

Comparison of Propagation Methods on Red Maple

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When we talk about propagation objectives of red maples, we always have in mind the numbers we want to plant in the field and the quality of seedlings, softwood cuttings, or tissue-culture liners.

We at McGill's Nursery try to start with the best possible plant, so we can dig the best possible product 1 or 2 years down the road.

Besides this, our goal is to have a live tree in every hole. Just to give you a little information, we went through our records of many years and came up with the following percentages in comparing budding, softwood cuttings, and tissue-culture plants:

Budding	Loss as seedlings	3%
	Loss when budded	15 to 20%
	Loss to tractors	---
	Culls and incompatibility (incompatibility depended on cultivar and age of trees harvested)	<u>15 to 25%</u>
	Total loss	33 to 48%
Softwood cuttings.	Average loss when planted	10 to 15%
	Loss to tractor damage, culls, and high shanks	<u>20 to 25%</u>
	Total lost	30 to 40%
Tissue-culture plants:	Average loss at planting	5%
	Loss to tractors, culls	<u>10 to 15%</u>
	Total lost	15 to 20%

From this comparison you can understand why we at McGill Nursery are very happy with our red maple tissue culture program.

In the last seven years we have not made a softwood cutting, but we do a little bit of budding once in a while. The reason for this is the tissue culture laboratory is short on a given red maple cultivar.

Our tissue-culture plants are produced by Microplant Nurseries in Gervais, Oregon. Microplant is a joint venture of A McGill & Son and Knollview Nurseries.

At the moment we grow 15 cultivars of red maple from tissue-culture. Our planting season in the greenhouse starts on April 1 and lasts until the end of August. During that period we handle 500,000 little red maples from the tissue

culture laboratory; besides these we handle many other plants such as crabapples, birches, cherries, etc.

We usually keep our greenhouses 100% full and I consider the greenhouse a plant factory. It takes from 8 to 10 weeks to produce a field-ready red maple liner

When I have a sizeable number (50 to 60,000) ready for the field, we make a field planting. Thanks to our drip-irrigation system we can make red maple plantings in spring, summer, or fall. The liners are planted by mechanical planter, 12 in. apart and 44-in row spacing. When we receive the little tissue-cultured plants from the lab they are very tender and it is our job in the greenhouse to make it as easy as possible for them to get used to all elements of Mother Nature.

As soon as we unpack the boxes we plant them in plastic tents with intermittent mist to maintain a high humidity. During this process we try to lower the humidity by opening up part of the tent so the little plants can get used to the outside environment. In our tent area we maintain 40% shade

The lab ships us the plants in small plastic containers (30 to 40 plants per container) The planting crew lifts the plantlets out of the containers and plants them in small 1 3/4- x 2-in. deep pots (80 to a flat). When the roots are not too long a planter can plant 5000 plants a day.

The soil mix must be a well-draining soilless greenhouse mix. The mix consists of 50% hemlock bark and 50% Premoist (W.R. Grace Product) When I water the plants before planting I add some Benlate and calcium nitrate. The stock mix is 2-lb calcium nitrate and 2-lb Benlate mixed in 2 gal of water and run through a 1:200 Smith Injector.

While growing in the greenhouse some grading is necessary. Without grading, big-leaf plants will shade out the smaller plants and you lose 10% of your crop.

The next move is the transfer from the shade area to the main greenhouse with no shade. This takes a little watching, a little hand-misting for a day, then they are on their own. As soon as the plants are outside in the main greenhouse we start a fertilizing program until they are about eight inches tall. Then we move them outside and cut the fertilizer off. The plants keep growing till the fertilizer is exhausted and reach a height of about 12 to 16 inches. At that time they have hardened off and are ready for the planter.

The growing of these tissue-cultured plants seems difficult in the beginning, but after you get some experience with them, you never want to go back to softwood cuttings.