# Heirloom Sweet Potato Varieties

# A Preliminary Look in 2010

**George Kuepper, Sustainable Agriculture Specialist**

**with Seth Stallings, 2010 Student Intern**

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# Introduction

In 2010 the Kerr Center received a Specialty Crop Grant from the USDA Agricultural Marketing Service (AMS) for a 3-year project investigating and demonstrating small-scale heirloom sweet potato growing. Our goals include identifying appropriate-sized equipment, small tools, varieties, and organic growing practices suitable for the region's market farmers and gardeners.

Our main objective for 2010 was to identify the more critical production practices we would use in the next two years for demonstration and variety trials. We will publish those findings over the next two years after we gain more field experience.

We also planted a small variety trial, to gain familiarity with the range of sweet potato types and cultivars. The results were interesting and, even though they are preliminary, we decided to share them with you.

Please keep in mind that this was a *preliminary* trial, and our findings should be treated as such. We encourage you to carefully read the conditions under which we conducted the trial – the soil, the planting dates, and, of course, the weather. Our experiences in 2010 need to be replicated in future work before we are fully satisfied drawing strong conclusions.

# A Bit about Sweet Potatoes

The sweet potato (*Ipomoea batatas*) is a New World crop, native to the tropics. It is a member of the morning glory family (Convolvulaceae), whose edible portion is a true root. The white or "Irish" potato, by contrast, is a member of the Solanaceae family, which includes tomatoes, peppers, and eggplant; the edible portion of the white potato is actually a tuber or fattened rhizome, which is an underground stem. That is why white potatoes turn green when exposed to light. Though sweet potatoes are sometimes called yams, they are not related to true yams, which belong to the genus *Dioscorea*. True yams are not grown commercially in the United States.

The varieties of sweet potato familiar to most U.S. gardeners and consumers have moist, orange flesh, with red or orange skins. However, there are also dry-fleshed varieties, and flesh and skin colors can vary widely. Yellow, white, purple, and red are among the common colors.

Sweet potatoes are often referred to as a perfect food or "super food." They are high in fiber, Vitamin A, Vitamin C, Vitamin B6, potassium, and manganese. Sweet potatoes can help stabilize blood sugar, making them a good choice for diabetics. They are also low in calories – approximately 95 calories each." [1]

Sweet potatoes are increasingly popular in American diets. This is only partly due to their food value. Interest is also due to their being prepared and served as snack chips and french fries – relatively modern culinary innovations.

Another factor that increases interest among gardeners and small farmers is the potential of sweet potato as a resilient food crop for the uncertain climatic times ahead. Sweet potatoes are heat and drought tolerant, most varieties store easily and, with a little care, "seed" stock can be carried over year-to-year. Yields on good soils can be enormous and satisfying – 300 bushels per acre is not unreasonable or uncommon [2].

Student Intern Seth Stallings harvesting sweet potatoes

## The Kerr Center 2010 Sweet Potato Trial: Location and Methods

We located the sweet potato trial at the Cannon Horticulture Project on the Kerr Center Ranch. The Cannon Horticulture Project was established in the fall of 2007 and is in transition to certified organic status. The Cannon site features a loam soil with moderately poor drainage. Farmers and gardeners know that this is *not* good soil for sweet potatoes; they prefer light, well-drained sandy loams. On the positive side, the site has organic matter levels around 3.1%, and ideal pH ranges from 6.6 to 7.0. Native phosphorus and potassium levels on these soils are typically low. However, compost applications in 2009 have improved the phosphorus status considerably and the potassium moderately.

The previous crop in 2009 was sorghum-sudangrass planted as green fallow. It was followed by a winter cover crop of triticale, purple vetch, and volunteer crimson clover. The plot was prepared for ridge-planting using a BCS tiller with hiller-furrower attachment, providing a 4.5-5.0 foot row spacing.

We transplanted sweet potato slips on two separate dates. Ten varieties (Yellow Jewel, Vardaman, Centennial, Nancy Hall, Allgold, Okinawa Purple, Cordner's Red, Cherokee, Dianne, and Redgold) were transplanted June 8th; the remaining seven (Georgia Red, Oklahoma Heirloom, Hernandez, Carogold, Scarlet, Sumor, and Redcliff) were set out on June 15th. These dates are quite late, but still acceptable, for sweet potatoes. Using two transplanting dates in this way is not good experimental technique. Unfortunately, we received half of the planting material much later than we'd hoped.

Supplemental drip irrigation was provided as needed. No foliar diseases were observed. Striped blister beetles did minor damage in late summer. Blister beetle populations were suppressed by spraying with a combination of pyrethrum, neem, and d-limonene. During harvest, some losses to rodent feeding on the roots were also observed.

The major challenges to our planting this year were the exceptionally high summer temperatures which truly "stress tested" the varieties. Several suffered badly. Where obvious, we've included those observations when variety performance is discussed.

Harvesting was done on October 12th using a moldboard plow to lift the roots from the row. Marketable roots were harvested and weighed.

## Results and Cultivar Descriptions

Because this was a preliminary trial, we have not reported measured yields. Instead, we provided general observations

only where we feel confident in them. The photos that follow were taken within a few days of harvest and are fairly representative of the roots each variety produced. Keep in mind that the trial was grown on heavy soil, which may affect root shape as well as yield.

The descriptions that follow are drawn from catalogs and sales literature provided by George's Plant Farm, Duck Creek Farm, and Sand Hill Preservation Center, plus Oklahoma State University and University of Arkansas Extension publications. Details and contact information for these resources are provided at the end of this document.

*Yellow Jewe*l

100 days. Developed by NCSU in 1970, Jewel is the most commonly grown sweet potato in Oklahoma [2]. The moist-fleshed roots are typically chunky and short. The skin is light copper and the flesh orange. Jewel resists stem rot, southern root knot nematodes, and internal cork. It is susceptible to black rot, scurf, and soil rot. Market and canning quality are considered good; slip production, fair. Jewel is a standard variety recommended by both Oklahoma and Arkansas Extension.

Jewel slips did not fare well in the extreme heat of June 2010 at Kerr Center. However, those that survived yielded quite well. Several roots reached jumbo size.

*Vardaman*

90 days. Vardaman has a compact, bush growth habit. Its roots are also compact—not inclined to be stringy, which is generally desirable. The roots have a light orange skin with dark orange meaty flesh. It is resistant to root-knot nematodes and internal cork. It is recommended by the University of Arkansas Cooperative Extension and is not generally thought of as an heirloom type. Vardaman was a good producer in our trial, with fairly uniform roots.

*Nancy Hall*

110 Days. Nancy Hall has cream skin and cream-to-yellow flesh. It is a true heirloom variety and is mentioned in a 1936 publication by George Washington Carver [3]. It has very good eating and keeping quality, and nice root shape. It is currently among the University of Arkansas's recommended varieties. It was a poor yielder in our trial, though it survived the heat of June quite well. However, it was one of the favorites for flavor among Kerr staff.

*Centennial*

90 days. Bred at the Louisiana Experiment Station at Baton Rouge in 1962, Centennial is still recommended by both Arkansas and Oklahoma. Its growth habit is semi-bush; it has orange, smooth skin and orange flesh. Centennial stores well, though canning quality is only considered fair. Slip production is also rated as fair. It is considered to be a reliable heavy yielder in normal years. Centennial tolerates fusarium wilt, stem rot, and internal cork, but is susceptible to black rot, scurf, soil rot, and root-knot nematodes.

Centennial is inclined to produce long, skinny roots, which we certainly observed. It is considered to be well adapted to heavy soils, though it only provided a modest yield in our trial.

*Allgold*

Allgold is a 1952 Oklahoma release that is still recommended by Oklahoma Cooperative Extension. It is early, with vigorous vines. Skin color is tan to orange; moist flesh is salmon to orange. Allgold is considered a good canner and has fairly good storage characteristics. It is a good slip producer. Allgold has good resistance to internal cork and moderate resistance to soil rot but is susceptible to stem rot, black rot, scurf, and root-knot nematodes. Oklahoma State considers this a heavy yielding variety and our trial confirmed that.

*Okinawa Purple*

140 days. Okinawa Purple is more popularly known as "Okinawan." It is an Asian type, with dry flesh, light beige skin, and deep dark purple flesh. The flavor is very sweet. A recent article on doctoroz.com refers to a purple sweet potato common to Okinawa locally called "Imo." It is given credit for the longevity of women on that island [4].

Okinawan survived well in the heat, but yielded poorly. This is likely due to our late planting date. It is a very long-season variety that we planted late and harvested much too early. We plan to give this variety a much fairer evaluation in the future.

*Cordner's Red*

Oklahoma State University never officially released this Oklahoma variety, though it came from their breeding program. It has a relatively compact growth habit, purplish-red skin, and orange, moist flesh. Cordner's Red is not considered a good storage variety, but its taste is reported to be excellent. However, several Kerr staff found it a bit bland. It produced a very good yield in our trial.

*Cherokee*

Cherokee is a 1965 South Carolina release. Roots are typically smooth and blocky. The skin is copper; the flesh, orange. Cherokee has long, thin, rampant vines. It is susceptible to fusarium. It is said to store well and is a prolific slip producer. Cherokee's yield was moderate in our trial.

*Dianne*

Dianne has red skin with deep orange flesh. The roots are generally long, slender, and torpedo-shaped, though many that we harvested would be described as blocky. Vines are fat and vigorous, with spiky leaves. Dianne yielded very well in our trial.

*Redgold*

Another Oklahoma release from 1953, Redgold is ranked as the second-most popular variety in the state [2]. It is still recommended by Oklahoma State University. Redgold has reddish-purple skin and salmon-orange moist flesh. While fresh-market quality is good, it is considered a poor canner with only fair storage life; slip production is fair to good. Redgold has intermediate resistance to stem rot, black rot, and internal cork; it is susceptible to scurf, soil rot and root knot nematodes. Redgold had only modest yield in our trial.

*Georgia Red*

Georgia Red is a release from Georgia that should not be confused with the popular, short-season variety Georgia Jet. Georgia Red is very long-season – 140 days. It has long, vigorous vines. The roots have coppery-red skin; the flesh is moist and light orange in color. It has good keeping and eating qualities and excels as a baking potato. Despite late planting and an early harvest, Georgia Red yielded well in the Kerr Center trial.

*Oklahoma Heirloom*

Oklahoma Heirloom is a true heritage sweet potato. The original stock was grown by Ralph Mills of Beggs, Oklahoma. He received it from a neighbor in Coalgate and grew it for more than 30 years. It looks similar to another heritage variety called Mahan and may be derived from it.

Oklahoma Heirloom has compact vines with ivy-shaped leaves. The flesh is orange and moist, with a very long storage life. Production is typically early and heavy… and so it was in the Kerr trial. This obscure variety was the second-highest yielding variety in the trial.

*Hernandez*

Hernandez is a mid-season variety originating from the Louisiana State University Agricultural Experiment Station's breeding program. It has vigorous vines, dark orange skin, and dark orange flesh. Hernandez has moist flesh with excellent baking, storing, and processing qualities. It resists fusarium and southern rootknot nematodes, and has moderate resistance to soil rot and white grubs. It was the best-yielding variety in the trial.

*Caro Gold*

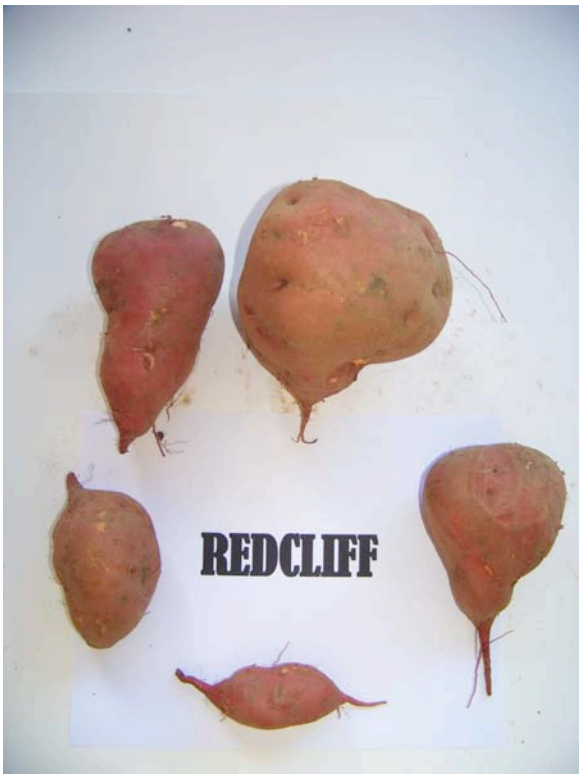
Caro Gold is a 1958 South Carolina release. It is early, and has rampant but thin vines, purple skin, and moist orange flesh. Caro Gold resists fusarium, cracking, and blue stem. It is considered a poor slip producer. Its yield in the Kerr trial was disappointing.

*Scarlet*

Scarlet is a North Carolina heirloom. Its long cylindrical roots have deep red to purple skin and orange flesh. Scarlet keeps well in storage and has superior baking qualities. It is resistant to fusarium, wireworms, nematodes, and growth cracking. Scarlet was a high yielder for us.

*Sumor*

An early variety, Sumor is a 1984 South Carolina release. It produces average vines with medium-pale green leaves. The root skin and flesh are white. Sumor stores very well but has a very bland, unsweet taste. It is considered a good substitute for white Irish potatoes in hot climates, especially after several months in storage. Sumor produced a high yield in the trial.




*Redcliff*

Redcliff is a 1968 release from South Carolina. It produces blocky red-skinned roots, with salmon-colored flesh, that have good baking and canning qualities. It has moderately good disease resistance. Redcliff suffered in the heat at Kerr Center this year. Surviving plants produced a poor yield.

## Locating Heritage Planting Stock

*We used two sources for our slips in the 2010 trial at Kerr Center. George's Plant Farm of Martin, Tennessee, provided Centennial, Nancy Hall, and Yellow Jewel. The remaining varieties were supplied by Gary Schaum of Duck Creek Farms at Mounds, Oklahoma. Note that the two primary sources for a wide array of heirloom varieties are Duck Creek Farms and Sand Hill Preservation Center.*

Duck Creek Farms (Gary Schaum)
P.O. Box 303
Mounds, OK 74047
918.827.6455
DuckCreekFarms@aol.com

George's Plant Farm
1410 Public Wells Road
Martin, Tennessee 38237-5618
731.587.9477
www.totorman.com

Sand Hill Preservation Center
1878 230th St.
Calamus, IA 52729-9659
563-246-2299
www.sandhillpreservation.com

Steele Plant Company
202 Collins St.
Gleason, TN 38229
731.648.5476
www.sweetpotatoplant.com

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## Further Reading


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# About the Authors

George Kuepper is currently Sustainable Agriculture Specialist and Intern Program Coordinator for the Kerr Center for Sustainable Agriculture. Prior to this, he was Midwest Office Coordinator and Technical Specialist for the National Center for Appropriate Technology and the ATTRA Project, specializing in issues related to organic certification, compliance, and transition.

Seth Stallings is a program assistant at the Kerr Center. He was born in Ft. Smith, Arkansas, and raised in Heavener, Oklahoma. He has an associates degree from Carl Albert State College and a Bachelor of Arts in Anthropology from Oklahoma Baptist University. He has had two internships: one with Crow Farms in Shawnee, Oklahoma, and the second, in 2010, with the Kerr Center in horticulture.