

The Effect of Rootstocks on Growth of Grape Varieties in New Mexico*

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Many varieties of *Vitis labrusca* are weak and chlorotic when grown upon their own roots in the alkaline soils of southern New Mexico. In other areas, the use of selected rootstocks has been reported to improve the growth and yield of many *labrusca* varieties (2, 3, 4). In California, resistant rootstocks have effectively controlled or reduced the injury to vinifera varieties due to plant parasitic nematodes (1).

Two *labrusca* varieties, Concord and Fredonia, and two vinifera varieties, Thompson Seedless and Cardi-

nal, were grown upon three rootstocks and their own roots. The rootstocks were Solonis (*V. solonis* x *Othello 1613*), Dogridge (*V. champini*), and Salt Creek (*V. champini*).

The vines were planted at the New Mexico State University horticultural farm in 1959, eight feet apart in rows twelve feet apart. Concord and Fredonia were initially trained to the four-cane Kniffin system, but the vigor of the grafted vines required six or eight canes by 1962. A flat-top trellis was used for the vinifera varieties. Thompson Seedless was cane-pruned,

Table 1. The average pruning weight per vine, in pounds, of four grape varieties grown on their own roots and upon three rootstocks, 1962-1964.¹

Year	Own Roots	Solonis	Dogridge	Salt Creek
Concord				
1962	0.41 (3)	2.85 (3)	3.85 (3)	4.00 (1)
1963	0.58 (3)	3.81 (3)	6.88 (3)	7.06 (1)
1964	0.63 (3)	4.75 (3)	9.08 (3)	11.25 (1)
Mean	0.54 (3)	3.80 (3)	6.60 (3)	7.44 (1)
Fredonia				
1962	1.06 (4)	4.56 (4)	4.06 (4)	5.56 (4)
1963	.77 (4)	6.00 (4)	5.81 (4)	9.25 (4)
1964	1.92 (4)	6.13 (4)	5.38 (4)	13.31 (4)
Mean	1.25 (4)	5.56 (4)	5.08 (4)	9.37 (4)
Thompson Seedless				
1962	8.44 (4)	6.50 (1)	16.13 (4)	6.00 (1)
1963	10.19 (4)	6.50 (1)	13.44 (4)	13.25 (1)
1964	10.56 (4)	9.50 (1)	13.38 (4)	16.50 (1)
Mean	9.73 (4)	7.50 (1)	12.65 (4)	11.92 (1)
Cardinal				
1962	4.50 (3)	3.50 (4)	5.00 (3)	
1963	6.75 (3)	5.80 (4)	6.25 (3)	
1964	6.66 (3)	5.94 (4)	6.33 (3)	
Mean	5.97 (3)	5.08 (4)	5.86 (3)	

¹Numbers in parenthesis indicate number of vines in the average.

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and Cardinal was trained to the Cord-on system and spur-pruned.

Concord and Fredonia varieties suffered no winter injury, so that pruning weights presented in Table 1 indicate vine vigor. Fredonia is a more vigorous variety than Concord. Both varieties were weak and chlorotic when grown upon their own roots (Table 1). Both grew more vigorously and were not chlorotic when they were grafted upon the rootstocks. Of the three rootstocks, Salt Creek produced the most vigorous vines while, in general, Solonis produced the least vigorous. A Concord vine grown on Salt Creek is shown in Figure 1. In 1964, 11.25 pounds of pruning were removed from this vine.

Thompson Seedless and Cardinal, although vigorous, are both susceptible to winter injury. Consequently, the differences in pruning weights between grafted and own-rooted vines of these varieties are small. Cardinal suffered more injury than Thompson

Seedless. Dogridge and Salt Creek rootstocks increased the vigor of Thompson Seedless, while Solonis did not. Vines grafted upon Dogridge and Salt Creek produced more prunings than own-rooted vines, although most or all one-year-old wood was winter-killed each year, and sometimes two-year-old wood also winter-killed. Own-rooted vines were less severely injured.

Differences were noted in the time that the buds began to grow and the rapidity of shoot growth between varieties on their own roots. Concord shoots were several inches long and berries were set when Fredonia buds were swelling. Cardinal always started growth late and many buds failed to grow, while Thompson Seedless shoots grew early and rapidly.

In all four varieties, bud break was retarded by grafting upon rootstocks. Dogridge was the latest, followed by Salt Creek and then Solonis (Figure 2).

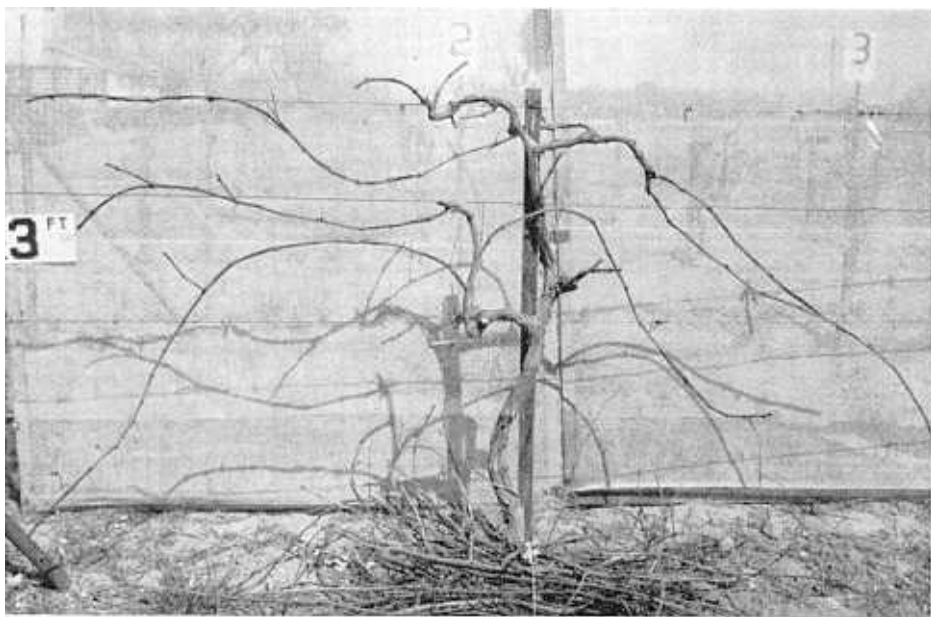


Figure 1. Concord grafted on Salt Creek, with 11.25 pounds of prunings in 1964.

For all varieties, buds on long canes were later breaking than those on very short canes, spurs or short laterals. Grafted Concord and Fredonia vines produced many laterals on shoots, so that selection of good canes was difficult. When shoots with laterals were selected, the laterals were retained and shortened to 2 to 3 buds, resulting in a combination cane and spur system. Spur pruning has been successful with several varieties usually considered adapted to cane pruning. Spur-pruned, own-rooted Fredonia vines began growth earlier, set better crops, and the fruit matured earlier than cane-pruned vines. Thompson Seedless responds well to spur pruning in New Mexico.

Literature Cited

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Fig. 2. Growth of Thompson Seedless vines in May, 1965. From left to right, own-rooted, Solonis, and Dogridge.

Delicious Spur Types in Pennsylvania

In the February, 1965 issue of *Pennsylvania Fruit News*, William B. Lower, of Boyers Nurseries and Orchards, Biglerville, Pa., has the following to say about the spur-type Delicious apple sports:

"The most widely planted, and the oldest Delicious spur that we have is the Bisbee strain of Starking. We have some 20 strains of Red Delicious fruiting, and of these, the Bisbee produces the typical apple—longer and narrower than any other. The authorities will tell you that the lightness of the soil, height of elevation, and continuous moisture produces the longer fruit. I don't question this, but I do know that we get the best type fruit from the spur Delicious. The solid color of this spur-type fruit is more of a dark purple than a cherry-red, the skin is thicker, and the fruit matures later than Starking. The spur-type apples store well—coming out late in the season with good eating quality.

"The Wellspur and Redspur sports of Starking have a slow habit of growth, and the problem of upright limbs. In our experience, they have a lower red color factor than either the Bisbee or Millerspur strains.

"Miller Sturdyspur is so new with us that we hesitate to make an evaluation. Our small trees have wider crotches and are less vigorous than the standard sports. The fruit is a good cherry-red without dullness. We are told that the fruit matures earlier than Bisbee, and is of good size.

"In summary, with the spur-type Delicious, we obtain a reduction in tree size, early bearing is induced, good anchorage is obtained with the standard rootstock, and the stiff upright growth of the main limbs practically eliminates propping. The quality and color of the fruit is acceptable, if not quite all that might be desired."