

NEW MEXICO'S VOICE FOR NATIVE PLANTS



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Giant sacaton on old floodplain, Pitchfork Ranch, NM, August 30, 2014. [Read more, page 6.](#) Photo: RSF

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Perennial Native Grasses: Food for a Dry World

by Richard Stephen Felger, Gila Chapter; University of Arizona Herbarium, Tucson

Recently, while learning some of the intricacies of Western Apache knowledge of food plants and the historic landscapes, I wondered: How different would it be if they, or any other Native Americans, had been able to teach invasive Euro-Americans about native food resources and greater respect for local ecosystems? Maybe it's not too late: at least, we are giving it a try.

New Mexico is rich in plant diversity, rich in plants used for indigenous cuisine. Dozens of such wild plants are suitable for agricultural crops and home gardens. The basic concept is: **Fit the crop to the land, not the land to the crop.** We want resilient crops with high yields. The concept includes no-tillage land use and perennial native plants that have been wild-harvested since ancient times. The implications for energy and water conservation are huge.

Some years ago I had the privilege of searching the world for new aridland/salt-tolerant food crops and now I find some of the best ones right here in our backyard in New Mexico. For example, the Gila Region of southwestern New Mexico has a native flora of about 1,500 species of seed plants. It is reasonable to estimate that Native Americans have used at least 15% of the seed plants in the Southwest for food, not just in the Gila Region of New Mexico. Among the more than 200 Gila Region wild food plant species, at least 10% provided staples and are the most promising "new" food crops for home gardens as well as large- and small-scale agriculture.

These perennial food plants will thrive best when provided with supplemental water until established, after which they should require minimal or perhaps no additional watering, depending on local conditions. The grains and seeds of these plants are small but produced in large quantities and easy to prepare. With funding from New Mexico Department of Agriculture, additional grant funds sponsored by the Sky Island Alliance, and funds for nutritional analyses from the Native Plant Society of New Mexico, Gregg Dugan and I are exploring cultivation, harvesting, and nutritional values of key candidate species. Most are grasses but we are also investigating some perennial composites, such as sunflower relatives.

Humanity depends on grasses. Civiliza-

tions co-evolved with them. No grasses, no modern civilization. Wheat, rice, corn, oats, barley, sorghum, and a richness of others. But these are tropical and temperate-climate plants—requiring extensive irrigation in dry regions—and annuals, which require annual replanting and tillage (plowing). What if we developed arid-adapted no-tillage food crops?

Nearly all grass grains (technically a caryopsis, a seed closely enveloped in the mother plant tissue, or fruit case) are edible, although some are undesirable such as ones in spiny burs. And a few, such as the members of the *Sporobolus* genus, have seeds that are free from the enveloping mother plant tissue. Here are two promising grasses among the dozen or so most interesting New Mexico food plants.

Bulb panicgrass (*Panicum bulbosum*) is a large perennial grass native to mountains in New Mexico, Arizona, Nevada, and Texas to southern Mexico. Native Americans say it's the easiest to harvest and process and tastes better than other grains. It was sought after as a special treat. The grain is millet, albeit a small one. You can easily strip off the ripe grain by hand into a paper bag. Like other grains and seeds, it is essential to get them dry as soon as possible—all moldy seeds and grains need to be avoided. You can prepare it as you would any millet or small grain. Grind it into flour to get the best taste and for easy preparation.

Bulb panicgrass occurs in widely scattered and localized populations. As the grain-bearing branches ripen they usually become reddish in color and the Apache name for the



Bulb panicgrass, Pinos Altos Mountains, NM, August 13, 2012. Photo: Jarrod Swackhamer



Bulb panicgrass flowers with orange anthers and purple stigmas, Silver City, August 13, 2012. Photo: Elroy Limmer

plant translates as “Red Grass.” Like most perennial grasses it is easy to grow, transplant, and propagate.

Bulb panicgrass has bluish-green foliage for an attractive landscape plant. This grass grows to about 5 ft (1.5 m) tall and forms very short rhizomes, producing a large, tufted grass. It can be grown from seed or from divisions; plants of any size can be easily propagated this way. However, to get good seed set you should have more than one clone to ensure cross-pollination. Plant it along a walkway, as an accent plant, or backdrop screen, or in an experimental plot for grain production. The above-ground parts are frost-killed but remain as fall color in your garden, or cut the above-ground part and it will resprout in spring after the last frost.



Giant sacaton on old floodplain, Pitchfork Ranch, NM, August 30, 2014.

Photo: RSF

The common name “bulb panicgrass” refers to the small, hard, corm-like or bulbous structure formed at the base of each stem, which is unique among New Mexico grasses. Recent molecular-based research indicates that *Panicum bulbosum* is more closely related to some of the bristle-grasses than to other *Panicum* species, and is therefore treated as a separate genus of one species: *Zuloagaea bulbosa*. Science marches on and fascinating new information can be reflected in new taxonomic alignments. Botanical nomenclature is the poetry of botany. But calling bulb panicgrass *Panicum bulbosum* is not wrong—just an older interpretation.

Giant sacaton (*Sporobolus wrightii*) is a very large, drought-hardy grass, forming tough clumps often as tall as or taller than a person. It is found across much of the Southwest to central Mexico and thrives even on salinized lands or with poor-quality water, and there are widely scattered but often expansive stands on old floodplains. Unlike most other grasses, the ripe seed is free from enclosing chaff, hence the name “dropseed” applied to many of the more than 150 species of *Sporobolus*. A grass seed free from the chaff should facilitate preparation. The common name “giant sacaton” is amusing since *sacatón* in Spanish would signify a large *zacate*, or grass, and also translates as “a wimp” or “gutless wonder.” Giant sacaton and its close relative, alkali sacaton (*Sporobolus airoides*), characteristically occur along valley bottoms, their deep roots reaching a shallow water table. The old tale of the West, “grass as tall as a horse’s belly,” probably refers to these large grasses. Old trails and roads often followed valley bottoms (and generally still do), the homeland of these grasses.

Giant sacaton leaf blades have minutely serrated, sharp edges, providing protection from herbivores including cattle, although when burned in early spring the tender new growth is suitable as forage. This grass is sometimes planted as a

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Bulb panicgrass makes an attractive ornamental.

Photo: Elroy Limmer

Perennial Native Grasses (continued from p. 7)

windbreak along perimeters of tender crops such as chilies. For home gardens, use it as a landscape accent plant instead of pampas grass, which is native to South America. In its traditional use as an important Native American food resource, the seeds were collected in large baskets, then basket-winnowed, parched or sun dried, and cooked or stored for future use.

We are finding that wild harvesting yields small amounts of grain after much work. Of course Native Americans had extensive knowledge of and practice at harvesting and we are just learning the intricacies of harvesting and preparation. Bulb panicgrass and big sacaton grain ripen within a narrow time frame, within a window of probably less than two weeks and not all at once. We have not begun to select for simultaneous ripening and food production. Who will continue learning?

Any new agronomic crop will face challenges. However,

careful observations, experimental trials, serendipity, and creativity can facilitate results. Incentives to develop our own arid-adapted food crops include adapting to a warming and drying climate, ever more critical water shortages, more sophisticated consumers such as the locavore market, and Native Americans returning to healthy traditional food resources. ❖

Richard Felger is a researcher with the University of Arizona Herbarium and the Sky Island Alliance in Tucson. He resides in Silver City with his wife Silke Schneider and many animals and plants. Dr. Felger has conducted research in deserts worldwide. His publication list is at the University of Arizona Herbarium website. The most recent book is Plant Life of a Desert Archipelago: Flora of the Sonoran Islands in the Gulf of California, University of Arizona Press, co-authored with Benjamin Wilder.

Contributions to the Jack & Martha Carter Conservation Fund

The generous financial support from so many NPSNM members and friends of the flora of New Mexico will make it possible for the Board to approve more funding for workshops throughout the state, additional basic research on a variety of critical plant taxa, continued support for the state's major herbaria, and hopefully for the development and sup-

port of more early education programs from K-12 in New Mexico schools.

Use the form provided below, or contribute through PayPal on the website, www.npsnm.org. Every contributed dollar is being used to protect the flora of New Mexico well into the future.
~Jack & Martha Carter

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**Gene Jercinovic and
Jarrod Swackhamer
inspecting giant sacaton
planted as a windbreak at
a chili field, Deming, NM,
August 27, 2014.**

Photo: RSF