

## THE SILVERHILL: A PROMISING AND APPARENTLY HARDY STRAIN OF SATSUMA ORANGE

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The Satsuma orange widely planted in the Gulf Coast region from Texas to Florida, is the hardiest type of orange grown on a commercial scale in the United States. It was introduced into this country from Japan where it is known as the Unshiu Mikan.

Although the Satsuma orange has been grown in the United States for nearly fifty-five years (it was first introduced by Dr. Geo. R. Hall in 1876) there has been until recently no evidence that the several different strains or varieties of Satsuma orange showed any differences in hardiness.

In connection with the citrus breeding work that has been under way for many years by the Bureau of Plant Industry, a number of hybrids between Satsuma oranges and other citrus fruits were made in 1908 and 1909 in northern Florida. The seeds from these cross pollinated fruits were in part true hybrids and in part seedlings very like the mother variety. Seedlings of the last type, commonly called "false-hybrids," are known to arise from the tissue of the mother plant that surrounds the embryo sac. A mass of cells arising from the nucellar tissue grows into the embryo sac and there develops into a false-embryo, utilizing the special nourishment provided for the embryo, and sometimes even displaces and consumes the embryo itself. Occasionally the true embryo persists and germinates as a seedling along with the false seedlings, i. e. seedlings that have arisen from the tissues of the mother plant.

These false-hybrid seedlings show many evidences of being profoundly influenced by the nourishment they have received when still young. For example, such false-hybrid seedlings always show cotyledons, the same as the true seedlings, and the same curious leaves intermediate between cotyledons and the ordinary foliage. Furthermore, they almost invariably develop long and powerful spines, even though arising from a fruit borne on a branch, almost, if not quite, spineless.

There is much evidence to show that such false-hybrid seedlings although representing in the main the mother variety, have undergone a rejuvenescence, probably because of the special nourishment received by such false-hybrids while still in a very young condition. It is possible that varieties long propagated by buds and more or less enfeebled by old age may possibly recover their pristine vigor by propagation through false-hybrid seedlings. At any rate, some of the false hybrid Satsumas that originated in 1908 and 1909 have shown vigor, and what is more important, unusual resistance to cold. Some of these hybrids were planted at Eustis, Fla., in 1911 and at Silverhill, Ala., in March, 1921. At both these places these false-hybrid seedlings showed exceptional vigor and at Silverhill they have given evidence of possessing a considerable degree of hardiness. One of the hybrids, C. P. B. No. 7272, was planted both at Eustis, Fla., and at Silverhill, Ala., in sufficiently large numbers to give a fair reading. In one fair-sized planting and two smaller ones near Silverhill, Ala., the trees have gone through three severe freezes with very little injury beyond defoliation.

In 1924 the temperature fell to thirteen degrees F., January 6; and to fourteen degrees on January 7. The young trees of No. 7272 were defoliated but otherwise uninjured, and by May of that season were fully leafed and in good condition. Two freezes occurred in 1928, the lowest temperature, fifteen degrees, occurring on February 2nd and 3rd. Little, if any injury was sustained by these false-hybrid trees beyond partial defoliation. Finally in December, 1929, and January, 1930, all trees by this time of large size and in full bearing went through a very disastrous series of freezes with temperatures falling to twenty degrees on December 3, twenty-one degrees on December 4, and twenty-five degrees on the 5th. Later in December the temperature fell

to fifteen degrees on the 30th, warm weather ensuing for about two weeks; then, on January 19 the temperature dropped to sixteen degrees. This severe freeze following warm, growing weather, caused great injury to ordinary Satsuma trees in this part of Alabama but the false hybrid showed no injury beyond defoliation except in case of a few trees that had been scale-infested and were in a weakened condition when the freeze hit them.

Ordinary Owari trees, growing alongside in the field and planted the same date, were severely injured by all of the freezes mentioned above, and there can be no doubt but that this false-hybrid is distinctly hardier than the ordinary Satsuma varieties.

Since the hardiness of this false hybrid (C. P. B. No. 7272) was first brought clearly to light at Silverhill, Ala., it is proposed to name it Silverhill.

The Silverhill Satsuma produces fruit of the same size and appearance as that of the Owari variety. The fruit ripens possibly a few days later but on the other hand keeps rather better than the Owari. It can, however, be picked, sized, packed and marketed along with the main crop of that variety without difficulty.

The Silverhill tree grows faster than the Owari, is rather more subject to the attacks of the scab

fungus (*Sphaceloma fawcetti* Jenkins) and is also somewhat later in coming into full bearing than Owari. Instead of beginning to fruit at four years of age, as the Owari does, about six years were required before these trees produced a crop. The susceptibility to scab resulting from rank vegetative growth probably contributes to this delayed fruiting. Effective control of scab secured by one or two additional sprayings with Bordeaux mixture, may possibly result in earlier fruit production.

The Silverhill tree is of an upright habit of growth, in contrast with the more drooping habit of the Owari and capable of carrying a large crop when in full bearing.

In spite of the drawbacks noted above, it is believed that the Silverhill is promising enough on account of its hardiness to warrant its being tested on a small scale by the Satsuma growers of the Gulf Coast region.

No nursery stock of this variety is at present available, but budwood in limited quantities will be supplied at the proper budding season to Satsuma growers and nurseries. It is not recommended that large plantings be made of it at present, but rather that a few trees be planted for testing alongside the ordinary Owari Satsuma.

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## CULTURAL PRACTICES IN PECAN ORCHARDS

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The subject assigned, is a very broad subject and hard to treat in a short paper, and yet cover the ground. Men have spent most of their lives trying to work out a definite program of cultural practices for a pecan orchard, and are not satisfied yet. Also the practice that may be best where rainfall averages sixty inches per year, may not apply where rainfall is but forty-five inches.

The main thing to keep in view is to grow good healthy trees that will produce nuts. Whatever it takes to produce that result for you, is the proper cultural practice.

About 1905, when pecan trees were first planted in orchards to a considerable extent, it was thought

they would not require very much cultivation or fertilization. In more recent years it has been demonstrated that the owner who gives his pecan trees the best cultivation and fertilization, who turns under sufficient leguminous cover crops, is the one who gets the most nuts.

It is worth while to select your best land on the farm for the pecan orchard. Land that has been under cultivation less than two years should not be used. In Jefferson County, Florida pecans seem to do best on Norfolk fine sandy loam, and on Orangeburg type of soil.

As most of our cultivated land is rather low in humus content it is preferable to turn under