Storing Horseradish Stecklings

Overwinter storage of horseradish stecklings—slender roots usually 8” to 14” long and not over ½” in diameter—from harvest until spring planting often results in heavy losses.

Farmers at Tulelake first planted horseradish on a large scale in the spring of 1955. Among the numerous problems is the one of how best to carry forward the crops of 1955. Among the numerous problems is the one of how best to carry forward the crops of 1955. Among the numerous problems is the one of how best to carry forward the crops of 1955. Among the numerous problems is the one of how best to carry forward the crops of 1955. Among the numerous problems is the one of how best to carry forward the crops of 1955.

When the pits were opened, four bundles from each pit were examined. The general condition of the stecklings was excellent. The length of sprouts in all pits was about 1” and invariably they were in the top layer only. Pits No. 3 and No. 5, as shown in the table in column 1, which were more deeply covered, showed less total sprouting. In pits No. 1, No. 2 and No. 5, where soil was sifted among the roots, there was less surface mold. Where straw lay against the roots, a thin layer of mold developed. No decay was apparent as a result of the mold.

The decay was called slight when not over 2” of the steckling was affected. When not more than half of the steckling was rotted, the decay was termed severe. There was no slight or severe decay in any of the four bundles of roots taken from pit No. 1. Pit No. 2 had an average of 0.8% slight and 0% severe decay; pit No. 3 had 2.3% slight and 0.4% severe.

Cold Storage Tests

In mid-December 1954, a second truckload of horseradish roots arrived in Tulelake from Los Angeles where they had been shipped from Japan. They were large for stecklings, being ½” to ¾” in diameter and up to 16” long. They had heated considerably in transit and a blue mold on them was advanced. Good material was selected and placed in cold storage because the ground was frozen and it was impossible to pit the stecklings. Containers used to hold the roots in storage were mostly cardboard cartons—20” x 14” x 14” holding an average of 500 stecklings and weighing 35 pounds. After the filled cartons were evaluated, as shown in the table in column 2.

There were four replications of 50 roots each per treatment. They were put in storage on January 24 and removed on March 26.

Earlier observations had shown that when stecklings were in storage, the decay almost always started at exposed places, such as along the crack in the side of an orange crate. Also, it had been observed that the roots had a considerable tolerance for freezing.

Several methods of wrapping were tried. The polyethylene bags had their necks twisted, bent over, and secured in place with a rubber band. The waterproof paper and aluminum foil were rolled around the roots and the ends of polyethylene liners and one with a waterproof paper.

The cold storage was held constantly at 38°F and 85% relative humidity. The rest of the storage room was full of potatoes. On March 23 it was noted that considerable heating was taking place in the cartons, so they were removed to an open shed until planting. The roots in four of the cartons were evaluated, as shown in the table in column 2. Some roots listed as having no decay did have small spots of blue mold.

Other Storage Tests

In mid-January, 1955, another load of stecklings from the St. Louis area arrived in Tulelake. From this lot, material for the tests outlined in the table in this column was selected. These stecklings were 6” to 8” long and ¼” to ½” in diameter. There were four replications of 50 roots each per treatment. They were put in storage on January 24 and removed on March 26.

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green, with small scattered white flecks. The eye is medium and the scales are chaffy. The meat is white or sometimes tinged with violet. The pulp is solid, light amber and remarkably free from defects.

In 1954, figs at Riverside continued to ripen over a long season, some still maturing on Christmas day. The extremely hot weather in August 1955 caused the ripening figs to become flabby in texture and made them unfit for shipment to the fresh-fruit market.

At Fresno and Chowchilla, Conadria produced dried figs of excellent quality and remarkably free from defects.

Sugar analyses of a large number of samples of dried figs in 1951 showed the total sugar content of Verdon to be 55.88%, Calimyrna—Sari Lop—56.00%, Franciscana—57.02%, and Kadota—Dot tato—57.69%. A representative sample of Conadria tested in 1954 showed 63.3% total sugar.

Development of Conadria

Actual fig breeding has been carried on at Riverside since 1928. A total of 16,650 seedlings, involving 273 combinations, have been grown and tested. Many varieties of edible figs have been used as female parents, including the commercial varieties of Dottato in 33 combinations, Franciscana in 13, Sari Lop in 16, and Verdone in 31.

Of the many combinations, the most promising seedlings producing edible figs were obtained from the Dottato and the Verdone crosses, especially from the latter. One such cross—Number 143—made in 1944, involved Verdone and a seedling male fig or caprifig, Number 72-80. Both parents are parthenocarpic—the fruits reach maturity without the stimulus of flower pollination or deposition of eggs by fig insects—in development of fruit. The resulting progeny totaled 72 seedlings; 38 produced edible fruit and 26 of these were parthenocarpic in fruit development. Three of the seedlings were regarded as worthy of distribution and trial in other areas. One especially, Number 143-5, has proven to be of sufficient promise—fruits were first produced in 1947—to warrant the distinction of having a variety name given to it. The selected name—Conadria—is a combination of the names Adriatic and Condit.

Conadria seems to be a very promising new variety of fig for the production of both fresh and dried fruit. It is especially promising for dried fruit in the San Joaquin Valley.

Ira J. Condit is Professor Emeritus of Sub tropical Horticulture, University of California, Riverside.

Robert M. Warner is Associate Pomologist, University of California, Davis.

The above progress report is based on Research Project No. 869.

Typical 5- and 7-lobed leaves of Conadria from vigorous branches.

HORseradish

Continued from page 6

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Roots held in the office at 78°F did not produce any growth when subsequently planted. Those held at 0°F appeared in fairly good condition after thawing. However, only 4% produced any growth. Unwrapped stecklings and those in porous Kraft paper held in cold storage were poor. A striking advantage in favor of the tightly sealed polyethylene bags was apparent because the stecklings had the least decay and were firmer than any of the other lots.

Other Observations

One grower’s pit was located under the eves of a building where it collected much moisture. The selected name—Conadria—is a combination of the names Adriatic and Condit.

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One grower’s pit was located under the eves of a building where it collected much more water than those in the open. The roots were wet when the pit was opened and were more turgid and in better condition than the roots in any of the other pits.

Stecklings were actually frozen in some of the shallower covered pits but thawed when the ground warmed up with no apparent damage to the roots. Stecklings which were much shriveled on arrival were buried in a wet sawdust pit and emerged in excellent turgid shape.

Stecklings did not keep satisfactorily in the common nonrefrigerated earth-covered potato cellars of the area.

Burton J. Hoyle is Associate Specialist in Vegetable Crops and Superintendent of the Tulalake Field Station.

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