Tree Survival of Three Malling Rootstocks in Tennessee

CHARLES A. MULLINS AND T. R. GILMORE[1]

The Malling (M) apple rootstocks have been widely tested in the United States. Numerous research reports have shown advantages of M.26, M.9, and M.7. University Extension Services and commercial nurseries in several areas highly recommend these 3 rootstocks for use in commercial orchards.

An experimental apple orchard was set at the Pleateau Experiment Station near Crossville, Tennessee, in 1950. Trees were periodically added to the planting through 1971. The primary purpose of this orchard was cultivar evaluation. Several of the cultivars were grafted on the 3 Malling rootstocks which were also observed as the orchard progressed. The orchard is at 1900 feet elevation. Soil type is Hartsells sandy loam with a depth of 2 to 3 feet to sandstone. Average annual rainfall is approximately 54 inches with favorable distribution. Droughts of long duration seldom occurred during this test period. Winter temperature fluctuations can be severe and prohibit most Prunus species. Winter injury was very severe to apple trees in the 1962-63 winter and has occurred occasionally in other winters. Weather conditions have been conducive to moderate fireblight development.

The first trees on M.9 were set in 1953. Included were 2 trees each of 'Wealthy,' 'Stayman,' 'Lodi,' 'Red Delicious,' and 'Golden Delicious' and 4 trees of 'Jonathan.' A planting of 50 trees on M.9 supported by a trellis was made in 1965 and 1967. Included were 10 trees each of 'Red Delicious,' 'Golden Delicious.' 'Red Rome,' 'Nujon,' and 'Spartan.'

These 72 trees on M.9 lived an average of 5.4 years. Only 29 lived beyond 5 years and 2 beyond 10 years. The trees set in 1953 had weak root systems which allowed some to lean badly. Some broke at the graft union. The trellis was used for support of trees set in 1965 and 1967 to avoid the problems of the trees set in 1953. However, with the 50 trees supported by the trellis, rootstock death occurred. Symptoms of Armillaria root rot were found. However, this could well have been a secondary infection. Fireblight and winter injury was suspected as cause of death of these trees.

Trees on M.9 produced large well colored fruit. Production often started the second year after planting. Tree size was ideal. However, the short life offset all the advantages of M.9 rootstock.

Malling 26 is a relatively new rootstock. Fifteen trees on M.26 were set from 1967 to 1971. Included were 3 'Quinte,' 3 'Spigold,' and 2 'NY 44410-1' without support and 7 trees each of 'Red Delicious' and 'Golden Delicious' tied to a trellis.

Only 4 of the 22 trees on M.26 were alive at this writing. Average life of the 22 trees on M.26 has been about 5 years. Most of the trees with no support broke at the graft union. Ten of the trees supported by the trellis died from an undetermined cause.

Thirty-eight trees on M.7 rootstock were set between 1957 and 1968. Fifteen scion varieties were included. Thirty-two of the 38 trees were living in the spring of 1976 with an average age of slightly over 11 years. Tree shape, vigor, and general performance has varied considerably with cultivar.

'Red Delicious,' 'Stayman,' 'Tydemans Red,' 'Empire,' and 'Shenandoah' trees on M.7 had weak root systems. Post supports became necessary and

[1]Assistant Professor, Plant and Soil Science Department and Associate Professor (Retired), Horticulture Department, University of Tennessee, respectively.

were provided. Trees set prior to 1967 have developed stronger root systems and most of the support has been removed. The 6 trees that died were broken at the graft union, usually in periods of high winds.

Trees of 'Golden Delicious,' 'Rome,' 'Tydemans Red,' 'Melrose,' 'Mutsu,' and 'Lodi' were limited in size as expected. Trees of the other cultivars were upright and more vigorous than expected but could easily be held to desired size by pruning. Fruit color has been desirable, probably due to openness of the trees. However, fruit of 'Golden Delicious' has been small and very russetted. This may possibly be due to pesticide injury in the more open type tree. Yields of all trees on M.7 have appeared favorable. However, tree number is insufficient for conclusive yield data.

Trees of 'Rome,' 'Melrose,' 'Mutsu,' 'Cortland,' 'Summerred,' and 'Lodi' on M.7 have performed well. Other cultivars have been less favorable.

Book Review

Southmeadow Fruit Gardens—Choice and Unusual Varieties for the Connoiseur and Home Gardener (an illustrated catalog). 1976. By R. A. Nitschke, 2363 Tilbury Place, Birmingham, Michigan 48009. 108 pages. $5.00.

This is not your run-of-the-mill nursery catalog. Nor is Robert Nitschke a typical nurseryman. A lawyer by profession, like Pinckney Wilder, one of the cofounders of the American Pomological Society, he is a pomologist and nurseryman largely by avocation. He is a devoted collector of fruit varieties and pomological literature. Since the early 1950's, he has searched for and collected, mainly for his personal satisfaction, fruit varieties of outstanding dessert quality, and of unusual characteristics and beauty from this continent and abroad. Whenever possible he has tested them by growing them himself.

As the word about his collection got around, Nitschke received more and more inquiries for scionwood and possible sources of trees of rare varieties. This eventually led him to establish Southmeadow Gardens as a nursery in 1961, with the help of Lorne Dowd, of Wabash, Indiana.

The plants offered for sale in the catalog are now propagated and shipped by T. C. J. Grootendorst, of Lakeside, Michigan, a graduate of the Horticultural College at Boskoop, Netherlands.

The 1976 catalog, Nitschke's second illustrated catalog, contains numerous descriptions of apple, pear, peach, plum, cherry, quince, grape, and gooseberry varieties, many of them unavailable from other sources. It includes many beautiful black-and-white prints of fruits reproduced from old classic, pomological books, as well as photographs taken by the author. His descriptions are often quite detailed, yet presented in a most interesting and intimate style, as if telling about dear friends. They are usually his own observations, as well as those of noted pomologists, both past and present. The origin of each variety is noted, to the extent that the author could determine, which gives the catalog a uniquely historical flavor.

If you enjoy old, rare fruit varieties, and those of high dessert quality; if you enjoy pomological history, and beautiful old prints of fruits, treat yourself to a copy of the Southmeadow Fruit Gardens illustrated catalog.

—G. M. Kessler