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The millets expedition from coarse grains to ‘Sri Anna’

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Abstract

Being one of the first crops to be domesticated, these small-seeded grasses popularly known as millets have the history of consumption since the Bronze Age. Even the Indus Valley Civilization trace back to its existence. During the pre-independent and post-independent periods, millets were the common man food and wheat and rice spruced up the rich elites. Until the advent of Green Revolution, millets contributed to 40% of India's cultivated grain production and were replaced by wheat and rice. By the passage of time they lost their value in Indian platter and merely recognized as coarse grains suitable for animal feed. Solemnly depending on the two major cereals, our country accelerated on the path of monoculture (wheat & rice) serving deficiencies to the Indian masses. But, better late than never, recognizing the enormous potential of millets, which also aligns with several UN Sustainable Development Goals in terms of being climate-resilient, nutritious and water-efficient crops, the GOI has been prioritizing millets for their rich heritage and nutrients' treasure. A submission on National Food Security Mission-Nutri Cereals was implemented considering the high nutritive value, potential for economic empowerment of small and marginal farmers and contribution to maintaining the earth's biodiversity; in April 2018, millets were rebranded as "Nutri Cereals" and the year 2018 was declared as the 'National Year of Millets', aiming at large promotion and demand generation. These efforts of cultivation and consumption of millets in India, have been brought to the forefront of the international arena as a proposal to UN to declare year 2023 as year of millets and has been finally declared and recognized as the "International Year of Millets-IYM-2023" globally. In present scenario, due to less cultivation, low production and high demand among the conscious people, millets are restricted to the plates of health conscious, intellectual, awarded and rich class people while wheat and rice being cheaply available belonged to poor masses. Leading ahead towards its popularization and introducing schemes for its promotion, cultivation and consumption, the Union Budget 2023 named millets (major, minor & pseudo) as "Sri Anna". But unless and until this Sri Anna falls in the platter of every common man, it would still be the 'orphan grain' which needs efforts from both government and individual to be there where it should be.

Keywords: Coarse grains, climate-resilient, millets, nutria-cereals, nutritious, shri-anna

Introduction

The term 'millets' simply refers to a group of small-seeded grasses, widely grown around the globe as cereal crops or grains for fodder and human food [5]. Due to their nutritive, environmental and socio-economic value they are synonymously known as 'Smart Food', 'Nutri-Cereals' and 'Sri Dhanya' or 'Sri Anna'. This group of grasses clubbed three major classes- Major millets, Minor millets and Pseudo millets. Major millets involves Sorghum (Jowar), Pearl millet (Bajra) and Finger millet (Ragi), whereas Minor millets comprises of Kodo millet, Barnyard millet (Sawa), Foxtail millet (Kangani), Proso millet (Cheena) and Little millet (Kutki) while Pseudo millets includes Buckwheat (Kuttu) and Amaranth (Chaulai) [1]. Unlike wheat and rice, millets have rough surface and so-called coarse grains or rough-type grains. The importance and cultivation cycle of millets in India have seen a paradigm shift since the last century. The detailed history, nomenclature and importance of millets in the Indian subcontinent and worldwide is discussed further in this paper.

Materials and Methods

All the data and information compiled in this review paper has been collected, sorted out and well-arranged from different secondary sources including research papers from journals, GOI magazines and publications and various trustworthy and renowned newspapers. As the world is celebrating India's put forth commencement on Millets' Year, the data revolving around these crops and their utilization, cultivation and distribution pattern is well described in the later pages.

Many government agencies, NGOs and private organizations are coming forward to give boost to millets through generating awareness in the customer community. Not only this, different annual plans, programmes and projects are being put forward by government and non-government organizations keeping in mind the millets theme. Hence, different publications regarding all aspects has been tried to be covered in this review paper.

Results and Discussion

The Archives of millets

Millets were among the first crops to be domesticated. There is evidence of consumption of millets by the Indus Valley Civilization (3000BC) [2]. There have been innumerable sources of literature and documents that suggest how millets were an intrinsic part of our food habits, culinary, rituals and society at large. Kalidas in his masterpiece, “Abhijnana Shakuntalam” explained the auspicious nature of foxtail millet. Even Yajur Ved verses includes mention of millets. Sushruta in his work ‘Samhita’ classified cereals as Dhanya varg, Khudhanya varg and Samidhanya Varg where Khudhanya includes various millets. Purandara Dasa’s “Ragi Thandheera” in Kannada highlights importance of finger millet in those times. Kautilya’s Arthashastra mentions various properties of soaked and boiled millets. Ain-i-Akbari by Abul Fazl records millets and their cultivating regions in the Indian subcontinent [5].

Production and Consumption Pattern of millets

During the pre-independent and post-independent periods, millets were the common man food and wheat and rice spruced up the rich elites. Until the advent of Green Revolution, millets contributed to 40% of India’s cultivated grain production and were replaced by wheat and rice. By the passage of time they lost their value in Indian platter and merely recognized as coarse grains suitable for animal feed. Solemnly depending on the two major cereals, our country accelerated on the path of monoculture (Wheat & rice) serving deficiencies to the Indian masses. Realizing the growing need of millets to cater to hidden hunger and encounter nutrient deficiencies in the human masses it has been gained momentum in the recent decades. Several varieties that are grown around the world were first cultivated in India. West Africa, China and Japan are home to indigenous varieties of the crop. India produces more than 170 lakh tonnes of millets per year and is the largest producer of millets in the world, accounting for 20% of global production and 80% of Asia’s production. India’s average yield of millets (1239 kg/ha) is also higher than global average yield of 1229 kg/ha. Major millet crops grown in India and their percentage share of production are pearl millet 61% share, sorghum 27% and finger millet 10% [3-4].

A decade-old NSSO household consumption expenditure survey shows that less than 10% of rural and urban households reported consumption of millets. In rural areas, more than 95% households reported consumption of rice and more than 59% wheat, only 8.5%, 6.6% and 5.3% reported consumption of jowar, bajra and ragi respectively. The monthly per capita consumption of cereals was lower in urban areas as compared to rural areas. It was 139 gm, 91 gm, 60 gm and 1 gm for jowar, bajra, ragi and small millets respectively. The consumption of millets was reported mainly from Gujarat (Jowar and bajra), Karnataka (Jowar and ragi), Maharashtra (Jowar and Bajra), Rajasthan (Bajra) and Uttarakhand (ragi) [6, 8].

The positives of millets

The IYM 2023 aims to contribute to the UN 2030 agenda for Sustainable Development particularly SDG2 (Zero Hunger), SDG3 (Good Health and Well Being), SDG8 (Decent Work and Economic Growth), SDG12 (Responsible Consumption and Production), SDG13 (Climate Action) and SDG15 (Life on Earth) [5].

Nutritional & Health gain: Millets are ‘powerhouse of nutrition’ and hence, declared “Nutri-Cereals” on 10th April 2018 by the Agricultural Ministry.

- **Basket of minerals:** calcium, iron, zinc, magnesium and potassium are present in sufficient amount.
- **High protein content:** ICAR-IIMR Hyderabad says that millets have 7-12% protein, 2-5% fat and 65-75% carbohydrates. Hence, they are best route to food and nutritional security and combat ‘hidden hunger’ [7].
- **Gluten-free:** Unlike wheat and rice, millets are gluten free therefore, used for celiac diseases, avoids obesity and diabetes.
- **Improves heart and pancreatic health:** Studies have shown that consumption of millets reduces total cholesterol by 8% reducing the risk of cardiovascular diseases.
- **High fiber content:** They act as roughage and promote bowl health.
- **Detoxify the body:** Presence of phenolic acids and flavonoids combats free radicals (cause of cancer) from body [7].

Environmental gain: Millets are advantageous to environment in various forms.

- **Climate resilient crops:** They can withstand stressed and varied ecological conditions due to accumulation of antioxidants and osmolytes.
- **Non-water intensive:** Unlike rice and wheat, they can be grown with little water availability or rainfed [4].
- **Tolerant to diseases & pests:** As they can withstand stressed conditions, they are resistant to diseases and pests as compared to other crops.
- **Less reliance on fertilizers:** Millets shows better growth and productivity even under low nutrient condition and hence, reduces dependency on fertilizers.
- **Short life-span:** Being short-duration crops, they escapes environmental adversaries.
- **Low carbon footprint:** Millets are C₄ plants therefore, they can utilize more atmospheric CO₂ and produces more assimilates [5].
- **Poor soil & topography:** Their ability to grow on poor soils and hilly terrains makes their cultivation easier.

Socio-Economic gain: Millets are known as ‘poor man’s food grain’.

- **Ensures food & nutritional security:** Being nutritionally rich they are referred as ‘miracle crops’ and even in low area and production provides higher productivity [4].
- **Crop of the developing world:** They are mostly grown in African and Asian countries predominantly developing ones as they require low investments.
- **Livelihood security to marginal & small farmers:** Millets provide low-investment agricultural opportunities with better gains to small & marginal farmers [6].
- **Diversification of food basket:** Millets can help

diversifying global food basket which prominently depends on wheat, rice and maize.

- **More export & foreign exchange:** India is the highest producer and 5th largest exporter of millets. A good export to the world can bring in good foreign exchange.
- **Fuel of the future:** Millets are addressing the need for fuel. Sorghum and Pearl millet can cater to the need of biofuel in the nation increasing more blending to petroleum and less dependency on fossils through reduction in import of petroleum.

Red flags to millets

- **Calories:** Although millets have a low glycaemic index, they are not a low-calorie option.
- **Overconsumption:** Also consuming millets in unrestricted amounts will lose out on any nutritional gains.
- **Processing:** Polishing and processing of millets like rice or wheat will raise their glycaemic index and benefits will be lost.
- **No multigrain:** Mixing grains might sound better on paper but it doesn't work in reality. Food is medicine but not in form of pill, potion, powder or multigrain Atta.
- **Complete replacement:** Millets aren't complete replacement for wheat or rice. Weekly consumption is good with rice and wheat.
- **Millets as per the season:** Seasonality in consumption of millets makes the availability of nutrients at just the time they are needed. Like bajra is preferred to consumed in winter with ghee, jowar is best to be consumed in summer with chutney, ragi is eaten year-round, especially during the rains.
- **Right food combination of millets:** Right food combination ensures right ingredients coming together making the diet more digestive and assimilative for nutrients for eg; bajra should be consumed with butter or ghee and never with jaggary, jowar should be taken with curd etc.
- **Soil fertility:** Although millets aren't exhaustive crops but unlike pulses they don't add to the soil fertility.
- **Non-aspirational food:** Millets aren't first choice of farmers or consumers. Government made wheat and rice free of cost from January 2023 which further tilts the scale against millets.
- **Rolling rotis:** Absence of gluten in millets reduces cohesiveness and elasticity which make them tougher to roll rotis.
- **Low productivity:** In comparison to wheat and rice millets have low productivity which makes them reluctant to cultivate among them the farmers.
- **Orphan crops:** Millets are reduced to 'orphan crops', planted largely in marginal areas prone to moisture stress as with availability of irrigation, farmers goes for wheat and rice due to more productivity.
- **MSP:** Government provides MSP only for jowar, bajra and ragi. Hence, farmers are hesitant to grow minor millets even if they provide good yield.
- **No more 'poor man's food-grain:** Absence of PDS for millets can't make them to the platter of common man as they are costlier than rice and wheat.

India's millets push to 'year of millets' and commencing the expedition of 'Sri Anna'

On March 3, 2021, the UN General Assembly adopted India's

resolution to declare 2023 as the International Year of Millets. Before this event a sub-mission on National Food Security Mission-Nutri Cereals was implemented considering the high nutritive value, potential for economic empowerment of small and marginal farmers and contribution to maintaining the earth's biodiversity; in April 2018, millets were rebranded as "Nutri Cereals" and the year 2018 was declared as the 'National Year of Millets', aiming at large promotion and demand generation ^[2]. These efforts of cultivation and consumption of millets in India, have been brought to the forefront of the international arena as a proposal to UN to declare year 2023 as year of millets and has been finally declared and recognized as the "International Year of Millets-IYM-2023" globally. Several events and activities, including conferences and field activities and the issuing of stamps and coins, are expected as part of the celebrations aimed at spreading awareness about millets, inspiring stakeholders to improve production and quality and attracting investments. Leading ahead towards its popularization and introducing schemes for its promotion, cultivation and consumption, the Union Budget 2023 of India named millets (major, minor & pseudo) as "Sri Anna".

- As per Finance Ministry, the Indian Institute of Millet Research- Hyderabad will be supported as the Centre of Excellence for sharing best practices, research and technologies at the international level ^[8].
- Throughout the year, several central ministries and government organizations will work towards promoting these "Nutri-Cereals".
- Delegates at G20 meetings (one going on in Indore this month) will be given a 'millet experience' through tasting, meeting farmers and interactive sessions.
- According to the Health Ministry, FSSAI will formulate guidelines to include millets in the food menu of schools, hospitals and government canteens. Hospitals like AIIMS are working to set up a 'millets canteen' to produce millets-based foods from March onward ^[8].
- The Lok Sabha speaker Om Birla has sought a special millet menu for the Members of Parliament, who will now get to choose from ragi poori to jowar upma and deserting with ragi laddoo to bajre ka chhorma and many more in the menu.
- The Youth Affairs Ministry has done webinars and conferences with leading athletes, nutritionists and dieticians on millets through the 'Fit India' app.
- The Ministry of Food Processing Industries had organized millet fair-cum-exhibitions in Andhra Pradesh, Bihar and Madhya Pradesh and the diversity of millets will be showcased at international trade shows.
- Indian embassies in more than 140 countries will organize exhibitions, seminars and cooked millet dish competitions.
- The government also intends to increase procurement of these grains under the public distribution system to focus on a more diverse food basket to improve nutritional status.

Conclusion and Way Forward

Why would people consume millets unless they are awarded about their health benefits? Why would farmers cultivate millets unless they have insurance in form of MSP for them? Why would poor purchase the costlier millets when it's difficult for them to cover for even one-time meal? Why would children eat the healthier millets unless they taste

good? Government initiatives have been started to increase awareness for health benefits of millets. It is making efforts to bring them under PDS system so that the poor can have them. Processing of millets in different tastier forms would be a good start up for its promotion. Due to various activities and efforts of different Departments and Ministries of GOI and the states and UTs, momentum has been gained for popularizing millets and turning it into a revolutionary movement. In line with PM's vision for healthier India, at a time when country is entering "Azadi ka Amrit Kaal", there is strong focus on *Jan Bhagidari* or people's involvement to bring the spotlight on this super food and for escorting this ancient food to the centre stage.

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