

Stump Grafting Old Citrus

navel orange scions set fruit in fifth growing season following grafting to stumps of old seedling trees

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After four growing seasons, thriving scions grafted into old seedling orange tree stumps demonstrated a way to rehabilitate orchards where the original variety is no longer profitable.

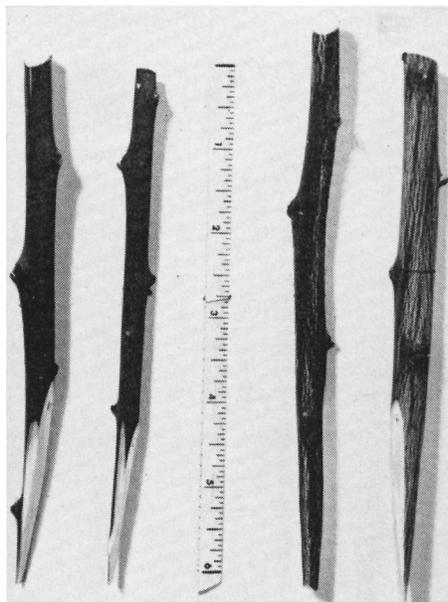
In June 1953, scions grafted in April 1949, were about 1½" in diameter and 8-10' in length. Growth had been vigorous and—at the beginning of the fifth growing season—the grafts had set an estimated box of navel fruit per regrown tree.

The experiment in stump grafting was initiated in a block of old seedling orange trees at Bryn Mawr, near Redlands. The orchard is reported to be over 80 years of age. The trees were planted rather close together and were very tall and high-headed. In most cases, scaffold branches were 5' or higher above ground and the trunks varied from 12" to 22" in diameter. All fruit picking was high in the trees, needing long ladders and creating an expensive labor problem. The trees had been bringing low returns during most recent years, and small-size fruit was a great problem.

In an effort to change the variety and lower the heads of the trees for more economical picking it was decided to stump-graft 12" to 18" above the ground—using scions rather than buds—and 144 stumps were grafted in April 1949. However, statistical information involves varying numbers because stumps scattered throughout the orchard were not always checked.

Scions for the grafting were obtained from an orchard where sucker wood was being thinned out and the orchard was known to be free of scaly bark disease. The scion wood was taken directly to the stump-grafting job. The propagating crew cut scion wood in the morning or late afternoon as the time worked out in their grafting operations.

Four types of scion wood—cut 5" to 6" long with four to six buds each—were used. One was from angular, rapid-growing, sucker-type of growth, not yet matured and rounded out, but very green and succulent. The second type were scions rounded out but still green and somewhat succulent. Green-barked scions from mature hardwood but with the outer corky bark not showing more than few grey callous streaks were the third type used. The fourth type was cut



Types of scions used. Left to right: An angular type scion of which 57% grew; the round green type of which 43% took; the green barked hardwood scion produced a 72% take; the grey-barked hardwood scion of which 14% grew.

from growth where the outer corky bark had formed rather heavy layers and was described as grey-barked. In general, these classifications indicate the maturity of the wood used in taking the scions. The angular scions were from the most immature wood and the grey-barked scions were the most mature.

The number of scions inserted varied from 8 to 10—sometimes, 12—to a

stump. Of 1,155 scions inserted in 115 stumps in April 1949, 653—55%—had taken satisfactorily on June 20.

In checking the growth of the scions, differences seemed to exist between the north, south, east and west sides of the stump as far as the number of scions that were making satisfactory growth was concerned. Therefore a careful count was made June 20 of the scions on each directional side of the stumps.

There was no choice—in 68% of the stumps—in vigor of growth and take, three months after the grafting job was done. On 18% of the stumps the take was best on the north side and only 14% of scions making the best growth were found to be on the south, east and west sides of the stumps grafted.

The average length of 155 scions was 6½" with an average of 4.86 buds on each scion. Of 788 buds counted, 64.7%—an average of 3.27 buds on each scion—were growing. Of 510 growing buds, 126 or 24.8% were top buds and represented 81% of the total number of top buds.

Of the 510 buds growing, 367 or 72.4% were middle buds which meant that 77% of the middle buds grew.

Of the buds which were below the top of the stump, when a scion was inserted, only 9% grew satisfactorily, compared with 77% of the middle buds and 81% of the top buds.

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Photograph taken in June 1953 of a seedling orange stump grafted in April 1949, showing the growth of the navel scions.

