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Nutri-Cereals: Lifeline for Humans

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ABSTRACT

Food habits have been one of the biggest changes owing to concerns over human health. We forgot our indigenous foods and were chasing standardisation. In this regard, millets were once considered too primitive to be used, forgetting our own roots. But today a lot of efforts are being put to increase the demand of millets in India and the world, including changing the mind-set of the people.

IMPORTANCE OF MINOR MILLETS

Nutri-cereals are small-seeded crops falling into three broad categories viz. Major millets like Sorghum/Bajra/Finger millet, Minor millets like foxtail and Pseudo millets like Amaranth and Buckwheat. They are gaining much importance recently owing to its nutritive value and hence, United Nations at the behest of the Government of India has declared current year as the International Year of Millets (IYoM) - 2023. This group is one of the ancestral cultivated food grains known to humans in India prior to popularity of fine cereals like rice and wheat. At the time of the green revolution, importance was given for quantity than quality aspects. However, the current emphasis is on encouraging the use of nutraceutical foods that promote better health and well-being thereby reducing the risk of chronic diseases such as obesity, diabetes, CVD and cancer. Millets impart nutritional superiority over other similar crops and is a powerhouse of protein, minerals, vitamins, and antioxidants.

Millets are gluten-free, and rich in dietary fibre, micronutrients, including calcium, iron, phosphorus, and low in Glycaemic Index (GI). They have ability to survive in less fertile soil, resistance to biotic and abiotic stresses and relatively shorter growing season (Devi et al. 2004). Short growing season and an adaptable component of multiple cropping systems both under irrigated as well as dry farming conditions make this group unique from other crops cultivated. As far as nutrition aspects are considered, each of the millets is three to five times nutritionally superior to the widely promoted rice and wheat in terms of proteins, minerals and vitamins. They can provide nutritious grain and fodder in a short span of time. Once considered as "famine reserves", this group has gained much importance in the recent years. Our daily diet plan should be milled based ones so that these undervalued crops attain international importance.

The five major millet producing states of India are Rajasthan (Bajra/Sorghum), Karnataka (Jowar/Ragi), Maharashtra (Ragi/Jowar), Uttar Pradesh (Bajra) and Haryana (Bajra) with an area of 138 L ha and 173Ltonnes production (Source: FAO Stat 2021). Even though the area under production was more prior to green revolution, the current productivity after three decades is higher due to adoption of high yielding varities/hybrids (Fig.1). Quality seed production techniques for these millets are already established and farmers are encouraged to take up seed production as a remunerative source at the onset of high demand for these nutri cereals in the current scenario.

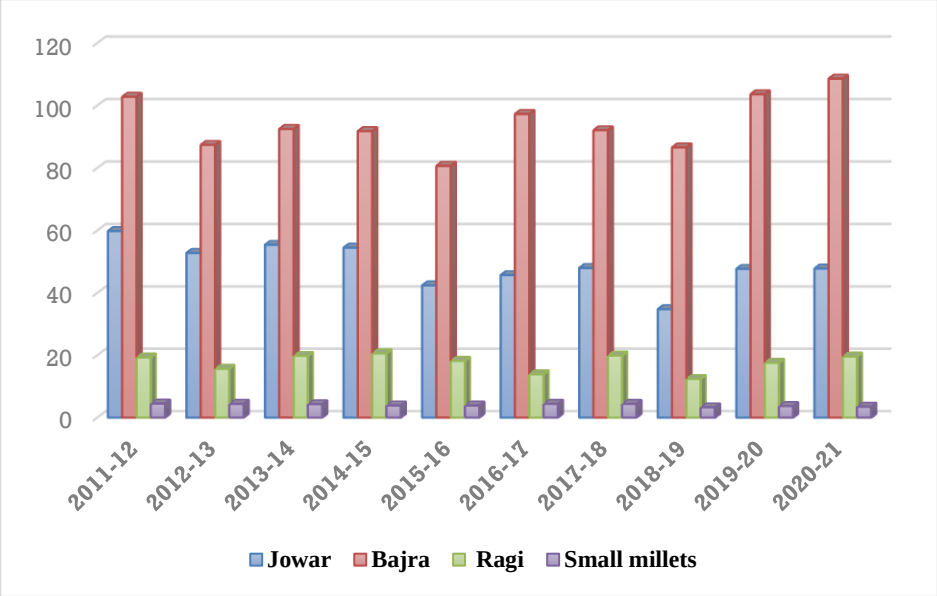

Figure 1. Production of Nutri-cereals from 2011-2021 (Production in Lakh tonnes)
(Source: National Conference on Kharif Campaign brochure, 2022**;** M/O OF Agriculture & Farmers Welfare)

PRODUCTION CONSTRAINTS

- A number of constraints like poor soil fertility, low and erratic rainfall, high temperatures, weed infestation, downy mildew disease and bird damage affect productivity.

- Disease and pest: at different crop stages, insect pests and diseases affect the grain quality and yield aspects like stem borer, shoot fly, foot rot, neck blast and the list are endless. Timely precautionary measures need to be carried out to curtail the effect of biotic agents.
- Area reduction due to fragmented cropping system, production on unfertile land or intercropping with major crops has led to decline in production over more than past two decades.
- Crop improvement is generally more difficult in millet than in most other crops, and among the different types of millet only pearl millet, and to a small extent finger millet, has so far been researched at the international level. Despite their early domestication history major crop breeding programs largely neglected millets till the last decade. The many health-promoting benefits of millet have awakened the interest of researchers and crop improvement based on modern genomics tools is the need of the hour.
- Labour Intensive: Compared to other major cereals, millet requires high labour input during transplanting, weeding, harvesting, and grinding.

ENHANCEMENT OF PRODUCTION AND PRODUCTIVITY OF MINOR MILLETS

- Increase the production of good quality seeds and their availability.
- Strengthening quality seed chain.
- Facilitate Breeder/foundation/certified Seed production and provide reasonable procurement price.
- Government subsidies.
- Frontline technology demonstrations/ cluster demonstrations.
- Demand creation through awareness and increase in consumption.
- Crop diversification.

CONCLUSION

For a developing country like India, the eradication of malnutrition is still a challenge. Hence, the future research must be focussed on the development of high-yielding varieties of millet based on a farmer participatory mode as well as millet-based value-added food production. Hence, collective efforts have to be taken to empower smallholder farmers to take up seed production programs as a less input remunerative source to achieve sustainable development.

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