



# 'Theis' - A New Variety of Sweet Sorghum for Sirup Production

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'Theis', a new superior sweet sorghum variety for sirup production, was developed at the U. S. Sugar Crops Field Station, Meridian, Mississippi, in the cooperative research program of the Agricultural Research Service, U. S. Department of Agriculture and the Agricultural Experiment Stations of Alabama, Florida, Georgia, and Mississippi.

The name "Theis" was chosen in honor of the late Dr. Thomas Theis, who was director of sugar crops research for the U. S. Department of Agriculture at the time of his death.

Cooperative tests during the past five years in Alabama, Florida, Georgia, and Mississippi have shown the superiority of Theis to 'Brandes' for sirup production.

These tests were conducted at the Sand Mountain Substation, Crossville, Alabama; Agricultural Research and Educational Center, Quincy, Florida; Georgia Mountain Branch Station, Blairsville, Georgia; Georgia Agricultural Experiment Station, Experiment, Georgia; Alcorn A&M College, Lorman, U. S. Sugar Crops Field Station, Meridian, Coastal Plain Branch Station, Newton, Pontotoc Ridge-Flatwoods Branch Station, Pontotoc, and Northeast Branch Station, Verona, Mississippi.

### DESCRIPTION OF THEIS

Theis is a late-maturing variety, which matures about the same time as Brandes and 'Wiley'. It is similar to Wiley in height, but far superior to Wiley in

lodging resistance. The stalks are practically free of the external waxy bloom common to most sweet sorghum varieties.

The panicle is erect and semi-compact (Fig. 1 & 2). Pubescence on the black glumes is semi-deciduous except on the callus, where the hairs are somewhat longer and more persistent. The glumes have a sharp apex and cover about one-third of the caryopses. The glumes do not clasp the seed at maturity and are nonpersistent in the threshed seed. The large, brown, near-orbicular seeds are flatter on the dorsal side than on the ventral side. Theis has a soft chalky seed coat and mostly corneous endosperm. The brown subcoat is absent, and the lemma is awnless.

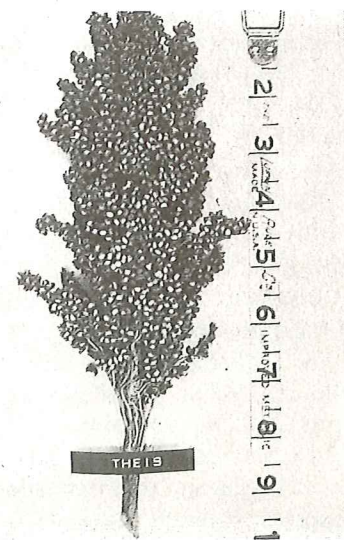


FIGURE 1. Typical panicle of Theis.

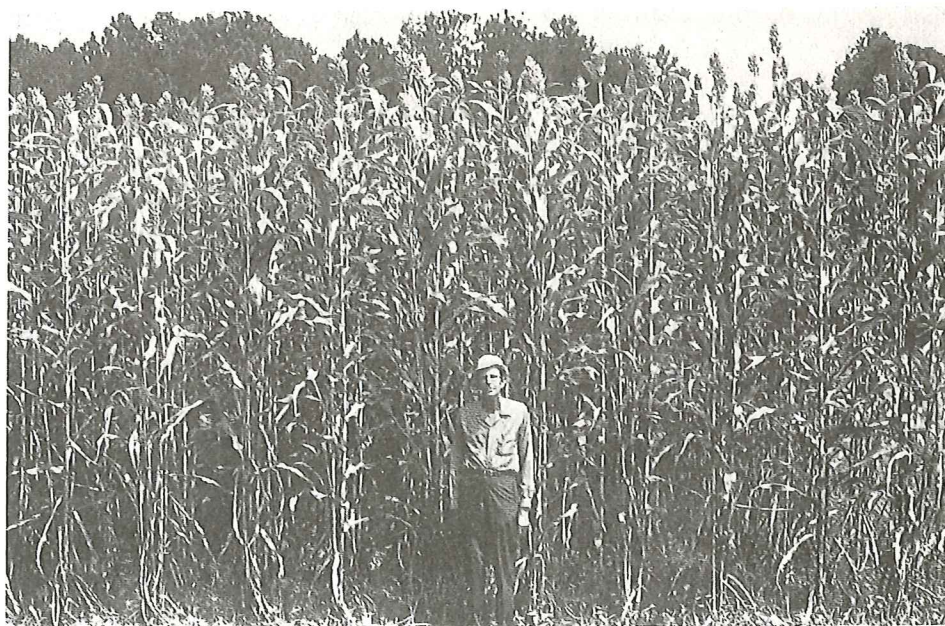


FIGURE 2. Typical Theis sweet sorghum plants.

## EXPERIMENTAL RESULTS

Data for three to five years at nine locations are shown in Table 1. This was superior to brandes in yield of stripped stalks, sirup per ton of stalks, and sirup per acre. The new variety was not as resistant to lodging as Brandes; however, excessive lodging occurred in This only during strong winds on the perimeter of a hurricane. This is far superior to Brandes in drought tolerance. The juice from This and Brandes failed to boil to sirup density (108°C) twice and once in the 39 tests, respectively. This failed to produce commercial grade sirup at Experiment in 1970 and at Lorman in 1972; whereas Brandes failed to produce commercial sirup at Experiment in 1973. This normally has adequate starch in the juice to give the sirup body, but not enough to interfere with sirup manufacture. The sirup from This has mild sorghum flavor, amber color, and excellent quality. The new variety is well adapted to the Southeastern part of the United States.

This produces seed with good germination which is retained well during storage in comparison to that of Wiley.

**Cooperative investigations of the Agricultural Research Service, U. S. Department of Agriculture, and Alabama, Florida, Georgia and Mississippi Agricultural Experiment Stations.**

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Table 1. Comparative data for This and Brandes in Alabama, Florida, Georgia, and Mississippi, 1969-73.

Locations	Years Tested	Stripped Stalks		Lodging		Sirup/Ton		Sirup/Acre	
		Theis : Brandes	Theis : Brandes	Theis : Brandes	Theis : Brandes	Theis : Brandes	Theis : Brandes	Theis : Brandes	Theis : Brandes
		Tons/Acre	Tons/Acre	Percent	Percent	Gallons	Gallons	Gallons	Gallons
ALABAMA									
Crossville	5	19.6	17.9	0	0	15.6	16.1	310	288
FLORIDA									
Quincy	4	14.5	14.6	3	0	16.1	14.9	233	217
GEORGIA									
Blairsville	5	21.2	20.7	1	1	12.9	13.3	271	267
Experiment	5	16.5	16.1	2	1	14.8	15.5	239	263
MISSISSIPPI									
Lorman	5	15.3	11.8	0	0	12.6	11.0	196	134
Meridian	5	26.5	24.8	25*	20*	15.6	15.0	410	370
Newton	3	20.5	18.9	33*	7*	13.9	14.1	289	274
Pontotoc	3	21.6	17.1	3	0	14.8	13.4	320	232
Verona	4	24.9	18.6	0	0	15.2	14.3	372	261
Mean		20.1	17.8	7	3	14.6	14.2	293	256

\* Hurricane in 1969

Gissendanner, former Superintendent and J. T. Eason, Superintendent, Sand Mountain Substation, Crossville, Ala.; W. H. Chapman, Professor (Agronomist) and Center Director and R. L. Stanley, Jr., Assistant Agronomist, Agricultural Research and Education Center, Quincy, Fla.; H. B. Harris, Professor, Georgia Agricultural Experiment Station, Experiment, Ga.; and J. W. Dobson, Jr., Superintendent and C. D. Fisher, Assistant Professor, Georgia Mountain Branch Station, Blairsville, Ga.

### DISEASE RESISTANCE

This is highly resistant to leaf anthracnose and stalk red rot, both caused by *Colletotrichum graminicola* (Ces.) G. W. Wils. It is tolerant to maize dwarf mosaic virus and moderately resistant to downy mildew (*Sclerospora sorghi*

Weston and Uppal). This is tolerant to most cotton insecticides, consequently it is far superior to Brandes in this respect.

### HISTORY

This was selected from the progeny of the cross, (Wiley x C.P. Special) X [MN 1054 (PI 152965) X Mer. 51-2 (White African x MN 660)]. The cultivar was selected from the F<sub>2</sub> progeny in 1962. Progeny-row selection continued through the F<sub>6</sub> generation. This was advanced to the agronomy nursery in 1968 and evaluated under the breeding number, Mer. 67-10. After one year of observation at Meridian, the cultivar was placed in the regional agronomic variety tests in 1969 in Alabama, Florida, Georgia, and Mississippi for evaluation.

Growers may obtain a small amount of This seed from the Foundation Seed Stocks, Mississippi State University, P. O. Box 5267, Mississippi State, Mississippi 39762.