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Growing Heirloom Sweet Sorghum

A Quick Look at Some New Varieties

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Introduction

Kerr Center has been growing sweet sorghum and making sorghum syrup since 1986. In 2008 we chose to plant a selection of heirloom sorghum varieties to see how well they might do. Unfortunately, Mother Nature had a few plans of her own. Hurricane Gustav may have been downgraded to a tropical depression when it reached Poteau the first week of September, but the winds and rain were serious business. They flattened most of the plants, effectively ending our trial. Still, we made some early observations that other growers might find useful.

What are Heirlooms and Why Bother with Heirloom Sorghum?

As a descriptor, heirloom tells us that something is probably old and handed down from previous generations. The word means roughly the same thing when we talk about heirloom crops and crop varieties; they are usually old cultivars, no longer in wide use by large-scale commercial growers. Some are truly hand-me-down selections nurtured by generations of family gardeners; others may be early releases from USDA or Land Grant University breeding programs that remain in use by gardeners and small farmers. One thing everyone agrees on is that all heirlooms are non-hybrid and not geneti-

cally-engineered, so that seed may be saved and re-planted.

Still, one person's heirloom can easily be another's modern improved variety. One such example in our trial was 'Theis,' which was released in 1974 and has been in use a long time, but is still popular and continues to be distributed by Mississippi's Agriculture and Forestry Experiment Station.

Though sweet sorghum producers always clamor for more, there is a good selection of improved sorghum varieties available these days including 'Dale,' 'M81E,' 'Theis,' 'Della,' 'Bailey,' and 'Topper 76-6.' Another new variety 'KN Morris,' named for Dr. Morris Bitzer (University of Kentucky), is just now becoming available. These varieties have been bred for high yields and disease resistance and, under most conditions, would be expected to outperform older cultivars. So why bother with heirloom varieties?

There are several reasons for Kerr Center's interest in heirloom sorghums. Aside from the fact that they are a valuable genetic reservoir for plant breeders, many heirlooms still perform well in the field. In addition, they provide profitable production and marketing niches for growers. For example, they might be used to feed the growing consumer interest in heirloom vegetables





Alan Ware checks the sorghum crop at the Kerr Center.

Fall Farm-Fest—Sorghum Done Right

Each October, the Overstreet-Kerr Historical Farm puts on Fall Farm-fest, a community event that features sorghum and sorghum cooking. The Kerr Center grows sorghum cane and cuts it right before the two-day festival. Some of the sorghum juice is pressed from the cane the old fashioned way, with draft power, and cooked the old fashioned way, in a copper “pan” over a wood fire. Teams of master sorghum cookers mind the fire and test the sorghum as it turns from a thin, green juice into the thick, amber sorghum syrup.

Tens of thousands of school children and visitors from around the United States have attended the festival which also features an antique tractor show and demonstrations of farm arts and crafts.

The Overstreet-Kerr Farm is a project of the Kerr Center. The center saved the 1890 home from destruction and restored it to its original grace and beauty in the early 1990s. It is listed on the National Register of Historic Places and stands proudly as a symbol of Oklahoma’s unique history.

and traditional foods. Creative sorghum marketers might highlight the fact that they make syrup from heirloom varieties. In fact, sorghum making, itself, invokes an earlier time and is the centerpiece of many rural festivals (see box above).

We also observed that some heirlooms were much earlier than improved varieties we’ve customarily grown and processed at the Kerr Center. Early varieties might make for early product sales at times when summer festivals and farmers markets are still in full swing.

There are a large number of heirloom sorghum varieties in existence, though many of them are difficult to find. We found twenty to plant, along with several improved varieties for comparison.

The 2008 Kerr Center Trial

We established our trial on pasture ground we’re converting to organic production. The site features a loam soil with moderately poor drainage, 3.1% organic matter and pH 6.5. Phosphorus and potassium levels were low and medium respectively. We planted a total of 26 varieties on June 5th. Of

these, perhaps seven would be considered modern or improved varieties; the rest were all heirloom types.

We side-dressed the planting with approximately 650 lbs./ac. of a 4-2-4 commercial organic fertilizer (equivalent in lbs./ac. of 26-14-26 for NPK, respectively) on June 17th. We also applied a light foliar spray of fish emulsion and soluble kelp on July 16th. No herbicides or pesticides were used. Sprinkler irrigation was applied as needed. We thinned to 8–10 inches between plants.

We planted fifty-foot plots, but did NOT replicate them. Replication is recommended when trying to measure fine differences among varieties. In our case, we were trying merely to approximate flowering date, maturity, and identify any varieties that were clearly unsuitable for serious evaluation in the future.

The seed of improved sorghum varieties largely resembles grain sorghum, though the grains are usually a bit smaller. We noticed that the seed of some heirlooms more closely resembled broomcorn, which is even smaller and more elliptical in shape. The resulting plants, however,

*Heirloom Sweet Sorghum Trial, 2008*

Variety (H) Heirloom (I) Improved	Seedling Emergence	Head Emergence	Soft Dough	Lodging (Pre-hurricane)	Stalk Height	Tillering
Black Amber (H)	9-Jun	3-Aug	1-Sep	severe	10 ft	Moderate
Mennonite (H)	9-Jun	5-Aug	3-Sep	v. slight	9 ft.	Heavy
Texas Black Amber (H)	10-Jun	7-Aug	3-Sep	severe	9 ft	Few
Sugar Drip (H)	9-Jun	7-Aug			8.5 ft	Moderate
San Felipe Pueblo (H)	11-Jun	9-Aug			8 ft	Moderate
Salt's Red (H)	11-Jun	10-Aug			7.5 ft	Moderate
Rox Orange (H)	10-Jun	11-Aug		v. slight	7.5 ft	Moderate
Mt. Pima (H)	10-Jun	11-Aug			7 ft	Heavy
Simon (H)	9-Jun	11-Aug			8.5 ft	Moderate
Red's Red Sweet (H)	9-Jun	13-Aug			7.5 ft	Moderate
Umbrella (H)	9-Jun	14-Aug			8.5 ft	Moderate
White African (H)	9-Jun	15-Aug			10.0 ft	Moderate
Keller (I)	9-Jun	15-Aug			11 ft	Moderate
Gila River Kana (H)	11-Jun	18-Aug			8 ft	Heavy
Honey Drip (H)	10-Jun	18-Aug			9 ft	Moderate
Iowa Sweet (H)	10-Jun	20-Aug			9.5 ft	Moderate
Onavas Red (H)	12-Jun	24-Aug			7 ft	Moderate
Yellow Bonnet (H)	9-Jun	27-Aug			9.5 ft	Moderate
Bailey (I)	10-Jun	31-Aug			12.5 ft	Moderate
KN Morris (I)	9-Jun	1-Sep			11.0 ft	Moderate
Della (I)	10-Jun	2-Sep			11.5 ft	Moderate
Cana Ganchado (H)	12-Jun	£			¥	Few
Santa Fe Red (H)	12-Jun	£			¥	Moderate
Tasagui (H)	11-Jun	£			¥	Heavy
M81E (I)	9-Jun	£			¥	Moderate
Theis (I)	10-Jun	£			¥	Moderate

£ Denotes a variety that had not flowered by September 3.
¥ Denotes a variety that had not flowered by September 3 and was not measured for height.

were clearly sweet sorghum. The difference in seed was a bit of a surprise, but not terribly so. Like grain sorghum, sweet sorghum and broom corn are members of the sorghum family, which also includes annuals like sudangrass, milo, and perennial johnsongrass.

Discussion

The table details our observations before Hurricane Gustav put us out of business in early September. The varieties are listed in the order that the heads emerged.

Seedling Emergence: Despite differences in seed type and source, all varieties emerged

surprisingly quickly and evenly. This was a benefit of planting when the soil was well warmed, with abundant moisture. Rapid emergence aided weed management. Normally, sweet sorghum emerges and builds a canopy more slowly than corn, which makes weed control a bit more challenging.

Head Emergence: We recorded heading (flowering) date when roughly 10% of plants had fully-emerged seed heads. Though all varieties emerged from the ground within four days, heading stretched over many weeks, beginning the first week of August. Several varieties had still not headed out a month later.

Seed Sources:

While Dr. Bitzer generously provided a few of our varieties, most are generally available from commercial sources. We sourced our varieties as follows:

VARIETIES:

Theis, M81E

from:

MAFES Foundation Seed Stocks
Box 9811

Mississippi State, MS 39762-9811
662.325.2390

hmsucare.com/crops/sorghum/descriptions.html

Note: MAFES is also a source for the popular 'Dale' and 'Topper 76-6' varieties.

VARIETIES:

Iowa Sweet, Rox Orange, Salt's Red, White African, Yellow Bonnet

from:

Sand Hill Preservation Center
1878 230th Street

Calamus, IA 52729

563.246.2299

www.sandhillpreservation.com

VARIETIES:

Cana Ganchado, Gila River Kana, Mt. Pima, Onavas Red, San Felipe Pueblo, Santa Fe Red, Tasagui, Texas Black Amber

from:

Native Seeds/SEARCH

526 N. Fourth Avenue

Tucson, AZ 85705

520.622.5561

www.nativeseeds.org

VARIETIES:

Black Amber, Honey Drip, Mennonite, Red's Red Sweet

from:

Baker Creek Heirloom Seeds

2278 Baker Creek Road

Mansfield, MO 65704

417.924.8917

rareseeds.com

VARIETY:

Sugar Drip

from:

Hubert Farms

10685 E. 1700 N.

Ferdinand, IN 47532

812.719.1898

Soft Dough Stage: Commercial sorghum producers typically determine harvest date by measuring sugar content in the plant sap using a refractometer. Traditionally, however, growers determined harvest date by seed maturity. When sorghum seeds reach the soft dough stage, stalks have adequate sugar content and are ready to be cut. Sadly, only three varieties reached the soft dough stage before the storm flattened everything.

Lodging: For readers not familiar with the term, lodging refers to plants falling over. Lodging creates real problems during harvest, whether by hand or machine. There are two types of lodging. Stalk lodging results from breakage or weakening of the stalk, causing the upper stalk to topple while the roots remain in the ground. The bottom-most internodes remain intact. Root lodging results when the roots are weak and the entire stem is bent over, beginning at the soil level. As the plant struggles to right itself, it grows in a bent shape called a "gooseneck." Prior to the hurricane only four varieties showed any tendency to lodge. In all cases, the plants were root-lodged, suggesting their weakness was poor or damaged roots rather than stems.

Stalk Height: Stalk height was measured when all or most of the plants in each plot were headed out. Five varieties had not headed out when the whole planting storm-lodged.

Tillering: Tillering (also called "suckering" or "stooling") is the natural tendency for grass plants to produce more than one stem, especially when plant populations are light. Some growers suggest suckering may increase per acre syrup yield, but this has not been confirmed. We thinned our stand to a moderate in-row density, but used wide 48-inch rows. This may have encouraged tillering, though we've since learned that many growers found more suckers in their fields in 2008 than usual.

In the Future...

Ours was only a preliminary study. We plan to evaluate more heirloom sorghum varieties in the coming years.

We certainly encourage you to try these and other sorghum varieties yourself. Your experiences might be quite different and we'd like to hear if they are.

The sweet sorghum trial was a project of the Kerr Center's School of Sustainability. Interns Jenny Hardy and Erica Hellen participated in the trial. For more information on the School of Sustainability and internships, visit www.kerrcenter.com or call 918.647.9123

