

# PEARL MILLET

Bulrush Millet, Cattail Millet, Candle Millet, Bajra, Candlestick Millet

*Pennisetum glaucum*

Gramineae

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## ECHO® PLANT INFORMATION SHEET

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### Origin

Pearl Millet reportedly was domesticated over 4,000 years ago in the West African Sahel, spreading later to East Africa and India. Pearl Millets, along with sorghums, have been dominant staple crops in Africa for over a thousand years. More drought-resistant than other cereal crops, Pearl Millet has become the staple food for millions of people in Africa and India who live on desert fringes or in other highly arid regions. Pearl Millet now is widely distributed, occurring in parts of the Americas and Australia. In the last 30-50 years, the use of maize has replaced Pearl Millet in parts of tropical Africa; however, there is a recent renewed interest in Pearl Millet for use in regions facing increased droughts and intensified desertification, as it is more heat and drought tolerant than maize.

### Uses

Pearl millet is both a food grain and a forage crop. The sweet raw grains sometimes are consumed whole. Mature grains are ground into flour and used in the preparation of fermented and non-fermented flat breads; made into porridges; eaten as boiled and steamed foods and used in the preparation of alcoholic and nonalcoholic beverages. In the Sahel, couscous is an important food preparation made from sorghum and Pearl Millet. In Ghana, Pearl Millet flour is made into a stiff porridge called *toh* and a thin fermented porridge known as *koko*. In India, the immature ears often are roasted and eaten like sweet corn and popped grains are eaten sweetened with powdered sugar or a palm sugar called *jaggery*. The solid stalks and other residues of Pearl Millet are used as livestock feed; for fencing; for roofs; and as fuel. In western countries, Pearl Millet is used principally as a forage species.

### Common Names

- Arabic
  - Dukn

### Cultivation

Pearl Millet is adapted to conditions too harsh for other food crops. It survives and produces seed on poor quality, sandy soils in hot, low-rainfall regions. It thrives under less severe growing conditions but does not tolerate waterlogged soils. It matures rapidly after emergence which allows the plants to reach maturity even though the rainy season may be too short for other crops that have longer maturity periods. In traditional Pearl Millet culture, seeds usually are sown in hills, 5-10 seeds per hill, (thinned after emergence thinned to two per hill) at a depth of 3.5 to 4 cm (1.5 in) at the beginning of the sustained rainy season. Position hills 45-50 cm (18-20 in) apart in rows 45-90 cm (18-36 in) apart. Wider row spacing, 1.5 to 2 m (5-7 ft) between Pearl Millet rows, is required if it is intercropped with cowpea or sorghum. Pearl Millet responds less favorably to fertilizer supplements than maize or sorghum; often it is grown without fertilizer additions. Pearl Millet produces extensive deep root systems allowing for efficient water and nutrient uptake during the rapid growth phase. On poor soils, Pearl Millet may require alternation of fallow periods with cropping periods. For example, 3 years cropping may be followed by 3-6 years fallow, depending upon soil nutrient conditions. Intercropping or crop rotation with legume species such as cowpeas or groundnuts will improve soil fertility and reduce the need for long fallow periods.

### Harvesting and Seed Production

The grain heads are cut off when the grain is fully ripe, 3-4 weeks after flowering. Multiple hand harvests often are required as tiller shoot ears normally mature later than ears on primary stalks.

### Pests and Diseases

Pearl Millet is vulnerable to Witchweed (*Striga* spp.), a plant root parasite. Locusts and birds often reduce Pearl Millet production. Stem-borer insects weaken, and may cause breakage of, Pearl Millet stems. Damaged stems should be removed and burned. Pearl Millet midges damage flower spikelets leading to poor seed set. Early sowing allows Pearl Millet plants to attain maturity before midge populations fully develop. Ergot, smut, and downy mildew are troublesome fungal diseases. Pearl Millet flowering spikes release a sugary solution, honey dew, in response to ergot infection. Spores in the honey dew are transferred by insects, ants, and raindrops to other plants. Flowering stalks exhibiting honey dew should be cut off and destroyed and only clean seed free from *Ergot sclerotia* should be planted. Smut infects and expands Pearl Millet grains causing the release of numerous spores. Infested spikes should be cut and burned to prevent the spread of smut spores. Downy mildew (Green ear disease) is the most serious Pearl Millet disease. It produces brown leaf streaks and rows of white spore cases on the undersides of leaves. The ears do not develop fully and tiller shoots may lack ears entirely. Often, native strains of Pearl Millet have natural resistance to downy mildew. Early plantings of Pearl Millet are less susceptible than late plantings. Infected plants and plant residues should be burned. Crop rotation will reduce the severity of mildew infections. The use of mildew-resistant Pearl Millet varieties is the only satisfactory method for long-term mildew control.

### Cooking and Nutrition

Pearl Millet is a nutritious cereal. Its energy value and protein content (averaging 16%) exceed those of maize and sorghum. The fat content is about 5%, twice the amount found in other cereals. The amino acid content in the protein generally is regarded as well-balanced. Its lysine content is higher than most other cereals, but it is low in threonine and sulfur-containing amino acids. Food preparations vary from country to country, as noted above.

As cattle feed, Pearl Millet silage and grain compare favorably to maize and generally are superior to sorghum in protein and usable energy content. It also lacks tannins, found in sorghums, that interfere with feed digestibility. Responses by chickens and pigs to Pearl Millet grain diets are favorable compared to sorghum and maize.

## References

Heuzé V., Tran G., 2015. *Pearl millet (Pennisetum glaucum), grain*. Feedipedia, a programme by INRA, CIRAD, AFZ and FAO. <https://www.feedipedia.org/node/724> Last updated on September 30, 2015, 14:00

<http://ecocrop.fao.org/ecocrop/srv/en/cropView?id=8418>