

PolicyPennings by Daryll E. Ray & Harwood D. Schaffer

Fonio, a crabgrass relative and a hardy grain, supplies nutrition to millions in Africa

Like many, we pride ourselves on lawns with a lush green growth that provide a green carpet around our homes and flower beds. The preferred grasses we like to encourage are various fescue and bluegrass varieties.

And, then there is crabgrass.

If we do not get a pre-emerge herbicide down in time, it is everywhere and during some hot, dry summers, if it weren't for crabgrass we would not have much of a lawn at all. In addition, it is a nuisance in the flowerbeds, tillering its way around the flowers in no time at all.

Imagine our surprise when we learned that it was originally introduced into the US from Europe in the 1800s as a possible food crop. While it was not successful as a food crop it did succeed very well as an invasive species that is now the bane of those seeking the perfect lawn.

It turns out that a close relative of crabgrass—fonio—is grown as a grain in a wide area of West Africa just south of the Sahara from Northern Nigeria on the east to the Atlantic Ocean facing countries from Senegal/Gambia to Guinea on the west. Not only that, it is considered to be a delicacy that often sells for twice the price of rice.

When Europeans conquered that part of Africa, they referred to fonio as hungry rice and as a result it has been seen as an inferior grain, receiving little attention from agronomists and crop breeders. In retrospect that may turn out to be a mistake because not only is fonio “one of the world’s best-tasting cereals,” it is highly nutritious and well-tolerated by people with a gluten intolerance.

Fonio is the subject of a chapter in the National Academy Press’ “Lost Crops of Africa: volume I Grains.” In that chapter the authors describe fonio as “probably the oldest African cereal.” It is grown on 300,000 hectares (over 750,000 acres) and “supplies food to 3-4 million people” each year.

“Fonio is grown on poor, sandy, or ironstone soils that are considered too infertile for pearl millet, sorghum, or other cereals.” It can also be grown on “soils [that] are acidic clays with high aluminum content—a combination toxic to most food crops.” Another advantage of fonio is that it comes in a wide variety of landraces with some producing grain in as few as 70-84 days after they are planted,” while other varieties mature in 165-180 days.

“By planting a range of quick and slow types farmers can have grain available almost continually. They can also increase their chances of getting enough food to live on under even the most changeable and

unreliable growing conditions.”

Fonio is a very small grain that is resistant to shatter which also means that threshing is a time-consuming chore. On the other hand the small size (less than 1mm) means that insects cannot develop inside the grain making it easily storable under less than optimal conditions. In addition, women need to spend time dehulling the grain and removing the sand that has become mixed with the grain during threshing. In recent years, machines have been developed to help in dehulling though the cost is a major factor for most peasant farmers.

Once the hull and the bran have been removed, the grain “is made into porridge and couscous, ground and mixed with other flours to make breads, popped, and brewed for beer.” It can also be used to make pasta. The combination of fonio and beans provides a good balance of the essential amino acids that the human body needs to synthesize protein in the absence of animal-based foods.

At present, fonio yields average less than 1 tonne per hectare (compared to US recent wheat yields of 3 tonnes per hectare). The National Research Council authors write, “despite its importance, fonio is a crop less than halfway to its potential. There have been few, if any, attempts to optimize, on a scientific basis, the process of growing it. Its taxonomy, cultivation, nutritional value, and time to harvest are only partially documented.

Further information on fonio can be found at <http://fonio.cirad.fr/en/fonio>.

As we contemplate an increase in the world’s population from 7 billion today to 9 or 9.5 billion in 2050, it would seem that investment in breeding higher yielding, localized varieties with a wide range of maturity dates would go a long ways toward ensuring an adequate supply of grain for some of the most vulnerable farm populations in the world. In addition, working with farmers to find ways of improving harvesting methods, and developing/propagating threshing, and dehulling techniques all of which would reduce the amount of labor required to prepare this valuable crop for consumption, allowing producers to be able to handle higher yields.

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