SORGHUM SYRUP

CURRENT TOPIC

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NCAT Agriculture Specialists
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Sorghum syrup is a natural sweetener made by processing juice squeezed from the stalks of certain types of sorghum (*Sorghum bicolor*) called *sweet sorghum* or *sorgo*. Sweet sorghum is grown for syrup or forage, whereas most other sorghums, commonly referred to as *milos* or *kafirs*, are grown for grain. Sweet sorghums resemble grain sorghum at maturity except that they are about three times taller, reaching a height of 12 feet or more.

Specialized milling equipment is necessary to extract the juice, and evaporative pans with heating units are used to steam off excess water, leaving syrup. It takes about 8 gallons of juice to make 1 gallon of syrup.

The correct label for sorghum syrup is "sorghum syrup" or "pure sorghum." Molasses, unsulphured molasses, cane molasses, and cane syrup are byproducts of sugarcane processing and sugar crystallization. "Sorghum molasses" is a blend of sorghum syrup and sugarcane molasses.

Sweet sorghum is ideally suited to the small diversified farm. The seed heads (which are cut off prior to processing) can be fed to chickens. The grain, leaves, and stalks of sweet sorghum can be fed to ruminant livestock. Bagasse, the organic waste from sorghum syrup processing, can also be fed to livestock, or composted and returned to the fields.

Traditionally, the use of herbicides, insecticides, and fungicides is minimal or eliminated altogether in the production of sorghum syrup. Farmers raising sweet sorghum will need to use good cultural practices—such as crop rotations, cover crops, and timely cultivation—to avoid weed problems. Some growers may want to tap into the burgeoning *organically grown* niche market.

Yields of 200 to 300 gallons of syrup per acre are possible, though 120–130 gallons is an average yield. Wholesale prices for sorghum syrup run about $12–$15 per gallon. In a crop budget analysis done by the Kerr Center in Oklahoma, a sorghum enterprise realized profitable returns to land and management at a yield of 112 gallons per acre selling for $18 per gallon (1). Many small-scale growers aim for $30 per gallon. Niche marketing, smaller jars, and fancy labeling are methods used to achieve this goal.

In the past, sorghum mills were a common feature of southern agriculture. Farmers could process their crop at local mills, often on a share arrangement with the mill owner. One of the biggest challenges facing new producers today is the lack of milling equipment. Most growers rely on used equipment manufactured decades ago for the sorghum syrup and sugarcane industries.

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As an alternative to a sorghum mill on every farm, Alcorn State University in southern Mississippi sponsors a mobile sorghum "juice" pressing trailer that is loaned out during sorghum season. William Patton (2), agronomy specialist, can provide further information and details, in case a cooperative venture like this could be feasible in your region.

Stainless steel, galvanized steel, or copper pan evaporators are the other major equipment item associated with sorghum syrup production. Pan evaporators are usually custom-manufactured and are available through suppliers to the sorghum syrup, sugarcane, and maple sugar industries. A refractometer, thermometer, fuel burner, enzymes, containers, and labels are other supplies needed to process and market sorghum syrup.

For processing commercial sweet sorghum, clean facilities are important because the product is sold as a food item to the public. Some states require a food processor permit, and others may want to inspect processing and packing areas.

Variety selection is an important consideration and is somewhat region-specific, according to climate and soil type. Qualities to evaluate when selecting a variety include: days to maturity, growth habits matched to harvest equipment, stalk size, and cold tolerance.

The Mississippi Agricultural and Forestry Experiment Station (MAFES) Foundation Seed Stocks supplies certified seed for sweet sorghum varieties—Dale, Theis, M81-E, Topper 76-6—adapted to the Mid-South region. Contact:

MAFES Foundation Seed Stocks
Mississippi State University
P.O. Box 9811
Mississippi State, MS 39762
662-325-2390
Fax: 662- 325-8118
Email: Rvaughan@pss.msstate.edu
http://msucares.com/crops/sorghum/descriptions.html

Townsend Sorghum Mill in Jeffersonville, Kentucky, is a good source of sorghum syrup varieties adapted to conditions north of Memphis, Tennessee. Contact:

Townsend Sorghum Mill
11620 Main Street
Jeffersonville, KY 40337
606-498-4142
Contact person: Danny Townsend

Sweet sorghum is widely adapted to the U.S., with commercial production in at least 26 states. Land-grant universities in Kentucky, Tennessee, Alabama, and Georgia have conducted research and published materials on producing and processing sweet sorghum. Selected educational materials from Kentucky, Tennessee, and New York are enclosed for your information.

The National Sweet Sorghum Producers and Processors Association (NSSPPA) holds a meeting on the first weekend of March each year. The meeting location rotates between Bowling Green, Kentucky, and Nashville, Tennessee. The association publishes a newsletter to exchange information among producers, as well as a directory. According to NSSPPA, there are 500–700 sorghum syrup producers in the U.S. raising a total of 25,000 to 30,000 acres.

For NSSPPA membership and newsletter information, contact:

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www.nssppa.org

USDA published a series of Farmers' Bulletins and Agriculture Handbooks on sorghum syrup, proceeding from the turn of the century through the 1970s (3, 4, 5, 6, 7, 8). Though dated, they still provide an excellent summary of sorghum syrup production—including varieties, cultivation, harvesting, and processing; in addition, the photos and illustrations provide historical glimpses into farm equipment and syrup-making procedures. USDA publications are located in land-grant university libraries, and photocopies can often be obtained through Inter-Library Loan. Of special interest are the six USDA and Agriculture Experiment Station bulletins available as full-text online documents listed under **Web Resources**.

Sweet Sorghum Production and Processing by George Kuepper was published by the Kerr Center for Sustainable Agriculture (9) in 1992. This 93-page manual, available for $12, is a practical handbook on everything a farmer needs to know about sorghum growing and processing. It is based on the Kerr Center's experience with sorghum production, and includes black-and-white photographs of equipment and processing methods. The Overstreet-Kerr Historical Farm, a project of the Kerr Center, sponsors a farm festival each October where sorghum-syrup-making is demonstrated.

The Cooperative Extension Service, which is the land-grant university outreach program for farmers in each state, is the primary source of crop production information on sweet sorghum. The **Web Resources** section below contains links to educational materials from Wisconsin, Minnesota, Alabama, Kentucky, Texas, and Georgia.

One of the best ways to learn how to make sorghum syrup is by first-hand exposure. The National Sweet Sorghum Producers and Processors Association can provide referrals to sweet sorghum farmers in your region, syrup-making festivals, and related events.

References

1) Kuepper, George. 1992. Sweet Sorghum Production and Processing. The Kerr Center. Poteau, OK. 93 p.

2) William Patton, Agronomy Specialist, Alcorn State University, 1000 ASU Drive, No. 479, Lorman, MS 39096, 601-877-6551, cxwbp@cotton.vislab.olemiss.edu

3) Hugh, B.A., and S.F. Sherwood. 1924. Sorgo-Sirup Manufacture. USDA Farmers' Bulletin No. 1389. 29 p.

4) Walton, C.F., E.K. Ventre, and S. Byall. 1938. Farm Production of Sorgo Sirup. USDA Farmers' Bulletin No. 1791. 40 p.

5) Cowgill, H. B. 1942. Sorgo for Sirup Production Culture, Harvesting, and Handling. USDA Farmers' Bulletin No. 1619. 38 p.

6) Stokes, I.E., O.H. Coleman, and J.L. Dean. 1957. Culture of Sorgo for Sirup Production. USDA Farmers' Bulletin No. 2100. 32 p.

7) Freeman, K.C, D.M. Broadhead, and N. Zummo. 1973. Culture of Sweet Sorghum for Sirup Production. USDA Agriculture Handbook No. 441. 30 p.

8) Freeman, K.C. 1986. Sweet Sorghum Culture and Sirup Production. USDA Agriculture Handbook No. 611. 55 p.

9) Kerr Center for Sustainable Agriculture, P.O. Box 588, Poteau, OK 74953, 918-647-9123, http://www.kerrcenter.com

Enclosures

Bischoff, M.E., and J.K. Campbell. 1992. Producing Sweet Sorghum Syrup in New York State. Agricultural Engineering Facts EF-16. Cooperative Extension Service, Cornell University. 2 p.

Bitzer, Morris J. 1987. Production of Sweet Sorghum for Sirup in Kentucky. Part One. AGR-122. University of Kentucky, Cooperative Extension Service. 4 p.

Bitzer, Morris J., and Joe D. Fox. 1987. Processing Sweet Sorghum for Sirup. Part Two. AGR-123. University of Kentucky, Cooperative Extension Service. 8 p.

Bitzer, Morris J. 1990. Sweet sorghum good income supplement. Delta Farm Press. March 16. p. 37.

Drapala, Patti. 1993. Foundation Seed has sweet story to tell. MAFES Research Highlights. March-April. p. 3.

Morgan, Lowell. 1997. Sorghum. Rural Heritage. Autumn. p. 58-63.

Morris, William C. et al. 1993. Practices of Tennessee growers in producing and marketing sweet sorghum, 1988-1990. Tennessee Farm and Home Science. Spring. p. 9-16.

Undersander, D.J. et al. 1990. Sorghum—for Syrup. Alternative Field Crops Manual. University of Minnesota Extension Service, Center for Alternative Plant & Animal Products.

Web Resources

Sorghum for Syrup
Alternative Field Crops Manual (Univ of WI, Univ of MN)
http://www.hort.purdue.edu/newcrop/afcm/syrup.html

Production of Sweet Sorghum for Syrup in Kentucky, AGR-122
University of Kentucky
http://www.ca.uky.edu/agc/pubs/agr/agr122/agr122.htm
http://www.ca.uky.edu/agc/pubs/agr/agr122/agr122.pdf

Processing Sweet Sorghum for Syrup, AGR-123
University of Kentucky
http://www.ca.uky.edu/agc/pubs/agr/agr123/agr123.htm
http://www.ca.uky.edu/agc/pubs/agr/agr123/agr123.pdf

Growing Sweet Sorghum for Syrup
University of Georgia
http://www.ces.uga.edu/Agriculture/agecon/pubs/sweetsorg.htm

Syrup Sorghums for Texas, L-5146
Texas A&M University
http://sorghum.tamu.edu/publications/787576-747466-l5146.pdf

Sweet Sorghum Culture and Syrup Production, ANR-625
Alabama Cooperative Extension Service
http://www.aces.edu/department/extcomm/publications/anr/anr-625/anr-625.html

Farm Production of Sorgo Sirup
USDA Farmers' Bulletin No. 1791 (1938)
http://worldzone.net/art/christison/sorgo/farmbulletin1intro.htm

Culture of Sorgo for Sirup Production
USDA Farmers' Bulletin No. 2100 (1957)
http://www.wvu.edu/~agexten/forglvst/Bulletins/2100.pdf

Culture of Sweet Sorghum for Sirup Production
USDA Agriculture Handbook No. 441 (1973)
http://www.wvu.edu/~agexten/forglvst/Bulletins/441a.pdf

Sugarcane and Sorghum Sirup for Home Use
Clemson Agricultural College Bulletin No. 105 (1945)
http://www.wvu.edu/~agexten/forglvst/Bulletins/105.pdf

Factors Influencing the Yield and Quality of Sorgo Sirup Produced in West Virginia
WVU Ag. & Forestry Experiment Station Bulletin 450 (1961)
http://www.wvu.edu/~agexten/forglvst/Bulletins/450.pdf

Costs and Returns from Producing and Processing Sorghum Syrup
University of Tennessee Agric. Exp. Stat. Bull. No. 363 (1963)
http://www.wvu.edu/~agexten/forglvst/Bulletins/363.pdf

MAFES Foundation Seed Stocks Maintains Seed of Four Sweet Sorghum Varieties
http://msucares.com/crops/sorghum/descriptions.html

Sorghum Molasses in the Ozarks—Bittersweet Style
Bittersweet, Vol. 1, No. 3 | Spring 1974
http://thelibrary.springfield.missouri.org/lochist/periodicals/bittersweet/sp74f.htm

Syrupmakers.com
http://www.syrupmakers.com/

Ken Christison's Cane Mill Page
http://www.syrupmakers.com/mills/

The Southern Matters Sugar Cane Operations Page
http://www.southernmatters.com/sugarcane/operations.htm

Ken's Christison's Cane Mill Catalogs
http://www.syrupmakers.com/catalogs/index.htm

Sweet Sorghum (Sometimes Called Sorghum Molasses)
Ken Christison and Keith Kinney
http://www.herculesengines.com/sorghum/default.html

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The electronic version of **Sorghum Syrup** is located at:
HTML
http://www.attra.ncat.org/attra-pub/sorghumsyrup.html
PDF
http://www.attra.ncat.org/attra-pub/sorghumsyrup.pdf

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