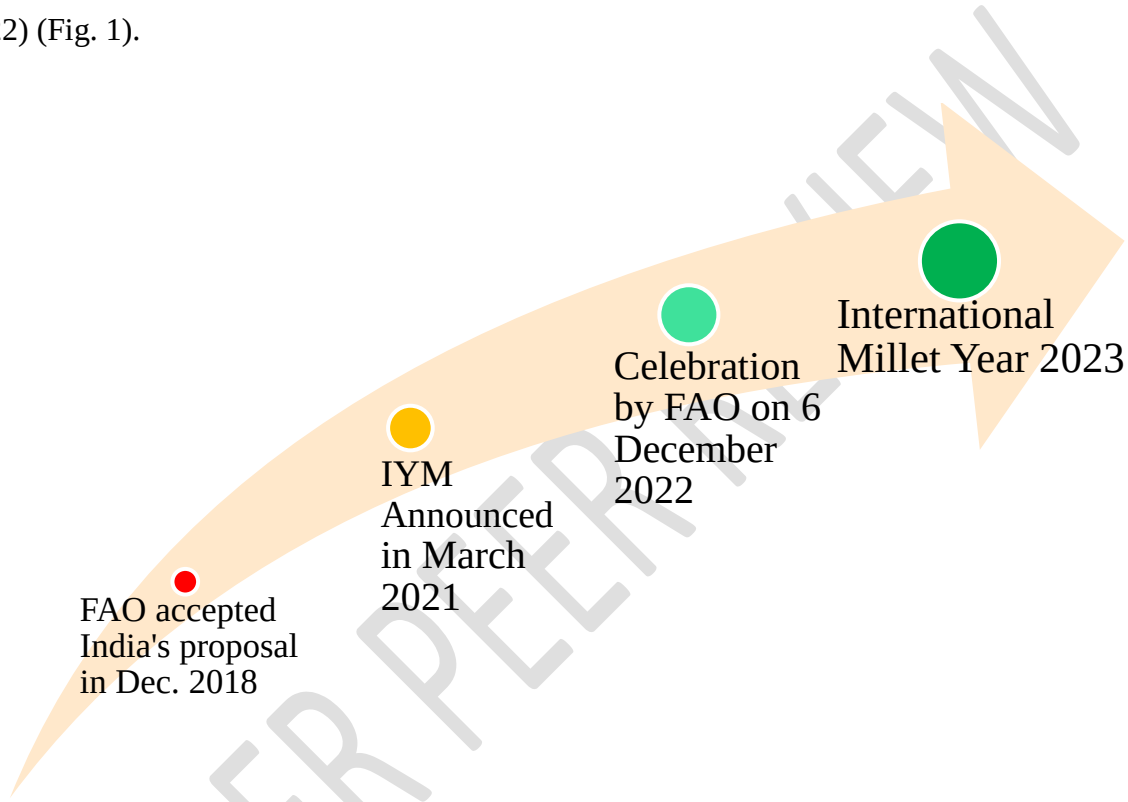

Fig. 1 Timeline of International Year of Millets (IYM)-2023

Categorization of Coarse Grains elucidating Millets and Non-Millets Varieties

Coarse grains can be categorized into two primary groups: millets and non-millets. Within the millets category, there are two subgroups: large millets, which encompass pearl millet, sorghum, and finger millet; and minor millets, which consist of proso millet or panivaragu (Panicum miliaceum), foxtail millet or thenai (Setariaitalica), little millet or samai (Panicum sumatrense), barnyard millet or sanwa millet (Echinochloa colona), and kodo millet or varagu (Paspalum scrobiculatum) (TNAU, 2015). Outside the millet classification, the non-millet group comprises barley and maize as the primary crops.

Table: 1 Millet and Non-Millet Group

S. No.	Millet group	Food products	Non-Millet group	Food products
1.	**Sorghum** *(Sorghum bicolor)*	Roti, ugali, popped sorghum, malt food, snack/roasted mix grains.	**Maize***(Zea mays)*	Chapaties, ladoo, halva, kheer, sev, mathi, popped corn, etc.
2.	**Pearl millet***(Pennisetum glaucum)*	Roti, ugali, fermented food products, pizza, roasted mix grains.	**Barley***(Hordeum vulgare)*	Roti, Sattu.
3.	**Finger millet***(Eleusine coracana)*	Roti, dumpling, popped millet, maltfood		
4.	**Small millets***(Panicum sumatrense)*	Roti, cooked cereals.		

(Source: Sandhu, 2014)

Nutritional profile of 100 gm Cooked Millet

100 grams of cooked millet provides a nutritional profile that makes it a healthy addition to your diet. With just 119 Calories (the capital C in Calories denotes kcal on food labels), it offers a balance of essential macronutrients and micronutrients. The 23.56 grams of carbohydrates, including 1.26 grams of fiber, make it a good source of sustained energy and can aid in digestion. Its 3.45 grams of protein support tissue repair and overall body functions. The minimal 0.98 grams of fat make it a low-fat option. Millet also contains essential minerals like

phosphorus (100 mg), magnesium (0.272 mg), folate (0.61 mg), and iron (0.63 mg), contributing to bone health, muscle function, and red blood cell formation (Fig. 2).

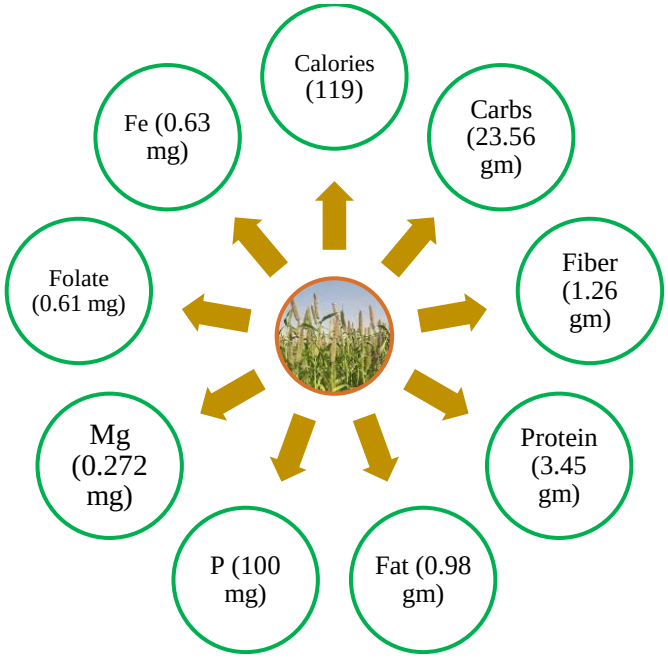

Fig. 2 Nutrient Breakdown of 100g Cooked Millet

Nutritional comparison of Millet with Wheat and Rice

In millets, protein content is somewhat comparable to that of cereals, while fat, minerals, fiber, carbohydrates (CHO), calcium (Ca), iron (Fe), and carotene content are more abundant in millets. Notably, among all millets and cereals, Ragi stands out with the highest calcium content, boasting 344 mg. Observing these nutritional attributes of millets, it becomes apparent that transitioning our dietary habits from cereals to millets is advantageous. Millets are known for being easily digestible and having a straightforward cultivation process.

Table: 2 Nutritional composition of Millet with Wheat and Rice

S. No.	Nutrient (per 100gm)	Pearl millet	Sorghum	Ragi	Rice	Wheat
1.	**Protein (gm)**	11.6	10.4	7.3	6.8	11.8
2.	**Fat (gm)**	**5**	1.9	1.3	0.5	1.5
3.	**Minerals (gm)**	**2.3**	1.6	**2.7**	0.6	1.5
4.	**Fiber (gm)**	1.2	1.6	**3.6**	0.2	1.2
5.	**CHO (gm)**	67.5	72.6	72	78.2	71.2
6.	**Energy K. cal.**	361	349	328	345	346
7.	**Ca (Mg)**	42	25	**344**	10	41
8.	**P (Mg)**	296	222	283	160	**306**
9.	**Fe (Mg)**	5	5.8	**6.4**	3.1	4.9
10.	**Carotene (µg)**	**132**	47	42	0	64
11.	**Niacin (Mg)**	2.3	3.1	1.1	1.9	5.5

(Source: Gopalan et al., 2014; Ramashia et al, 2021; Jhawer, 2022)

Health benefits of Millets

Millet is more than just an intriguing alternative to other grains. The grain is high in phytochemicals, including as phytic acid, which is thought to lower cholesterol, and phytate, which is linked to a lower risk of cancer (Coulibaly et al., 2011; Kaur et al., 2014). These health advantages have been attributed in part to the wide range of potential chemopreventive substances known as phytochemicals, which include antioxidants found in high concentrations in foods such as millets (Izadi et al., 2012). They may provide a variety of health benefits, including blood sugar and cholesterol reduction. These are also gluten-free, making them an excellent alternative for anyone suffering from celiac disease or adhering to a gluten-free diet. The benefits are outlined in the following points:

1. Providing support for the cardiovascular system

Millet contains magnesium, which helps to regulate heart rhythm. Consuming millet may also raise levels of the protein adiponectin, which has been linked to cardiovascular tissue protection.

2. Providing assistance to the digestive system

Millet contains fibre, which enhances digestive health and aids with bowel movement management. Millet also contains prebiotics, which help probiotic bacteria flourish in the microbiome. This is essential for intestinal health as well as the immune system as a whole.

3. Improving Mood

Millet contains a significant amount of the amino acid tryptophan, which helps to improve one's mood (Chin, 2022; Lang, 2022).

4. **Diabetes prevention**

According to a 2021 study, millet may reduce the risk of developing type 2 diabetes. It also helps diabetics maintain their blood glucose levels (Kaur et al., 2014).

5. Obesity control

Another study published in 2021 examined the effectiveness of millet consumption in treating obesity and excessive cholesterol.

6. Decreasing oxidative stress

Millet includes antioxidants, which may help the body resist oxidative stress linked to sickness and ageing. Chronic illness risk may be reduced by antioxidants (Chin, 2022; Lang, 2022).

Role of Millet Production on Pertinent Sustainable Development Goals

IYM 2023 aspires to contribute to the 2030 Agenda for Sustainable Development of the United Nations. Sustainable millet production embodies a multi-faceted solution aligned with key Sustainable Development Goals (SDGs). Primarily, it addresses SDG 2 by mitigating hunger, enhancing food security, and promoting nutrition. Millets' inclusion in diets supports SDG 3's aim for holistic well-being. Additionally, elevating millet consumption aligns with SDG 8, bolstering smallholder farmers' prospects and economic growth.Furthermore, heightened trade in millets resonates with SDGs 8 and 12, fostering economic expansion and diversifying global food choices. In tandem, cultivating millets aligns with SDGs 13 and 15, promoting climate-

resilient agriculture and sustainable land use. In essence, sustainable millet cultivation encapsulates a comprehensive approach that addresses hunger, well-being, economic growth, trade diversity, climate action, and ecological preservation, underscoring the transformative potential of integrated solutions within the framework of the SDGs(Antony & Maharajan, 2022; FAO, 2022; Girgaonkar, 2023).

India's Dominance in Millet Production, Exports, and Global Market Trends

India holds the global mantle in millet production, commanding approximately 41% of the total worldwide yield in 2020 (Jain, 2023). Annually, the country generates roughly 12 million MT of millets. In the fiscal year 2020-21, India's millet exports reached a valuation of USD 26.97 million. As of 2020, India secures its place as the fifth largest millet exporter on the global stage. During 2020-21, India's millet exports, though slightly decreased, still amounted to USD 26.97 million compared to USD 28.5 million in 2019-20. Notably, the primary millet importers from India in 2020-21 were Nepal (USD 6.09 million), the UAE (USD 4.84 million), and Saudi Arabia (USD 3.84 million). As of 2020, the prominent millet importers include Indonesia (8%), Belgium (7.36%), Germany (4.65%), Mexico (4.1%), Italy (4.02%), the United States of America (3.35%), the United Kingdom (3.25%), Brazil (3.24%), and the Netherlands (3.14%). Collectively, these top 10 importers contributed USD 221.7 million out of the global import total of USD 466.3 million in 2020 (PIB, 2022).

Crop-wise Area, Production, and Yield Trends of Millets in India (2017-2022)

In the millet category for the year 2021-22, pearl millet emerged as the leader with the largest cultivated area of 75,500 hectares and the highest production of 92.2 lakh tonnes. Following this, sorghum, finger millet, and minor millets held the subsequent ranks with areas of 48,300 hectares, 10,100 hectares, and 4,590 hectares, and productions of 43.1 lakh tonnes, 16.7 lakh tonnes, and 3. 3 lakh tonnes, respectively. In terms of productivity, finger millet claimed the top position with a yield of 1,662.27 kg per hectare, while minor millets registered the lowest productivity at 809 kg per hectare (Table 3).

Table 3 Crop-wise Area, Production, and Yield Trends of Millets in India (2017-2022)

S. No.	Crop	Year	Area (\'000 Hectares)	Production (\'000 Tonnes)	Yield (Kg per Ha)
1.	Pearl Millet (Bajra)	2017-18	7,480.60	9,208.85	1,231.03
		2018-19	7,105.03	8,664.13	1,219.00
		2019-20	7,542.68	10,362.68	1,374.00
		2020-21	7652	10863	1420
		2021-22	7550	9220	1374
2.	Sorghum (Jowar)	2017-18	5,024.45	4,803.38	956.00
		2018-19	4,092.87	3,475.09	849.06
		2019-20	4,823.76	4,772.10	989.29
		2020-21	4378	4812	1099
		2021-22	4830	4310	989
3.	Finger Millet	2017-18	1,194.29	1,985.24	1,662.27
		2018-19	890.94	1,238.70	1,390.34
		2019-20	1,004.46	1,755.06	1,747.27
		2020-21	1159	1998	1724
		2021-22	1010	1670	1747
4.	Minor Millets	2017-18	546.27	438.99	803.60
		2018-19	453.75	333.00	734.00
		2019-20	458.35	370.81	809.00
		2020-21	444	347	781
		2021-22	459	330	809

(Source: Millet State, 2021; APEDA, 2022)

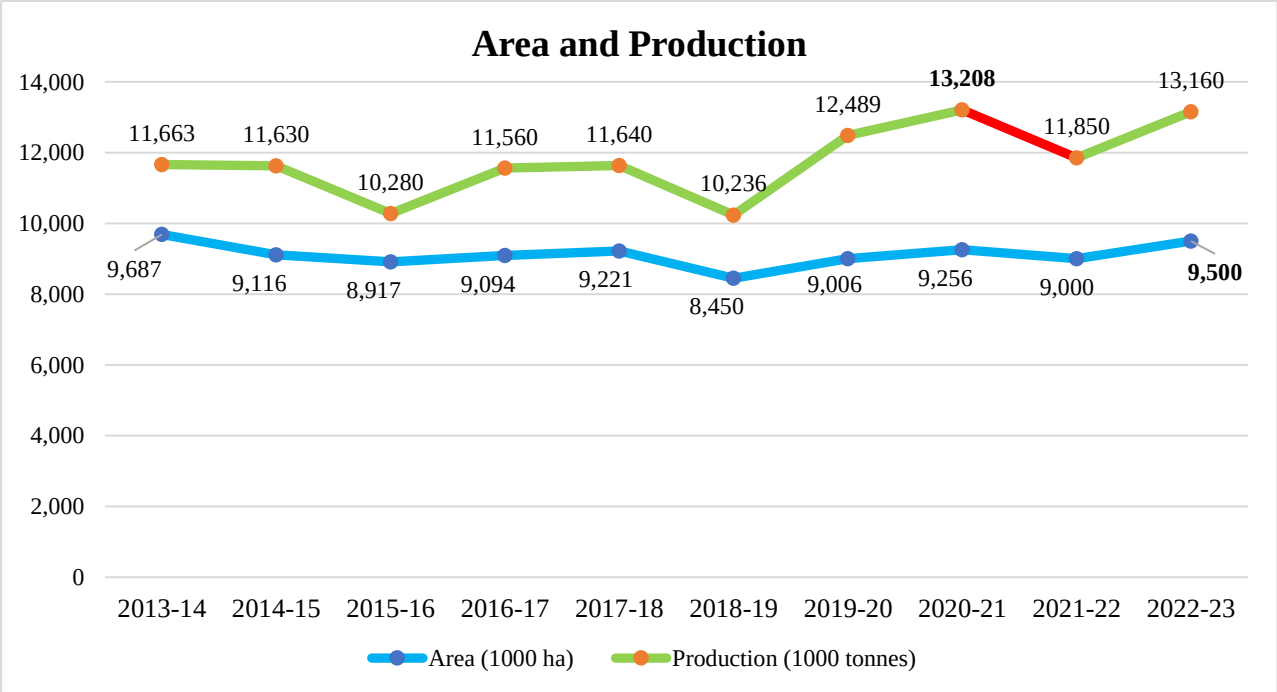

Fig. 3 Millet Area and Production Trends in India

Top Destinations for India's Millets Exports

India's exports during 2020-21 in terms of quantity (in MT) and value (in US$ Million) to various countries are shown in Table 4. Notably, Nepal emerges as a significant trade partner, importing 22,095.7 MT of goods valued at US$ 6.09 million. This sizeable quantity represents a notable 25.6% of India's overall exports. Conversely, Algeria occupies the 10th position in this list, importing 1,761 MT of commodities with a total value of US$ 0.49 million. Despite its comparatively lower import figures, Algeria's share in India's exports remains at 1.81%.

Table 4 Top Destinations for India's Millets Exports

Top ten Country	**2020-21**	
	Qty in MT	**US$ Mill**
Nepal	22095.7	6.09
UAE	15556.7	4.84
Saudi Arabia	13516.5	3.84
Libya	5142.63	1.65
Tunisia	5549	1.63
Morocco	3915	1.07
UK	2102.85	0.99
Yemen	3138	0.78
Oman	2337.16	0.66
Algeria	1761	0.49
Top ten	**75114.5**	**22.04**
Other Countries	**11,371**	**4.93**
Total	**86,486**	**26.97**
Share of top ten in India's export	**86.85%**	**81.72%**

(Source: PIB, 2022)

Top 10 Countries of millet in area and production

India leads in millet production, utilizing an area of 9.5 million hectares to yield a substantial 12 million tonnes, with an average yield of 1.3 tonnes per hectare. This underscores India's significant contribution to global millet production. India's productivity lags behind that of China and Ethiopia, a challenge that can be overcome through adopting scientific practices. The shift of Indian farmers from modern to traditional agricultural practices has been a setback. However, there's an inspiring example from Sangli village in Maharashtra. Here, a farmer's transition from conventional to traditional farming resulted, where Group farming, done by around 25 farmers, has yielded 4,300 kg bajra per acre in the village. The national average isjust about 1,300kg bajra per acre while the state average is 1,200kg per acre(Patil, 2022). On

the other hand, China has the most efficient millet production compared to all the countries, which is why it holds the third position. This is remarkable considering that China achieves this with a relatively small cultivation area of only 0.9 million hectares (Table 5).

Table: 5.Top 10 Countries of millet in area and production

S.No.	**Country**	**Area (1000 ha)**	**Production (1000 tonnes)**	**Yield(T/ha)**
1.	India	9500	12000	1.3
2.	Niger	7000	3400	0.5
3.	China	900	2700	3
4.	Nigeria	2000	2000	1
5.	Mali	2,100	1,800	0.9
6.	Sudan	2,500	1,500	0.6
7.	Ethiopia	450	1,100	2.4
8.	Burkina Faso	1,200	1,000	0.8
9.	Senegal	1,000	1,000	1
10.	Chad	1,180	700	0.6
11	**World**	138 (20%) **(lakh ha)**	863 **(lakh tonnes)**	

(Source: USDA, 2023; Nag,2017)

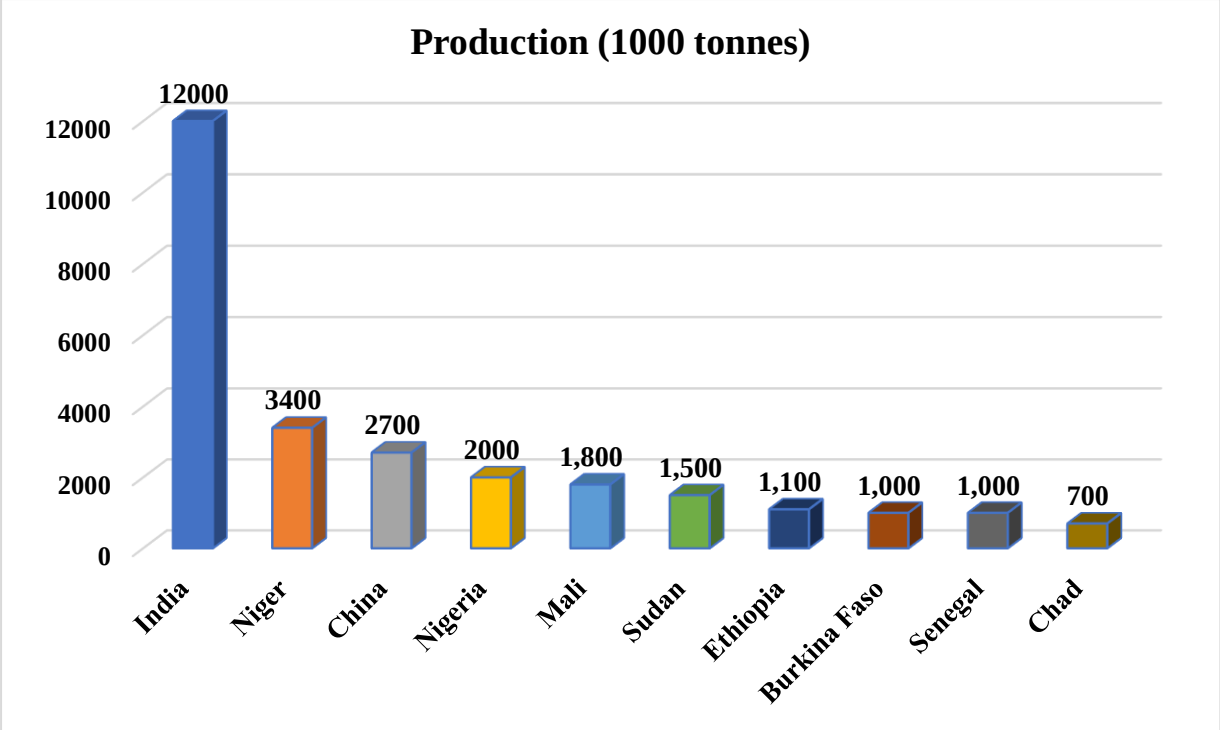

Fig. 4 Top 10 Countries in terms of Millet Production (1000 Tonnes)

Extension Strategies for promoting millets

1. Government authorities and policymakers should integrate millets into the menus of public institutions like Anganwadi, schools and medical facilities.
2. The private sector should invest in the long-term millet production by extending financial support and loans. Moreover, the food industry needs to broaden the manufacturing and marketing of millet-based products.
3. Chefs and influential figures should infuse millets into their culinary creations and menus, endorsing their usage. Simultaneously, they should educate the public about innovative and appealing ways to prepare millets, aligning with dietary standards.
4. From a young age, children should be motivated to explore millets, understanding their history and benefits. They should also have opportunities to taste millet-based dishes in school cafeterias.
5. Farmers, especially smallholders and family farmers, should receive knowledge about millet benefits and the latest cultivation, harvesting, and post-harvest techniques for ensuring top quality.
6. Non-governmental organizations (NGOs), cooperatives, and civil society groups engaged with farmers should disseminate best practices for millet cultivation, offering

practical training and avenues for improved market access. They should establish networks and action groups to enhance millet availability and affordability.

7. Researchers and educational institutions should allocate resources to investigate millets, encompassing their nutritional attributes, characteristics, and sustainable production techniques.
8. The global impact of the IYM hinges on strategic partnerships involving FAO offices, stakeholders, commercial entities (transport, entertainment, and advertising firms), and local governments.
9. Implement mid-day meals featuring millet in schools and Anganwadi's at least once a week.
10. By 2023, hotel buffets should include at least one millet-based item.
11. Install millet vending machines in public spaces.
12. Promote and back various forms of media – print, social, and electronic – to propagate millet awareness (Rao et al., 2018; FAO, 2022)

CONCLUSION

Millets hold a vital place in India's agricultural landscape and culture. They are not only a resilient and sustainable crop but also a source of nutrition for millions. With a rich history dating back to ancient texts, millets are now experiencing a resurgence in popularity due to their health benefits and versatility in modern cuisine. India's leadership in millet production, along with government initiatives to promote them, underscores their significance. Furthermore, millet cultivation aligns with environmental goals, as it requires minimal fertilizer and pesticides, offering a potential solution to reduce greenhouse gas emissions from agriculture. The designation of 2023 as the International Year of Millets by the FAO demonstrates the global recognition of millets' importance. As we move forward, embracing millets can contribute to sustainable agriculture, improved nutrition, and a healthier planet.

BIBLIOGRAPHY

Agriculture INDIA. [@AgriGoI]. (2022, Dec. 20). Hon'ble Minister, Agri & Farmers' Welfare Shri @nstomar, Hon'ble MoS Sushri @ShobhaBJP & Shri @KailashBaytu and other Parliamentarians cut a Bajra Cake during the millet luncheon today. Twitter. Stable URL: https://twitter.com/AgriGoI/status/1605164548318957568

Amadou, I., Gounga, M. E., & Le, G. W. (2013). Millets: Nutritional composition, some health benefits and processing-A review. Emirates Journal of Food and Agriculture, 25 (7): 501-508. Stable URL: https://ejfa.me/index.php/journal/article/view/981

Antony Ceasar, S., & Maharajan, T.(2022). The role of millets in attaining United Nation'ssustainable developmental goals.Plants, People, Planet,4(4),345–349. Stable URL: https://doi.org/10.1002/ppp3.10254ANTONY CEASARANDMAHARAJAN349

APEDA. (2022). India Millets Production. Stable URL: https://apeda.gov.in/milletportal/files/Statewise_Millet_Production.pdf

ASSOCHAM. (June 2022). A report on Millets: The Future Super Food for India. The associated chambers of commerce and industry of India. Stable URL: https://www.assocham.org/uploads/files/Report_Millets%202022%20(Print%20Version)%20(1).pdf

Bhat, B.V., Rao, B.D. and Tonapi, V.A. (2018). The Story of Millets. Karnataka State Department of Agriculture, Bengaluru, India with ICAR-Indian Institute of Millets Research, Hyderabad, India. Stable URL: https://www.millets.res.in/pub/2018/The_Story_of_Millets.pdf

Chin, A. (2022, Jan. 10). What to know about millet. Medical News today. Stable URL: https://www.medicalnewstoday.com/articles/what-is-millet

Coulibaly, A., B. Kouakou and J. Chen. (2011). Phytic acid in cereal grains: structure, healthy or harmful ways to reduce phytic acid in cereal grains and their effects on nutritional quality. Am. J. Plant Nutr. Fert. Technol. 1:1–22. Stable URL: https://scialert.net/fulltext/?doi=ajpnft.2011.1.22

Department of Commerce, GOI. [@DoC_GoI]. (2022, Dec. 20). India is one of the leading exporters of millet in the world. Twitter. Stable URL: https://twitter.com/DoC_GoI/status/1604808953187401731

FAO. (2020). Emissions due to agriculture. Global, regional and country trends 2000–2018. FAOSTAT Analytical Brief Series No 18. Rome. Stable URL: https://www.fao.org/3/cb3808en/cb3808en.pdf

FAO. (2022). INTERNATIONAL YEAR OF MILLETS (IYM) 2023. Communications handbook and toolkit. Rome, Italy. CC3253EN/1/12.22. Stable URL: https://www.fao.org/3/cc3253en/cc3253en.pdf

FAO. (2022, Dec. 6). Opening Ceremony of the International Year of Millets 2023. Stable URL: https://www.fao.org/webcast/home/en/item/6085/icode/

FAOSTAT. (2021). Crops and livestock products. Stable URL: https://www.fao.org/faostat/en/#data/QCL

Find Easy. (2023). Top Indian states by Coarse cereals production. Stable URL: https://www.findeasy.in/indian-states-by-coarse-cereals/

Girgaonkar, P.S. (2023, April 23). Millets: The Sustainable Superfood That Can Help Achieve Sustainable Development. The Times of India. Stable URL: https://timesofindia.indiatimes.com/blogs/urban-pulse-planning-policies-and-development/millets-the-sustainable-superfood-that-can-help-achieve-sustainable-development-goals/

Gopalan C. Rama Sastri B. V. & Balasubramanian S. C. (2014). Nutritive value of indian foods. National Institute of Nutrition. Stable URL: https://www.worldcat.org/title/1190966724

ICRISAT. (2017, April 15). Bringing back millets- the super crop of our ancestors. StableURL:https://www.icrisat.org/a-short-history-of-millets-and-how-we-are-recognising-their-importance-in-the-modern-context/

India in Portugal. [@IndiainPortugal]. (2022, Dec 19). Millets have been an integral part of our diet for centuries. International Year of Millets aims to create awareness and increase the production & consumption of millets. Twitter. Stable URL: https://twitter.com/IndiainPortugal/status/1604779614248714241/photo/1

Indian Science Technology and Innovation. (2023, Feb. 8). MILLETS: The Future Food. Stable URL: https://www.indiascienceandtechnology.gov.in/listingpage/millets-future-food#:~:text=Before%20Green%20Revolution%2C%20the%20millets,is%201%2C239%20kg%20per%20hectare.

INCCA. (2010). India: Greenhouse Gas Emissions 2007. Indian Network for Climate Change Assessment. Stable URL:

https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=d7d6040de1f57b79ad49af205af5fc39cb0aadae

Izadi, Z., A. Nasirpour, M. Izadi and T. Izadi. (2012). Reducing blood cholesterol by a healthy diet. Int. Food Res. J. 19(1):29–37. Stable URL: https://www.researchgate.net/publication/285946620_Reducing_blood_cholesterol_by_a_healthy_diet

Jain, A. [@aniljaindr]. (2022, Dec. 20). आजभारत Millets कासबसेबड़ाउत्पादकदेशहै।मिलेटछोटेकिसानोंकेलिएसबसेसुरक्षितफसलेंहैंक्योंकियेफसलेंकठिन, गर्मवशुष्कवातावरणमेंभीजलवायुअनुकूलहैं। Twitter. Stable URL: https://twitter.com/aniljaindr/status/1605141333471285248

Jhawer, M. (2022, Feb 05). Millets versus Wheat and Rice. *MED India*. Stable URL: https://www.medindia.net/patients/lifestyleandwellness/magical-millets-for-your-health-wheat-and-rice.htm

Kaur, K. D., Jha, A., Sabikhi, L., & Singh, A. K. (2014). Significance of coarse cereals in health and nutrition: a review. Journal of food science and technology, 51, 1429-1441. Stable URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4108649/

Lang, A. (2022, Sep. 12). What Is Millet? Nutrition, Benefits, and More. Healthline. Stable URL: https://www.healthline.com/nutrition/what-is-millet#nutrients

Millet State. (2021). APY Statistics. Indian institute of millets research. Stable URL: https://www.milletstats.com/apy-stats/

Ministry of Agriculture & Farmers Welfare. (2022, April 19). International year of Millets (IYoM)- 2023. National Conference on Kharif Campaign, 2022. Stable URL: https://agricoop.nic.in/sites/default/files/Crops.pdf

Nag, O. S. (2017, April 25). The Leading Millet Producing Countries In The World. Worldatlas. Stable URL; https://www.worldatlas.com/articles/the-leading-millet-producing-countries-in-the-world.html

Narendra Modi. [@narendramodi]. (2022, Dec. 20). As we prepare to mark 2023 as the International Year of Millets, attended a sumptuous lunch in Parliament where millet dishes were served. Good to see participation from across party lines. Twitter. Stable URL: https://twitter.com/narendramodi/status/1605157790539997185

Patil, A. (2022, Oct. 4). Maharashtra: Switch to scientific farming fetches Sangli village bajra yield 3 times the national average. The Timses of India. Stable URL: https://timesofindia.indiatimes.com/city/kolhapur/maharashtra-switch-to-scientific-farming-fetches-sangli-village-bajra-yield-3-times-the-national-average/articleshow/94630952.cms

PIB. (2022). Exports of millets to increase exponentially as Indian exporters find new markets. Stable URL: https://pib.gov.in/PressReleasePage.aspx?PRID=1796514

PIB. (2022, Dec. 6). FAO Opening Ceremony of International Year of Millets 2023 held in Rome, Italy. Ministry of Agriculture & Farmers Welfare. Stable URL: https://pib.gov.in/PressReleasePage.aspx?PRID=1881256

PIB. (2022, MAR 29). Promotion of Millets. Ministry of Agriculture & Farmers Welfare. Stable URL: https://pib.gov.in/PressReleasePage.aspx?PRID=1810915

PIB. (2023, March 21). Contribution of Agricultural Sector in GDP. Ministry of Agriculture & Farmers Welfare. Stable URL: https://www.pib.gov.in/PressReleasePage.aspx?PRID=1909213

Ramashia, S. E., Mashau, M. E. and Onipe, O. O. (2021). Millets Cereal Grains: Nutritional Composition and Utilisation in Sub-Saharan Africa. *Intech open*. Stable URL: https://www.intechopen.com/chapters/76189

Rao, B.D., Bhat, B.V. and Tonapi, V.A. (2018). Nutricereals for Nutritional Security. ICAR Indian Institute of Millets Research (IIMR), Hyderabad-500 030. ISBN: 81-89335-70-7. https://www.millets.res.in/pub/2018/Nutricereals_for_Nutritional.pdf

Sandhu, J. S. (2014). The status paper on Coarse Cereals. Directorate of Millets Development, Jaipur. Department of Agriculture, Cooperation and Farmers Welfare. Stable URL: https://www.nfsm.gov.in/StatusPaper/StatusMillets2016.pdf

TNAU. (2015). Post Harvest Technology:Agriculture:Millets. Stable URL: https://agritech.tnau.ac.in/postharvest/pht_millets_littlemillets.html

USDA. (2022). Millet Area, Yield and Production. IPAD (International production Assessment Division),Foreign Agricultural Services. Stable URL: https://ipad.fas.usda.gov/countrysummary/default.aspx?id=SU&crop=Millet