Elm Species Resistance To Canker Worm Injury

By Loren D. Potter[1]

During the spring of 1950 the shade trees of Fargo were subjected to a heavy infestation of canker worms. The attack, well remembered by Fargoans, practically defoliated some American Elm trees leaving only a lacy skeleton of veins. The author was, therefore, quite interested to note two boulevard Elm trees which were only slightly damaged but were growing in an area of heavy canker worm infestation. Examination of the two trees, which was the result of noting their apparent resistance to canker worm attack, revealed that they both were not the usual American or White Elm (*Ulmus Americana L.*) but were instead specimens of Red or Slippery Elm (*Ulmus fulva* Michx).

A survey of boulevard trees in a 45-block sector of the city revealed no other specimens of Slippery Elm. These two trees, and undoubtedly others in the city, must have unknowingly been mixed in with seedling trees of American Elm at the time of planting. The complete range of Slippery Elm, as given by Sargent (1), is from the Province of Quebec through Ontario to northern and eastern South Dakota, northeastern and eastern Nebraska, southeastern Kansas and Oklahoma and southward across to western Florida. For Minnesota Rosendahl and Butters (2) report it as being frequent throughout the southern half of the state and less common northward. Stevens (3) reports the species as being rare along the Red river and occurring no farther west, although quite common 40 miles east of Fargo.

The principal distinction between this species and the common American Elm is the presence in Slippery Elm of a larger, darker green leaf that is more prominently folded along the midrib and the winged fruit which is broader, more orbicular in shape, and has a smooth margin but a slight pubescence over the seed cavity. The young branches are more reddish-brown, sometimes almost a dull orange, in color and smoother than those of American elm. They have a thick fragrant inner bark which is mucilaginous, demulcent, and slippery, thus accounting for the common name, Slippery Elm. The inner bur scales of Slippery Elm are densely covered with brown hairs unlike the smooth bud scales of American Elm.

Both specimens of Slippery Elm were bordered on either side by American Elm trees 12 to 15 feet in distance with the trees varying in size from 6 to 9 inches basal diameter. The trees on one boulevard had been ringed with a band of Tanglefoot in early September,

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1949, and injury to all trees was slightly less than on the other boulevard where no trees were banded. In both cases the branches of adjacent trees were in contact and overlapping.

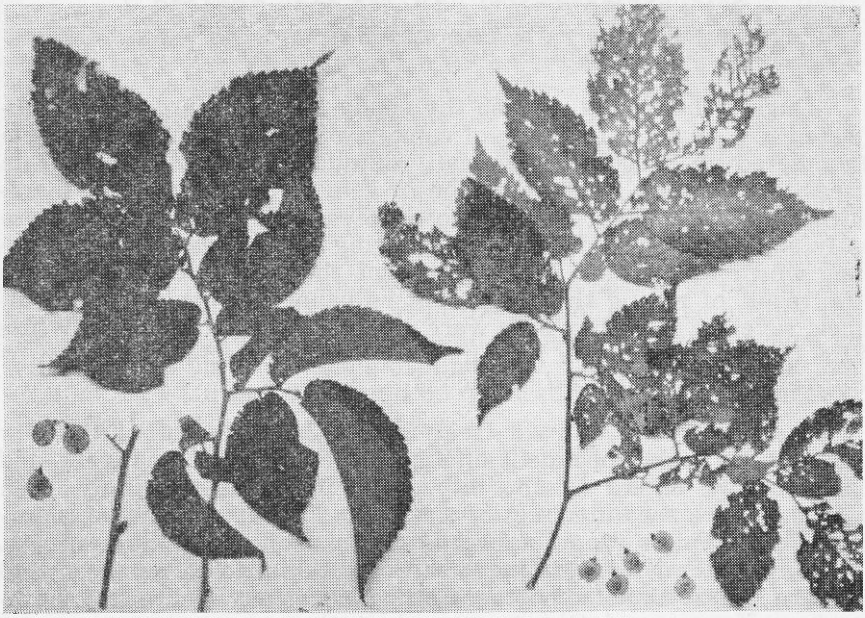

Fig. 1. Left, leaves and seed of Slippery Elm. Right, leaves and seed of American Elm. Note the greater injury from canker worm on the American Elm.

Figure 1 shows representative branches from the unbanded trees collected June 23, 1950, with the fruit of each species collected at an earlier date. Note the comparative damage of the two species, Slippery Elm to the left and American Elm to the right, although the branches were from contacting sides of two adjacent trees.

The validity of this apparent resistance of Slippery Elm and the possible causes will depend upon further experimentations with the life history stages of the canker worm and its relationship to American and Slippery Elm.

(1) Sargent, Charles Sprague. "Manual of the Trees of North America."—Houghton Mifflin Co.—The Riverside Press, Cambridge, Mass. 910 pp. 1921.

(2) Rosendahl, Carl Otto and Frederick K. Butters. "Trees and Shrubs of Minnesota."—The Univ. of Minnesota Press, Minneapolis, Minn. 385 pp. 1928.

(3) Stevens, Orin Alva. "Flora of North Dakota."—North Dakota Institute for Regional Studies, Fargo, N. Dak. 1950.