

The Quarterly Journal of the Florida Native Plant Society

# Palmetto



# Fox-tail Millets ~ Bristly Foods

Daniel F. Austin

Ray Miller once wrote of me in *The Palmetto*, “he doesn’t do grasses.” Well, that has changed!

It seems that growing up in the swamps of western Kentucky and then slogging through the Everglades and Big Cypress for 31 years made a permanent impression on me. Although now I live in a desert grassland in southern Arizona, there is a *ciénega* (marsh) about 30 miles south of my home. Often I find myself there, looking at the plants and mentally comparing the flora with that of Florida. One of the plants in the Arivaca Ciénega is the grass *Setaria parviflora*, long called *S. geniculata*. That plant is so common on disturbed sites in Florida that I rarely paid attention to it. Here in Arizona it is notable, first because it is here (after all, it is not a desert plant), and second because it is shared with Florida. The Florida plants of *S. parviflora* grow in disturbed areas of flatwoods, hammock margins, marshes (brackish and fresh water), and coastal dunes and swales.

To many people Florida’s *S. parviflora* is knot-root fox-tail or *rabo de zorro* (fox-tail, Spanish). Others say the grass is *cepillo de fregar botellas* (bottle brush, Puerto Rico), *deshollinador* (the husker, Puerto Rico), *pajita cardosa* (little thistle grass, Chihuahua), *rabo de gato* (cat tail, Cuba), or *zacate amarga* (bitter grass, Mexico).

Wunderlin and Hanson’s *Guide to the Vascular Plants of Florida* calls *S. parviflora* yellow bristle-grass. The similar *S. pumila*, native to the Old World, they call yellow bristle-grass or yellow fox-tail. Names of those two fox-tails are used interchangeably by many people because the plants are incredibly similar. These two have even been considered the same species in spite of originally growing on different sides of the Atlantic Ocean.

“Fox-tail” was used in the 1300s for the appendage of the European mammal called the red fox, *Vulpes vulpes*. Then in the middle 1500s, the name “fox-tail” was applied to grasses, alluding to the flower and fruit clusters that are long, slim, and resemble that mammal’s long brush. Originally, “fox-tail” was used for *Alopecurus pratensis*. By the 1700s, meadow fox-tail

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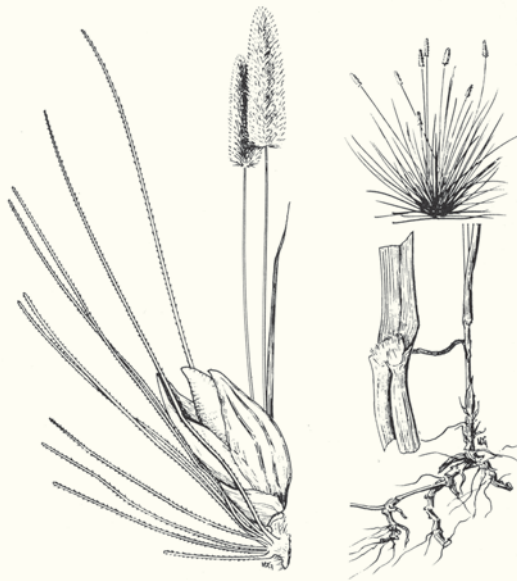


(*A. pratensis*) and rough eared fox-tail (*Setaria italica*) were recognized. Although “fox-tail” is often applied as a single word, with modifiers added the name now includes several species of the grasses *Alopecurus*, *Bromus*, *Hordeum*, *Muhlenbergia*, *Setaria*, and *Vulpia*. Japanese use the word *enokoro* for all *Setaria*. *Enokoro* may be a corruption of *inu*, dog, and *koro*, diminutive where “*inu*” refers to both dogs and foxes. Even the Maya of Yucatán make the mammal comparison by saying *ne-kuuk-suuk* (*neh*, animal’s tail, *k’uk’uk*, young part of a plant, *sak*, white). So do the Huastec of San Luis Potosí with *ehmill week ok* (like [a] fox tail) and the Fulani of Mali, who call it *laki davangel* (dog’s trail).

Other people combine two names and call *Setaria* “fox-tail millets.” *Setaria* is included with ten other genera (*Brachiaria*, *Digitaria*, *Echinochloa*, *Eleusine*, *Eragrostis*, *Panicum*, *Paspalum*, *Pennisetum*, *Sorghum*, *Urochloa*) that collectively are called “millets.” The name “millet” (from Middle French *millet*) was in English by about 1425 when it was used for *S. italica*. “Millet” is ultimately from Latin *millium* (having a thousand grains), a word that also left cognate names in Italian *miglio*, Portuguese *milho*, and Spanish *millo* [*mijo*]. The combination “fox-tail millet” was not applied to *S. italica* until about 1929. Later, the name was expanded to all of the species in *Setaria*.

“Bristle-grass” was applied to *Setaria* by 1840. That name refers to the bristly awns that extend out from below the seeds. Germans make the same comparison, saying *Borstenhirse* (bristle grass). Some of the Old World species have such sharp bristles that flower or fruit clusters are put in granaries to discourage rodent predation. By the 1850s, “species” names were being applied to distinguish different kinds, as in “rough bristle-grass” for *S. verticillata*.

Not long after moving to Arizona in 2001 I began studying a canyon in the



***Setaria parviflora* (Poir.) Kerguelen.**

Artist: unknown. From Leithead, H. L., L. L. Yarlett, and T. N. Shiflet. 1971. 100 Native Forage Grasses in 11 Southern States. USDA, Soil Conservation Service, Agriculture Handbook 389, Washington, DC.

Baboquivari Mountains southwest of my home. As I climbed up the canyon, I would pass two overlapping zones of fox-tails. Between about 3,800 and 4,200 feet were patches of *S. macrostachya* (plains bristle-grass, *zacate temprano* [early grass]). Above 4,200 feet that fox-tail disappeared, but still with me was *S. grisebachii* (Grisebach’s bristle-grass, *cola de ardilla* [squirrel tail]), just as it is lower in the Altar Valley where I live at 3,200 feet.

People have eaten the seeds (caryopses) of Old World *S. italica* for over 8,000 years and I started wondering again if anyone ever ate those of New World *Setaria*. I discovered that the seeds are edible for *S. parviflora* and for the species near my home. Moreover, they were formerly important in cultures from central Mexico to New England and the upper Great Plains. Eric O. Callen called *Setaria* grains the “first New World cereal,” eaten in Mexico for perhaps 1,500 years.

Richard S. MacNeish and Lawrence Kaplan first reported *S. parviflora* as being food for the people in the Tehuacán valley of Mexico in 1960. The species was then

discussed by Eric Callen in 1963. These grains appeared in the <sup>14</sup>C-dated 4000-3500 B.C. levels at the Ocampo Caves, and from the Sierra de Tamaulipas Caves dated at ca. 3000 B.C. These dates were before the domestication of maize (*Zea mays*) and fox-tail seeds were the best grasses available. Callen found that *S. parviflora* seeds were present in 71.5-77% of coprolites from the earlier levels in Tehuacán. Between A.D. 700-1500, *Setaria* had dropped to 20% in his samples, and continued to decline up to the Spanish arrival.

*Setaria parviflora* in the Mexican state of Tamaulipas, on the other hand, was a more important part of the human diet much later. Some have explained the difference by noting that maize did not appear in Tamaulipas until about 2200 B.C. Since maize arrived later than in the Tehuacán valley, *Setaria* remained an important cereal for longer in Tamaulipas.

Prehistoric use of the genus has now been extended from Tamaulipas and Tehuacán to people farther north and south in Mexico, the southwestern, central and eastern United States, and the Caribbean. We have records that seeds were eaten by pre-European people along the Río Grande river border between Coahuila, Mexico and Texas, the Pecos River of southern Texas, central Arizona east of Phoenix, the Big Sandy river of eastern Kentucky, the northwestern end of Lake Ontario, central Pennsylvania, and northwestern Iowa. There is even an archaeological site with *Setaria* in the Caribbean on San Salvador Island, Bahamas. These people represented the Arawakan islanders, Aztecs, the Salado culture, eastern Woodland cultures, Iroquoians, and Northeastern Plains groups. That is a diverse assemblage spanning a series of linguistic families.

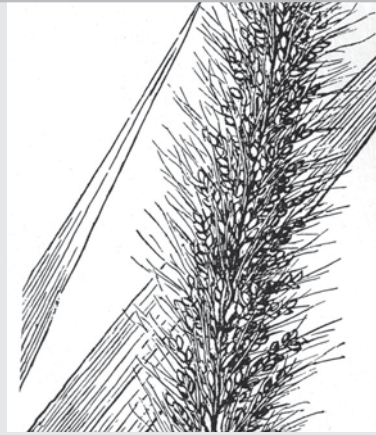
There appear to be records of only two historic American tribes consuming seeds of *Setaria* – one by the Cocopa along the lower Colorado River, and the

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*Setaria corrugata* (Elliot) J.A. Schultes.  
Artist: Edna May Whitehorn.



*Setaria macrosperma* (Scribner and Merrill)  
Schumann. Artist: Edna May Whitehorn.



*Setaria magna* Grisebach.  
Artist: Edna May Whitehorn.

Source: Hitchcock, A. S. and A. Chase. 1950. Manual of the Grasses of the United States. USDA Miscellaneous Publication No. 200, Washington, DC.

other by the Seri of coastal Sonora along the Gulf of Cortez. The Cocopa was experimenting with cultivating the Old World *S. italica*, and the Seri were gathering the native *S. macrostachya*. Seri call this grass *xica quiix* (globular things), and it was an important food to them into the 1980s.

What do millets taste like? Well, it depends on whom you talk with, and which one you eat. I have eaten millet raw (*Setaria*), in multigrain bread (*Panicum*), in porridge (*Panicum*, *Pennisetum*, *Setaria*), in Ethiopian *injera* (bread, *Eragrostis*), and made into *róka-farkú köles* (Hungarian crepes, *Panicum*). Raw, there is a somewhat nutty flavor so subtle that it almost cannot be detected. Of course, the species I tried from my front yard was not one of those recorded as being eaten by people. The bread mixture is excellent, but who could taste the millet? There are several other kinds of grains in the bread, but two kinds of wheat and oats dominate.

The porridge is certainly better than cream of wheat or oatmeal. I have never been fond of either of those, but many people think those are great. My wife Sandra took one taste of millet porridge and refused to touch it again. She is not like her Scotch-Irish great-grandfather who had a bowl of oatmeal porridge for

breakfast every day of his long life. The last time I tried oatmeal was 1996 in Scotland. The dish was the Scottish specialty in the bed-and-breakfast where we stayed. The porridge was not sweetened, but revoltingly salty and served with a traditional cow-horn spoon. I tasted only a salty cow-horn and switched to eggs.

Our Hungarian neighbor Ildiko made the *köles* for an evening meal when we were visiting, and threatened to throw out the whole batch after sampling them. She made crepes of wheat flour for the meal, but kept the *köles*. I tried them, over her objections, and they were not nearly as bad as she portrayed them. They were a lot like the *injera* that our Ethiopian friend Nigist made a few years back in Florida. *Injera* is a pancake-like bread made of another millet, *Eragrostis tef*. Both were distinctive in texture and taste in a way that cannot be described – it has to be experienced. Actually, I liked the millet *köles* – but not well enough to completely substitute them for the wheat crepes.

So, why did people abandon *Setaria* as food such that New World records are mostly buried in archaeological literature? It is not a simple answer as there have been different reasons for diverse groups in distinct times and places. Some of the people in the Old

World really did not like the way millet seeds taste any more than my wife or Hungarian friend. When different foods became available, people switched to those. Rice, our Japanese friend Kaoru contends, tastes better. Other people kept millets for making specialty foods like Japanese *awa okoshi* cakes and alcoholic beverages like Korean *dong dong ju* (a country sake). There are distinctive tastes that the grains impart to these products that have customary, ceremonial, and gustatory proponents. Some may even just like the cheap booze. I have not tried the rice cakes or sake, but they are recommended by my friends.

Regardless of whether you call the plants bristle-grasses, fox-tails, millets or fox-tail millets, remember that the seeds are edible when you see any of Florida's 4 native and 10 introduced *Setaria*. Still, you might want to let the wild birds and mammals eat their fruits. As of 1951 there were records of 67 birds and 10 mammals eating them; there are many more now. Wildlife has been eating *Setaria* far longer than humans, and they think the seeds are delicious! 🌾

For more information see: Austin, D. F. 2006. Fox-tail millets (*Setaria*: Poaceae) – abandoned food in two hemispheres. *Economic Botany* 60(2):143-158.



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**The purpose of the Florida Native Plant Society**

is to conserve, preserve, and restore the native plants and native plant communities of Florida.

**Official definition of native plant:**

For most purposes, the phrase Florida native plant refers to those species occurring within the state boundaries prior to European contact, according to the best available scientific and historical documentation. More specifically, it includes those species understood as indigenous, occurring in natural associations in habitats that existed prior to significant human impacts and alterations of the landscape.



**The Palmetto**

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