

UNDERUTILISED MILLETS: A WAY TO NUTRITIONAL SECURITY

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ABSTRACT

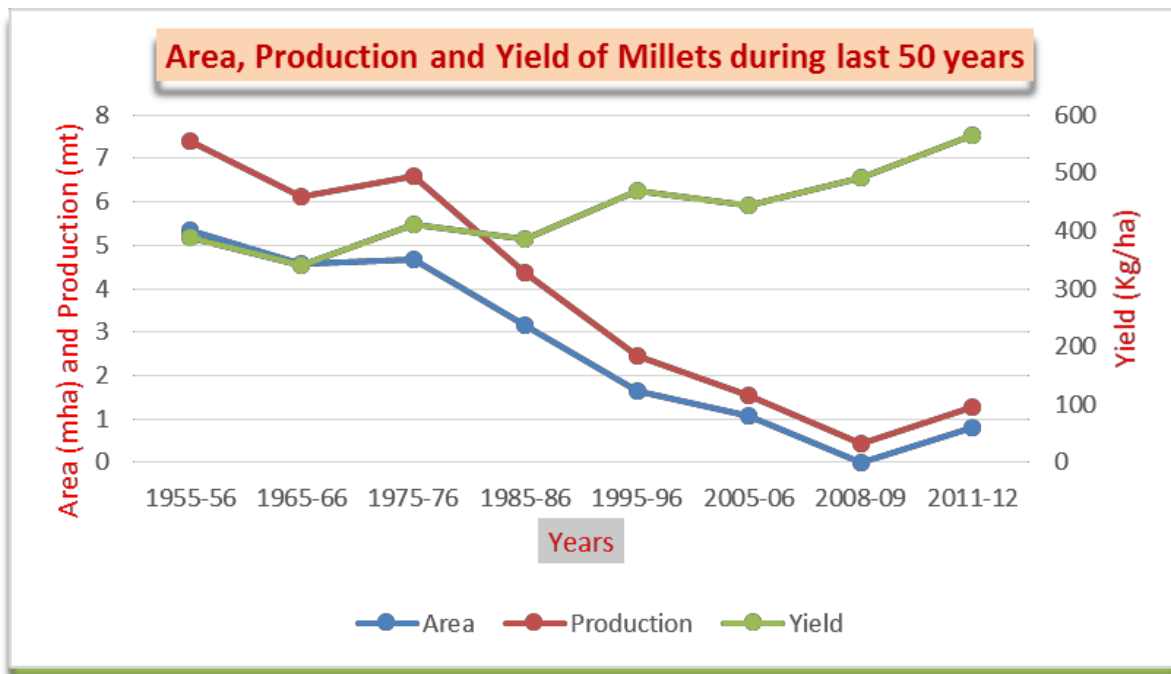
Across the world, many of the plant species that were cultivated for food, fibre, fodder, oil or medicinal properties, from centuries or even millennia are neglected and underutilized while they play a crucial role in the food security, nutrition, income generation of the rural poor. These underutilised plant species are favourable for climate resilience and risk diversification. While these crops continue to be maintained by cultural preferences and traditional practices, they remain inadequately characterised and neglected by research and conservation.

Keywords: Underutilized crops, Millets, Nutritional security, Food security

INTRODUCTION

There are various millets which comes under the umbrella of ‘underutilised’, ‘forgotten’ or ‘Orphan’ crops. Millets are a group of highly variable small-seeded grasses, widely grown around the world as cereal crops or grains for both human food and fodder. For thousands of years, millets have been growing as finger millet (*Eleusine coracana*), foxtail millet (*Setaria italic*), kodo millet (*Paspalum scrobiculatum*), little millet (*Panicum sumatrense*), proso millet (*Panicum miliaceum*) and barnyard millet (*Echinochloa frumentacea*) collectively they called minor millets. Here some interesting facts about millets other than that they are gluten free, highly nutritious, millets need very little water for their production, short growing period under dry, high temperature conditions and that's why in India, millets are more popular. Millets also required rich soils for growth, no millet attracts any pest hence they have no or low fertilizer usage and pest-free.

The production systems followed in the cultivation of these crops are usually very marginal, largely based on local landraces conserved by farmers, with least or no external inputs or often under default organic farming. Their continued neglect, in spite of their resilience and strength in providing a favourable harvest under very marginal production situations of arid, hilly and mountainous regions, is leading to the rapid loss of their competitiveness, genetic resources as well as the associated traditional knowledge on production, processing and utilization. Their decreasing cultivation is being confined to fragile agro-ecological regions, which are largely inhabited by tribal or other socio-economically poor farming communities trapped below the poverty line. These crops are predominantly grown as mixed or inter crop along with fodder yielding cereals like maize or sorghum, grain legumes like chick pea or pigeon pea, and oil seeds like mustard or niger. The lack of technology for processing their produce and hence the continued dependence on traditional processing methods of high drudgery is also eroding their competitiveness.



Source: Agricultural Census, Directorate of Economics and Statistics, Department of Agriculture and Cooperation, Government of India.2011-12.

A wide description of minor millets are as follows:-

Finger millet popularly known as Ragi is a well-known millet & consumed widely by the people all over the world. Ragi has the highest mineral & calcium content when compared to all whole grains & minerals. It is called as wonder grain. It is a powerhouse of protein & amino acids. It

helps to reduce the heat of the body. It also helps to heal ulcers & anaemia. It's a great replacement for rice & wheat especially diabetic patients.



Fig.1 Finger Millet

Foxtail millet popularly known as Kangni which was used in ancient days. They are short duration, tolerant to low soil fertility and drought. These are rich in carbohydrates, dietary fibre and minerals such as copper and iron. It helps to keep our body strong and immune. It also helps to control blood sugar and cholesterol levels.



Fig.2 Foxtail Millet

Kodo millet is a coarsest millet among the minor millets, is basically a digestion friendly millet. It is rich in phytochemicals, phytate that helps in reduction of cancer risks. It helps to reduce the body weight which is most needed for obese people. It helps to overcome irregular period

problems in women. It helps to reduce knee & joint pains. Also it is good for diabetic people. It reduces nervous disorders especially in eyes.



Fig.3 Kodo Millet

Little millet known as saamai or kutki. It is short duration, withstand both drought and water logging. It helps to prevent constipation & heals all the problems related to stomach. It improves the semen counts of men. It also helps for women with irregular periods problems. Its high fiber helps to reduce the fat depositions in the body.



Fig.4 Little Millet

Proso millet commonly known as cheena which is short duration tolerant to heat and drought conditions of western India.



Fig.5 Proso Millet

Barnyard millet known as sawan, which has six times high fiber content in comparison to wheat. It's a gluten free millet with high calcium, phosphorous & fiber. It is high in carbohydrates & fat too. It helps to maintain the body temperature. It acts as a good anti-oxidant too.



Fig.6 Barnyard Millet

Table: Nutritional facts of various minor millets to Rice and Wheat (per 100g)

Minor millets/ Crops	Protein (g)	Fat (g)	Fiber (g)	Minerals (g)	Iron (mg)	Calcium (mg)	Calorie s (kcal)
Finger Millet	7.3	1.5	3.6	2.7	3.9	344	336
Foxtail Mille	12.3	4.0	8.0	3.3	2.8	31	473
Kodo Millet	8.3	3.6	9.0	2.6	0.5	27	309
Little Millet	7.7	5.2	7.6	1.5	9.3	17	207
Proso Millet	12.5	2.9	2.2	1.9	0.8	14	356
Barnyard Millet	11.2	3.9	10.1	4.4	15.2	11	342
Rice	6.8	1	0.2	0.6	0.7	10	364
Wheat	11.8	1.5	1.2	1.5	5.3	41	326

Source: Millet Network of India, <http://www.milletindia.org>

Health benefits of millets:

These are some of the general health benefits of millets when consumed every day.

- Millets are generally rich in Protein, fibre, calcium, Iron & Minerals especially magnesium, copper & phosphorous.
- It helps to reduce cholesterol, lowers blood pressure.
- It helps in the development & repair of body cells & tissues.
- It helps to lower the risk of Type 2 Diabetes especially for women.
- Its high insoluble fibre helps to prevent Gallstones formation.
- Pre-menopausal women eating millets have a reduced breast cancer risk.
- Millets are also rich in health-promoting phytochemicals like polyphenols, lignans, phytosterols, phyto-oestrogens and phytocyanins. These function as antioxidants, immune modulators, detoxifying agents etc. and hence protect against age-related degenerative diseases like cardiovascular diseases (CVD), diabetes, cancer etc.

Government Policies for Minor Millets

To promote cultivation and consumption of millets and millets-based products, the Government of India announced an allocation of ₹300 crores in the budget of 2011-12, under Rashtriya Krishi Vikas Yojna (RKVY), for Initiative for nutritional security through intensive millets promotion (INSIMP). The aim is to demonstrate improved production and post-harvest technologies in an integrated manner. The scheme is being continued in 2012-13 and 2013-14, with allocation of

₹175 crores and ₹100 crores respectively and implemented in 16 states. In the sequence for the promotion of minor millets finger millet is covered under Minimum Support Price (MSP). The recently passed National Food Security Bill (NFSB) has included millets in the basket of food grains to be given at subsidized rate. Concern has been expressed about inadequacy of production to meet this new demand. Apart from bringing more land under cultivation of millets, about 300 Post-Harvesting units have been established in the Andhra Pradesh, Gujarat, Madhya Pradesh, Maharashtra, Tamil Nadu and UP. These units have increased the supply of raw material for value added products.

Indian Institute of Millets Research (IIMR), Hyderabad suggested to increase the demand for millets through production to consumption includes:

- Market-driven millets cultivation for specific end products, procurement and primary processing for continuous supply-chain management.
- Fine-tuning the technologies for development of millet food products and up-scaling.
- Nutritional evaluation and safety of selected millet foods.
- Consumer acceptability, price and market strategies and social and policy imperatives.
- Entrepreneurship and appropriate strategies to promote and popularize millets for commercialization through value-addition, branding as health foods.

National Institute of Nutrition (NIN), State agriculture universities (SAU's), private partners such as ITC linkages with Defence Food Research Laboratory (DFRL), Central Food Technological Research Institute (CFTRI), Central Institute for Agricultural Engineering (CIAE), Central Institute of Post-Harvest Engineering and Technology (CIPHET) and Home Science Colleges for the creation of market chain.

Strategies for creating demand

- Traditional and non-traditional, ready to use, convenience foods and foods that can be used for complementary feeding programmes may be developed with proven nutrient content and bioavailability mapping.
- Millet-based complementary foods such as *khichdi*, *upama*, *roti* etc. in feeding should be introduced in feeding programmes such as Mid- Day Meal (MDM), Integrated Child Development Services (ICDS) etc.
- R&D on millets as fodder and forage for livestock feed security may be strengthened.
- Commercialise and promote millet-based processed Ready to eat snacks and

convenience foods through public private partnership.

- Awareness regarding nutritional, health and environmental advantages may be created through known communication strategies.

Strategies for enhancing supply

- Development of hybrids/verities resistant/tolerant to salt/high temperature.
- Validation of high productive technology under real farming situations.
- Evolving strategies for better seed production with public, private, NGO partnership and establishment of seed villages.
- Research for better post-harvest management for enhancing the shelf life of millets and prevention of wastage.
- Markets and entrepreneurship development through modern and innovative approaches.
- Promote production and consumption of millets through mixed/ relay cropping with legumes and vegetables in homestead gardens.
- Setting up of a training-cum-demonstration centre for integrated processing of minor millets.

Millets contribute towards balanced diet as well as safe environment. They are nature's gift to humankind. Millets are a treasure for future India. Millets are drought, temperature and pest tolerant and hence are grains for the future in an environment of climate change and global warming. Despite these attributes, millets are losing their pride of place both in terms of production and consumption. Even while commercialisation is needed, primary effort should be to see that millets are consumed by the poor and they are cultivated as mixed/relay cropping with legumes and vegetables in homestead gardens for home consumption to ensure household food and nutrition security.

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