



Millets

The crop of Past, Present & Future

Tarun Rathore*, R.K. Yadav, Lokendra Singh and Vivekanand Yadav

Department of Genetics and Plant Breeding
Chandra Shekhar Azad University of Agriculture and Technology, Kanpur, India

Email: tarunrathore777@gmail.com

Received: January, 2023; Revised: February, 2023 Accepted: February, 2023

Historical background

Cultivation of millets is a method of a very old era i.e., around 8000 BC back during the beginning of sedentism and civilization in the anthropological history of the world. It is to be assumed that millets have two origins namely; Asian origin and African origin.

Asian origin millets are Proso millet, Kodo millet, and foxtail millet. Whereas, pearl millet, sorghum, and finger millet, were of African origin. Instead of an ancient crop, it is believed based on archeological evidence that Proso millet and foxtail millet are the oldest among the cultivated millets. Some evidence also points out those millets are

even older than rice. During the middle age era or medieval era, poor people used millet as their principal food to fulfill all their nutrient requirements, especially in Europe. This was the initiative when millets began to be seen as poor man's cereal.

Proso millet: It is to be believed that proso millet was domesticated -10,000 years ago. Multiple centers of origin were proposed such as north-western China, central China, and Inner Mongolia. According to the most recent evidence the domestication event is done simultaneously, one in China and one in Europe.

Fox millet: It was indigenous to China where it had been cultivated for over 6000 years.

Kodo millet: It is domesticated around 3000 years ago and was originally based in Indian origin.

Pearl millet: Based on archaeobotanical evidence the earliest domesticated pearl millet cultivation is around 4500 BC at Lower Tilemsi Valley in northeastern Mali. It was also suggested that pearl millet from

Nutritional Aspect:

Millets are unique among cereals because of their high macro and micronutrients such as; calcium, iron, potassium, magnesium, phosphorous, zinc, dietary fiber, polyphenols, and protein contents. It takes a place as an important staple crop worldwide for centuries. They are rich in valuable nutrients such as carbohydrates, proteins, dietary fiber, minerals, and vitamins. Millets also play a major and crucial role in medicinal aspects such as; barnyard millet which acts as a natural designer food and is highly effective for type II diabetes patients. And Finger millet is known as the richest source of calcium.

Carbohydrates: Millets contain a low amount of carbohydrates i.e., the average carbohydrate content of millets varies from

sub-Saharan West Africa was the predominant, or even the only, cultivated cereal across the region, including in Mali, Ghana, Mauretania, Burkina Faso, and Cameroun.

Finger millet: During the Bronze age around 4000 years ago finger millet was circulated from Africa to India through trade. Hence, it was believed that before reaching India Finger millet originated in Ethiopia.

Barnyard millet: Jomon period of Japan in 2000 B.C. had the earliest records of domestication and the archeological evidence suggests that it was grown in Japan as early as the Yayoi period, dating back some 4-5 millennia.

Little millet: This forms an important part of tribal agriculture i.e., among the Indian tribal population. It was domesticated in India, particularly in the Eastern Ghats of India. From a historic point of view has grown mainly in India, Myanmar, Nepal, and Sri Lanka.

57 to 73 g/100 g. The carbohydrate content of millets consists of starch (60% -75%), non-starchy polysaccharides (15%-20%), and free sugars (2%-3%). The carbohydrate content of barnyard millet is the lowest. The number of total sugars (g/100 g) in pearl millet (2.16-2.78) is higher, followed by that in finger millet (0.59 - 0.69) and foxtail millet (0.46). Raffinose and stachyose are also higher in pearl millet. Sucrose is the major sugar in the finger, foxtail, and proso millet.

Protein: Millets, like all cereals, have low protein content compared to legumes and animal sources. Millets abound in vital nutrients, and millet grains' protein content is considered equal to or superior in comparison to wheat, rice, maize, and

sorghum. The average protein content of millets is 10 % -11%. Pearl and proso millets have approximately 19% -33% higher protein content than the other millets. The protein content in pearl millet ranges from 9% to 21% which is comparable to that of wheat (11.8 g/100 g) but is higher than that in sorghum (10.4 g/100 g), rice (6.8 g/100 g), and maize (4.7 g/100 g).

Millets are good sources of essential amino acids, except lysine and threonine, but are relatively high in methionine. Finger millet contains amino acids in concentrations exceeding those of the FAO & WHO recommended standards.

Vitamins: Millets are a good source of β -carotene and B- Vitamins especially niacin,

Cause for the decline in the area:

In 1960, the green revolution resulted in the introduction of High-yielding varieties of rice and wheat for food security reasons which decline the area, production, and cultivation of millets in a broad manner. Minimum Support Price changed the pattern of crop production. The public Distribution System provides rice and wheat, which increased the consumption and demand pattern significantly, resulting in the decline of millet production and area. Nutrient deficiency and various deficiencies in children and women result

Conclusion:

Millets are a group of small-seeded grasses grown worldwide as a source of food and are highly variable; they possess many valuable nutritional components that enrich the human diet. Due to their versatile nature and ability to adapt to unfavorable climate and soil conditions, millets have been cultivated for centuries. Millets have better characteristics for food and non-food

riboflavin, and folic acid. Millets are also a rich source of health-beneficial phytochemicals including resins and tannins. All millets grains possess high antioxidant activity relative to other cereals and fruits.

Lipids: are minor constituents of millet. The fat content of the millets ranges from 1% to 5%, with the lowest in finger and Kodo millet (1%) and the highest in pearl, foxtail, and proso millets (5%). Like other cereals, whole-grain millets contain high amounts of fiber (8%-18%). The Overall Nutrient aspect of millet is beneficial for health and reduced the risk of health issues soundly.

in a drastic movement toward growing nutritive food in a large manner which is only possible by using high-yielding varieties introduced through the green revolution.

There is also a major cause that lies in human behavior that thinking millets are the poor man's food and revealing oneself as a high society people move towards other cultivations resulting in a decline in the millet production area in a consistent manner.

applications. Millet grains are an excellent source of soluble and insoluble dietary fiber, vitamins, minerals, and phenolic compounds; therefore, the health benefits associated with these compounds in millets will stimulate interest among food producers and consumers in using millets for purposes. With such benefits, it also has industrial values as value addition.