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Plants or hills in the field are selected according to yield, shape, and exterior and interior color.

Stem cuttings are used to increase planting material in the greenhouse. Field evaluations are made if enough material is available for a replicated trial.

Roots are planted in hotbed. Sprouting is evaluated, then the clones are grown in the field in the replicated plots. The best clone is selected. Storage characteristics are evaluated also.

The best clone of the clean seedstock is maintained in the greenhouse and increased in the foundation block located in an isolated area.

When sufficient seedstock is available, it is distributed to sweetpotato producers.

Table 1. Chronology of the production of California's foundation sweetpotato rootstock.

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**Louisiana’s Sweetpotato Foundation Seed Program**

W.A. Mulkey and J.H. Hernandez

Summary. Foundation sweetpotato [Ipomoea batatas (L.) Lam] seedstock has been produced annually at the Sweet Potato Research Station since 1949. Breeder seedstock is selected from superior hills and used for the following year’s foundation seedstock. Fields are intensely monitored after planting until harvest to remove off-type plants, mutations, etc. Seedstock is harvested from August through October, stored, graded, and repacked beginning in late January, and then made available to the growers during the early spring.

In 1948, state appropriations funded the establishment of a sweetpotato research center for the LSU Agricultural Centers' Dept. of Horticulture. This facility is now known as the LSU Agricultural Center Sweet Potato Research Station located at Chase, La. The primary mission of the research center was the production of high-quality foundation seedstock, maintenance of variety purity, and assistance in the development of new varieties.

About 20 roots of each sweetpotato variety being grown in Louisiana during 1948 were fumigated with methyl bromide by the Louisiana Dept. of Agriculture and Forestry in Baton Rouge, transported to Monroe, and bedded in a greenhouse in early Spring 1949. Sprouts from these roots were stored, graded, and repacked beginning in late January, and then made available to the growers during the early spring.

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Louisiana State University Agricultural Center, Louisiana Agricultural Experiment Station, Sweet Potato Research Station, Chase, LA 71324.

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brought to the research center and established for foundation seed production. These seedstock formed the nucleus from which the foundation seed program developed. Since that day, with the exception of ‘Jewel’, a North Carolina cultivar released in 1971, no additional sweetpotato vegetative plant material has been transported to the station.

Some 35 to 45 acres (14.2 to 18.2 ha) are used yearly in the production of foundation seedstock. Seedstock is harvested in 1000-lb (449-kg) bins on a one-row manual harvester. Breeder seedstock (roots that are used for next year’s foundation program) are hill selections taken from the front of the harvester as roots move up the conveyor (Fig. 1). The hill selections must be true-to-type, and have four to five No. 1 grade roots with good shape. In recommended varieties, such as ‘Beauregard’, this breeder seedstock is selected over 20 to 25 acres (8.1 to 10.1 ha). Breeder seedstock is stored separately from the foundation seedstock.

In mid- to late March, each root of the breeder seedstock is sliced (Fig. 2), from the distal end, in 1/8-inch (30-mm) or less cross-sections to examine for flesh color and presence of mutations, internal cork, or other disorders. The proximal ends [from 2 to 4 inches (5 to 10 cm)] of the roots found acceptable are treated with recommended fungicides and set upright on the cut surface in greenhouse benches (Fig. 3) and covered with a fumigated soil–peat mixture for plant production.

During foundation plant growth, the greenhouse is sprayed weekly with recommended insecticides. When the plant vegetation reaches a height of 10 to 12 inches (25 to 30 cm), stems are cut 1 inch (2.5 cm) above the soil line (Fig. 4) and transplanted in the field on 40-inch (1-m) rows at an in-row spacing of 12 inches (30 cm). Foundation seed fields are rotated out of production for 2 years to eliminate any possible disease agent or insect buildup or any possible contamination from roots left in the soil that did not deteriorate. Cultivation, fertilization, herbicides, and insecticides used in the foundation seed production follow recommended practices similar to those used by commercial growers.

Minimal acreage can be planted from the greenhouse beds. Additional acreage is increased by field-vine cuttings from transplants from the greenhouse beds. Station personnel rogue these fields every 2 to 3 weeks during the growing season to remove any mutations and off-type plants. Areas to be used for vine cuttings are rogued more often, about twice per week, to ensure that off-type plants are not selected as vine cuttings. Two field inspections are also made by representatives from the Louisiana Dept. of Agriculture during each growing season.

Harvest of foundation seedstock begins about 2 weeks earlier than the harvest of a commercial operation because smaller roots are desirable for seedstock.
The foundation seedstock are stored in temperature-controlled storage rooms. The seedstock are cured for 5 to 7 days at 85 to 90°F with a relative humidity (RH) of 85% to 90%. They are kept at 60°F with a RH of 70% for the remainder of the storage period.

In January, immediately prior to packing seedstock, the Louisiana Dept. of Agriculture conducts a storage inspection to ensure seed quality and purity. All seedstock is run over a conveyor, where roots that have visible mutations, are diseased are and off-size are removed. Acceptable seedstock is packed in 40-lb (18-kg) cardboard boxes for distribution.

After harvest, estimate of each variety's seedstock that will be available for Louisiana growers is provided to cooperative extension agents. Individual agents process orders from the growers of their respective parish. University research and extension personnel prorate the seedstock to the parishes. When available seedstock supplies exceed the state's total seed requirements, sales are made to out-of-state growers.

The varieties that are being maintained at present in the Louisiana sweetpotato foundation seed program include: 'Beauregard', 'Hernandez', 'Travis', 'Jewel', 'Centennial', 'Darby', and the breeding line 'L86–33'. Several older cultivars, including 'Porto Rico', 'Heartogold', and 'Goldrush' are maintained in small quantities for use in the LSU breeding nurseries.

**Mississippi Sweetpotato Foundation Seed Program**

R. Crofton Sloan, Jr.

**Additional index words.** Ipomoea batatas (L.) Lam., flesh discolorations, somatic mutations, chimera, mutation

**Summary.** The sweetpotato foundation seed program in Mississippi is committed to producing and supplying high-quality sweetpotato seed to the Mississippi sweetpotato industry. In 1991, a study was initiated to evaluate the effects of small heteroclinal chimeras in foundation seed roots on the root flesh quality in subsequent generations. The presence of small heteroclinal chimeras in parent seed roots did not increase the number or size of chimeras in three subsequent generations of storage roots.

The sweetpotato foundation seed program began in Mississippi in 1962, when the varieties Centennial, Goldrush, and Porto Rico were certified by the Mississippi Seed Improvement Assn. The foundation seed program, administered by the Mississippi Agricultural and Forestry Experiment Station, was located at the Pontotoc Branch Station and designed to produce foundation seed for sale to certified sweetpotato seed growers for production of registered and certified seed for the Mississippi sweetpotato industry.

At present, the foundation seed program, sweetpotato production research, and aspects of the sweetpotato breeding program are located at the Pontotoc Research and Extension Center (PREC) because it is located within 30 miles of the major sweetpotato production areas in Mississippi. 'Beauregard' accounts for 95% of the found-

**Pontotoc Research and Extension Center, Route 4, Box 249, Pontotoc, MS 38863.**

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