



Harvest in Madhya Pradesh, India. Photo: O. King/MSSRF

## Kutki millet: Climate resilient and water efficient crop for marginal lands in India

Kutki millet (*Panicum sumatrense*)—also known as little millet—is a small cereal grain that has been grown in Asia since approximately 2700 B.C. In recent years, increasing entitlements for subsidized rice and wheat through India’s Public Distribution System has contributed to slowly replace millets in Indian diets. Millets have also been neglected from research and development during the innovation of the Green Revolution and consequently, kutki millet has experienced lower productivity, despite its desirable traits such as water efficiency and heat tolerance. Renewed focus on enhancing production and use of kutki millet could greatly improve nutrient availability as well as climate resilience for farmers in this region, while also providing an income-earning opportunity.

### General features

Kutki millet is grown during the monsoon (“kharif”) season, and sowing typically begins in June. Kutki millet has a short growth cycle (75-150 days). It is water efficient and adaptable to a variety of growing conditions. It may be cultivated in rainfed, marginal areas with low soil fertility, and at altitudes of up to 2100 meters. Typically, kutki millet is grown on less fertile lands, such as hilly tracts, and is used as an intercrop with legumes, gram, or sesame, requiring little to no inputs. Thus, kutki millet enables farmers to increase their overall farm production by utilizing areas of land not suitable for other crops, such as rice and wheat. Kutki millet is typically more resistant to pests and diseases than other

cereals. However, it is still particularly susceptible to shootfly. Various methods have been used by farmers to prevent shootfly, such as early planting, lower planting densities, and intercropping that show some success. Yields of kutki millet range from 225-560 kg/ha, and in a good season may reach up to 900 kg/ha. Furthermore, kutki millet may be stored for long periods of time without suffering insect damage, providing a means of food security and diet diversity to households during shortage periods.

### Nutrition

Small millets, including kutki millet, are low in fat and high in fiber and protein. Kutki millet



A woman grinding kutki millet in a stone quern to make flour in Madhya Pradesh, India. Photo: O. King/MSSRF

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is particularly high in the sulfur-containing amino acids Cysteine and Methionine, and overall has a more balanced amino acid profile than other cereals. Kutki millet is especially rich in iron, and is also an excellent source of carotene and zinc. Kutki millet also contains antinutrients such as tannins, phosphorous, and phytic acids, which limit nutrient absorption by forming complexes with micronutrients including iron, calcium, and zinc, as well as proteins and carbohydrates. Antinutrient levels are often reduced throughout the processing stage. Dehulling, decortication, and various methods of cooking have been noted to lower antinutrient concentrations.

## Processing

Post-harvest processing is predominantly carried out by women. Processing begins by threshing the grain with the feet, followed by dehulling, which is done with a pestle and mortar. However, these processes are very tedious due to the small seed size of minor millets and their several layers and hardness. Grains often break during manual processing, which results in a less desirable product. To combat these difficulties, pre-treating of millets before processing has been adapted by many millet-growing communities. This most commonly involves applying heat to the grains before milling in order to weaken the starch granules and cause swelling. Kutki millet may then be milled by hand grinding with a stone quern to make flour. Improvements in mechanical grain-processing technology and its increased availability are needed to reduce the amount of time and energy women

currently spend on manual processing. After dehulling kutki millet can be cooked like rice, and used as a substitute for wheat and rice in various food products. Roti, mudde, and porridge are the most common traditional foods made using millets or millet flour. However, because millet protein lacks gluten,



### Little millet methi roti

#### Ingredients

½ cup little millet  
¼ cup moong dal  
Mixed vegetables as needed  
Salt, turmeric and green chili as needed  
1 tsp oil  
½ tsp cumin seeds  
Asafotida  
Curry leaves  
Cashew bits

#### Preparation

In a heated pan add oil and the cumin seeds, asafetida, curry leaves and cashew bits. Add in the moong dal and sauté for 1-2 minutes. Add in the little millet, vegetables, salt, turmeric and green chili. Add about 1 ½ cups of water or more, and cover. Let cook for 15-20 minutes or until the water is absorbed and the mixture is cooked through. Serve warm with chutney/sambar.

Source: <http://gourganic.com/index.php/2015/08/21/methi-paratha/>



Factsheet and literature  
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Kutki millet in Madhya Pradesh, India.  
Photo: G. Meldrum, Bioversity International



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