

Dwarf Apples in North Dakota

WILLIAM R. PAGE
Grand Forks, North Dakota

A long and active interest in fruits as a hobby led, in 1960, to my interest in investigating the possibility of growing dwarf fruits in backyard gardens in our northern prairie climate. My home site is on the North Dakota side of the Red River at Grand Forks, North Dakota, about 75 miles south of the Canadian border. In Minnesota, a stone's throw to the east, lack of hardiness is a serious limitation in the growing of fruit.

Our Extension Horticulturist from North Dakota State University, Harry A. Graves, supplied me with "Rootstocks and Methods Used For Dwarfing Trees," Cornell Bulletin 783, by Brase and Way. This work, as well as research results at various experiment stations in the U. S. and Canada, indicated obstacles to avoid and results one could hope for.

Professor Brase supplied me with rooted cuttings and scions of EM VIII and IX, and advised me about certain problems. Dolgo, Kerr and Rescue crabapples were grafted to Malling rootstocks, or to interstems to provide the framework for the support of less hardy standard apple varieties. Other grafts of dwarf "bark-rings" on hardy seedling whips were also tested.

The story of one tree may well speak for the others. A Rescue crab scion was grafted on an EM IX stock, and planted six feet from the east side of our home in 1960. The scion failed, but one shoot of EM IX grew enough to take a Dolgo crab bud in August, 1960. This bud grew three feet in 1961. The resulting whip was headed to 30 inches in April, 1962, and in May it blossomed from top to bottom

—a great thrill for this dirt dobber. The Dolgo whip branched and grew well in 1962, and a scion of Golden Delicious was grafted to one of its branches in May, 1963. This compatible union resulted in two shoots which outgrew other branches. Three fruit spurs developed, and a fairly mild winter with a minimum of -28° F. favored both wood and buds. One fruit was left to mature on each spur, but these were blown off by severe winds on Sept. 26. The fruit was of good size, and, although green to slightly yellow at that time, they developed typical golden color, with the largest fruit blushed slightly, after four weeks in our basement storage. Dessert quality, as judged in the winter, was slightly less than prime. This tree now shows a top growth of over six feet after four growing seasons.

Surprising cold tolerance was demonstrated by the East Malling stocks. EM VIII and IX rooted cuttings were mounded with six to eight inches of soil in the fall of 1960, the year they were planted. They showed no injury after minimum temperatures of -20° F. in December, -28° in January, and -20° in February, although I believe all branch tips were above the snow line. The competition of the roots of large nearby shade trees may have helped in hardening-off the young trees for winter. However, the EM IX stem of the "story" tree above did kill back to point where it was protected by vermiculite in a two-quart juice can, which topped the snow line and ground mulch. Perhaps the extra water received by this tree delayed the ripening of the wood.

During the winter of 1961-62, minimum temperatures were -18° F. in December, -31° in January, and -32° in February. Exposed stems of Mallings were unhurt. Earth mounds and/or trash mulch, plus a foot or more of deepest snow, protected roots. Unfortunately, a summer flood from the river killed many of the East Malling and grafted trees. One EM VIII in our backyard and a few crab frames on EM VIII and IX roots in the upper garden survived.

Lowest temperatures during the winter of 1962-63 were -16° F., -28° , and -22° respectively for December, January and February. Skimpy snowfall left much of the garden bare, and many usually hardy perennials were winter killed. The EM VIII tree had been mounded about eight inches for stooling purposes, and a two inch trash mulch covered the mound. Spring revealed two out of five branches dead from crotch injury above the mound, but small roots an inch within the mound were sound. This tree had to compete with adjacent plum trees and more distant shade trees.

The winter of 1963-64 was comparatively mild; all dwarf materials came through it uninjured, and grew well this past summer.

My observations during these past five years have given me reasons for optimism. I believe others will not fail if they grow their dwarf apples in sod or among flowers and shrubs which will compete with the apples for fall moisture. However, a good water supply should be provided through the summer. A six inch settled mulch as far as the branches spread is needed to protect the Malling roots in case of a snowless winter. Research has shown that Malling roots will be killed or badly dam-

aged if the soil temperature goes much below 15° F.

A safer and easier way to handle dwarf apples is to graft a dwarfing interstem on hardy roots. Deep, well-drained soils permit planting such trees so that the interstem is just below the ground level. A clean area one foot in diameter should be maintained at the base of the tree to prevent scion rooting. This area around the interstem can then be mulched easily.

•

Washington Apple Grower Appraises Delicious Sports

At the 1963 annual meeting of the Washington State Hort. Assoc., Marvin Sundquist, a noted Washington apple grower, gave his evaluation of several of the Delicious apple sports. Included in his comparison were Hi Early, Red King, Red Queen, Red Spur, Royal Red, Starking and Starkrimson, all of which had been planted or grafted in 1956.

According to Mr. Sundquist, Hi Early appeared to develop the darkest red color, followed by Red Queen and Starkrimson. He has not found this darkness of color a handicap in marketing. He also rated them for other characteristics as follows: **early coloring**—Starkspur (1), Hi Early (2), Royal Red (3); **uniformity of coloring throughout the tree**—Starkrimson (1), Hi Early (2), Red Queen (3); **resistance to sunburn**—Starkrimson (1), Red Spur (2), Red Queen (3); **earliness of bearing**—Starkrimson (1), Hi Early (2), Red Spur (3); **typiness of fruit**—Starkrimson and Red Spur tied for first; **general uniformity of fruit**—Starkrimson (1), Hi Early (2), Red Spur (3).