

# Transplanting tolerances of seven tree species

by James G. Staley and Jamie Dickson

James G. Staley is a horticulturist at Memphis State University, where Jamie Dickson is a graduate assistant.

Although there is apparent universal knowledge of transplanting requirements for trees there are few reported articles on tree transplanting research.

Pelton (1966), Crockett (1972), and Baumgardt (1975) listed a detailed account of these requirements as pertaining to balled and burlaped trees.

As far as actual transplanting results, Ford and Foot (1973) reported a 93 percent survival rate of trees and shrubs using a tree spade. Tree sizes ranged from 2 - 7 1/2 inches in diameter. Cool (1975) found that trees transplanted with a tree spade rather than hand methods had less than 5 percent losses as opposed to 31 percent by hand digging.

Van de Werken and Beavers (1965) and Van de Werken and

Warmbrod (1969) showed that tree species, root system, and management practices determines survival and growth rate. In their studies, Sugar Maple, Pin Oak and Yellow Poplar were ranked from best transplanting to worst respectfully. Willow Oak was originally used but transplanted so poorly it was replaced with Pin Oak.

The purpose of this study was to expand knowledge of tree transplanting tolerances of various species of different sizes.

A total of 454 trees were received from nurseries in Tennessee and planted from November, 1975 to March, 1976 on the South Campus of Memphis State University. Ball sizes conformed to those recommended by the American Association of Nurserymen. The trees were planted in four replicated plots on 20 foot centers and pits were at least 15 inches larger than the balls. The pits were backfilled with a mixture of soil, peat and sand (3:1:1).

All trees were watered when set and watered thereafter as needed. The results reported here are based on records taken June 30, 1976.

In looking at the table it is noted that the Maples transplanted the best regardless of size, whereas the Willow Oaks transplanted the poorest regardless of size. Green Ash transplanted well but Bald Cypress did poorly.

The transplanting tolerances of the Sugar Maple and Willow Oak agrees with the results of the research work by Van de Werken (1965).

It is of further interest to note that the larger size of Willow and Pin Oaks transplanted better than the smaller trees. This may be the result of the larger trees having formed a more fibrous root system due to greater lateral root development. □

TABLE I

Transplanting Loss (Per Cent) of Seven Tree Species

SPECIES	SIZE (Caliber)	NUMBER OF TREES IN STUDY	PER CENT LOSS
Bald Cypress	2 1/2-3"	29	24
Green Ash	1 - 1 1/4"	48	2
Norway Maple	1 - 1 1/4"	48	0
Red Maple	1 1/2-2"	33	0
Sugar Maple	1 - 1 1/4"	40	0
Sugar Maple	1 1/2-2"	41	0
Pin Oak	1 - 1 1/4"	23	9
Pin Oak	3 - 3 1/2"	86	0
Willow Oak	1 - 1 1/4"	30	40
Willow Oak	3 - 3 1/2"	76	26