Small Millets: A Sovereignty Nutrition for People

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ABSTRACT

Small millets are grains, which belongs to grass family, poaceae or graminae and order of poales taxonomically. Minor millets include finger millet, kodo millet, little millet, proso millet, barnyard millet and foxtail millet respectively. Major Geographical distribution of these small millets are mostly in the continents of Asia, Africa and a proportion in parts of Europe. As small millets are gluten free, provides more proteins, minerals and vitamins than rice and wheat comparatively in major African countries where cultivating other crops are very difficult with vast dry lands. Growing small millets is the best option available in places where rain is the only source for irrigation, to meet nutritional requirements.

INTRODUCTION

Small millets are majorly, finger millet, kodo millet, little millet, foxtail millet barnyard millet and proso millet (Bhat Sujata *et al.*, 2018).

Finger millet botanical term is *Eleusine coracana* and ragi, mandua, kapai, marua, nagli are few traditional names of Finger millet. proso millet botanical name is *Panicum milacium* & Cheena, baragu, panivaragu are local names. Foxtail millet *Setaria italica* locally called as Navane, kauni, kangni, korra, rala. Little millet called as *Panicum sumatrense* botanically while samai, samulu, kutki are local names of little millet. Barnyard millet scientifically named as *Echino chloacolona*, *simultaneously* called as Sawan, oodalu, jhingora in India, kodo

millet botanically called as *Paspalum scrobiculatum* & locally called as kodo, varagu, haraka, arikalu. (P. Ashoka *et al.*, 2009).

Fig 1; Major small millets

Significance Of Small millets:

Minor millets are occupied with major essentials nutrients such as carbohydrates, proteins, fats, dietary fibres vitamins, higher anti-oxidants and lower glycemic indexes (Pradipta Banerjee *et al.*, 2020). Comparatively to the cereals, for instance rice and wheat, small millets are more nutritious. Among all minor millets finger millet occupies first position in Calcium (Ca) supplementation serving approximately 300-350 mg/100 g. In providing a good balanced diet minor millets play a crucial role if they are consumed regularly. (Anju Bisht *et al.*, 2022). Apart from nutritional benefits small millets are excellent drought tolerant crops that can be grown with less irrigation requirement. Millet oil is rich in linoleic acid and tocopherols having high anti-oxidants properties (Sanyal *et al.*, 2022).

An interview conducted by several enthusiasts from TCB College of Agriculture and Research Station, Bilaspur to the tribal farmers of Bastar a plateau zone of Chattisgarh revealed interesting things such as, usage of millets to make strong mud walls, as a fertilizer for onion fields, for baking of mud pots, enhancing milk productivity in cattle, treatment of burns, were few points in the interview from the tribal farmers.

Nutritional Benefits of Small Millets**:** Small millets are cereal grains with lots of potential in micro and macro nutrients which helps humans to acquire deficient nutrients by c them. For instance, Finger millet have a high amount of Magnesium (Mg) which helps in formation of stronger bones. Little millet has little in the name but not in nutrition as is is high in phosphorus, which is very useful for weight – loss and tissue repairs and acts against asthma as well it is filled with high amino acids and boost immunity system. Proso millet is nutrient rich food that fights against cancer cells in the body, while foxtail millet is the power house of vit B-12. Kodo millet consumption increases production of vit-K and Barnyard millet is best source for vit-B6, kodo millet has highest phenolic content (10.3%) while foxtail millet has lowest phenolics (2.5%) in small millets.

Health Benefits:

Small millets have myriad of health benefits, as millets are low glycemic index (GI) foods which are very helpful in controlling type 2 diabetes for sugar patients. They also improve digestive health as they contain plenty of insoluble fiber which supports good bacteria to grow in the gut. Small millets also posses' lot of soluble fiber which trap fat and lower cholesterol level in the blood as a result the risk of getting atherosclerosis / heart attack will be less. Finger millet is excellent source of B vitamins which plays crucial role in functioning of brain to maintain cells healthy in the body as well producing new red blood cells. Food rich in high dietary fibers increase bowel movement "thus helping in good digestion process increases intestine health..." Dietary fibres play key role in lowering blood glucose levels with their higher moisture holding nature and glycemic index. (Easwaran

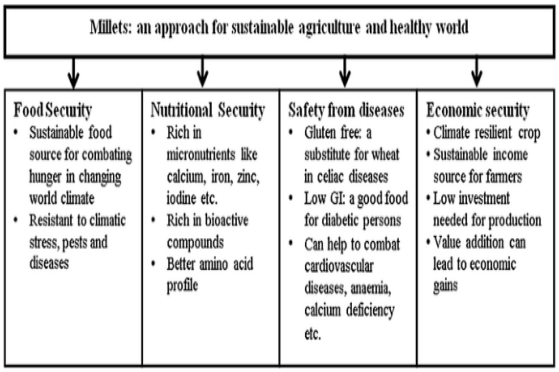
et al, 1991; Kavitha et al, 2001). Millets are best available source for the people who are suffering from celiac disease, as millets are gluten free. Consuming gluten rich food such as rice and wheat by these patients results in triggering of irritation (Saleh et al., 2013)

Culinary Use:

The best thing that comes into everyone mind when thought of culinary uses of small millets are salads and using them for breakfast, as there are many dishes and items one can prepare from minor millets but soaking them over night in water and adding them to salad increases higher fibers and roughages, although malt prepared from flour extracted from finger millet was a traditional dish being prepared from ages helps to fight against higher temperatures in summer season and provides many nutrients to the body. Breads and rotis made from the minor millet flour add nutty flavor in the diet. In the modern era people are looking for quickly made food. without much time consuming so the best idea to implement is to adding small millets to their breakfast to prepare popular breakfast like adai, pittu, idiyapam, kali, roti, and kesari were selected. Instant mixes of these traditional products with the incorporation of small millets were standardized. Bran of the millets is rich source of dietary fiber, which termed as complex unavailable polysaccharides

Cultivation & Sustainability:

Firstly, these minor millets are highly resilient to adverse environmental conditions, requiring minimal irrigation and inputs resources and these crops also contribute to the crop diversification & enhance soil fertility through their deep root system crop rotation strategies can be easily practiced in the farm. (Gajjela Indira *et al* 2023).



These crops complete their life cycle ranging from 80-110 days after sowing, so that inter-cropping. The period between 1961 and 2009 saw a dramatic decrease in cultivated area under millets, more so in case of small millets (80% for small millets other than finger millet (46% for finger millet). The USA is among the top producer of small millets and exports 15–20% of its annual production to over 70 countries.

Role in Food security:

Comparatively with Bajra and Jowar, minor millets are capable of meeting immediate food security. Primarily the sustainability of agriculture can be achieved by cultivating small millets as they have minimal requirement of chemical fertilizers with better cost-benefit ratio. (Mehanathan Muthamilarsan *et al* 2020). As global population increasing geometrically and food production enhancing arithmetically small millets are best source of crops to meet sustainable food and requirement of nutrients ultimately, the savior from hunger to lavish people on the globe. The climate resiliency and adaptability of millets to semi-arid regions make them a staple for smallholding farmers in African farming. Ongoing millet production enhances food productivity for the increasing population.

Global Initiatives:

Small millets are grown across the globe in several continents. Currently they are being

cultivating in 93 countries occupying 1 million hectares approximately. However global millet productivity has increased about 36% between 1961 and 2018 (Rajendra Prasad Meena *et al* 2021). Small millets share in total food grain production of India reduced from 22.17% to 6.94% over the last sixty years from 1950-51 to 2011-12 (Ashutosh Singh *et al*).

CONCLUSION

Millets are a very good source of nutrition and a major contributor to sustainability. Therefore, growing small millets in the farmers field should be encouraged at different seasons and incorporated in different cropping systems to achieve the holistic goals of environmental, food and livelihood security.

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