



Neglected Underutilized Species - Future Smart Foods

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World economic forum reports (Anonymous, 2023) revealed that, from the year 2005, number of malnourished populations reduced from 825.6 M to 628.9 M by the year 2014, later a surge in global hunger and malnourished people, attributed by population factor projected a 841.4 M, malnourished people by the end of year 2030, unveiling an increase by 25.5 per cent. Asia, home to 381 million undernourished people, has contributed the majority of this growth. However, the 250 million hungry people in Africa are the ones who are expanding the quickest. Second sustainable development goal (SDG-2): Zero Hunger, aimed at avoiding global hunger and all the forms of malnutrition. Burgeoning population, high input demanding major cereal crops, climate change and decrease in the availability of the arable land seriously threatens SDG-2. In addition to these factors, heavily reliance on selected crops for dietary requirements, not only further aggravated the global food security, but also, there exists a complicated aspect of obesity: as the world becomes hungrier, every world region becomes more overweight. The two existing issues in the agrarian community is to i) bridge the yield gap, a 30 per cent increase in overall yield is demanded to feed the all 9 billion population projected by the year 2050 and ii) bridge the nutrition gap for a balanced diet, though traditional crop spp. overcomes hunger, they may not always provide all the nutrients required (Li and Siddique., 2018).

Globally, sugar cane, maize and rice are the three predominant cultivated crops under the irrigated system, whose yield potentials were well exploited in the past few decades. World wide food habits reveal a poor diversity in consumption patterns, encompassing high cereal intake accompanied with less fruits and vegetables leading to nutrition gap. This paved the path to understand and utilize the *hidden treasures* – Neglected and Underutilized Species. As of available, 30,000 spp. meant for edible purposes, only 106 are being brought to plate encompassing 90% of human diet, and only three viz., rice, wheat and maize contribute to 60% diet, emphasizing the fact that majority of the plants spp are “Underutilized”. NUS are traditionally cultivated spp. for centuries later neglected due to availability of high yielding varieties. NUS have a high nutritional value and can be a good source of vitamins, protein, energy, and fibre, all of which help with food and nutrition security. Aside from their exceptional nutritional properties, many of these crops do not require significant inputs, can be cultivated on marginal soils, and are readily intercropped or cycled with staple crops. They also fit well into integrated practises such as agro-ecology. NUS may make agricultural systems more sustainable and climate resilient since they are typically evolved to marginal circumstances and many have the unique capacity to resist or endure fluctuations.

Millets – potential future smart foods

Millets are small-seeded grains that have been cultivated for thousands of years in various regions of the world. They are a good source of nourishment since they are high in fibre and high in vitamins, minerals, and proteins. Millets, which are grown in over 130 countries, have

long been regarded an essential part of the nutrition of nearly half a billion people in Asia and Africa. The United Nations General Assembly (UNGA) declared 2023 to be the International Year of Millets. This demonstrates the significance of millets and their role in enhancing food security (Antony et al., 2022). In addition to several health benefits, are also good for the environment due to their minimal water and input requirements. Recognising Millets' immense potential to produce livelihoods, enhance farmer income, and assure global food and nutritional security (Lokesh et al., 2022).

Millets are the underutilized nutri-cereals, non-acid forming, gluten free with good dietary properties. They are the rich source of essential fatty acids, minerals, proteins and vitamins that combats with translational diseases. Owing to their importance, strategies were formulated to incorporate portions of millets in diet to fight against malnutrition and impart immunity (Saini et al., 2021). Millets are climate resilient; they require nearly two-third water lesser compared with conventional crops like rice, wheat and sugarcane. They also demand relatively lesser inputs comparatively and can perform exceptionally well under arid and semi-arid regions. Though in the past few decades, the global carbon dioxide levels are alarmingly rising, millets were left unaffected as they are typical C₄ plants (Anonymous., 2022).

Embracing Future Smart Foods offers a promising pathway to achieving sustainable food systems that are nutritious, resilient, and economically viable. By harnessing the potential of these crops, we can create a more diverse and secure food future that benefits both people and the planet. The success of FSFs will depend on coordinated efforts across research, policy, and practice to ensure their integration into mainstream agriculture and diets.

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