

Understock—Keys to Success®

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INTRODUCTION

There are three important parts to grafting. First would be the selection and quality of understock, this is the most important. Second would be the actual grafting and after care during the graft healing process. Third and final would be the first year of growing in its selected pot and growth environment.

PLANT SPECIFICS

Acer palmatum. Starting with a plug understock liner in certain plant taxa gives us a better graft take and is more economical. *Acer palmatum* understock in a plug liner form gives us the best growth for grafting within 4 months of potting.

We do all of our bumping up the beginning of June of each year. The succession of growth is for the graft to be in its grafting pot for 4 to 8 months, then it will go into a 1-gal container for 1 full year and then into a 2-gal for 1 full year before going to the field. Our grafted maples are spaced in their flats for air circulation and light after grafting.

The cutleaf forms of *A. palmatum* are slower to form a full head, but they do maintain strong vigor and health.

***Carpinus betulus* 'Fastigiata'**. *Carpinus* also develop very well out of a 3-inch understock pot into a 1-gal container. We get very strong terminal growth in 4 months.

Cedrus deodara. We grow many cultivars of conifers, and our key to the success of our production is starting out with the best understock possible. *Cedrus deodara* is only available to us as a bare-root liner and not a plug liner. The problem that occurs with bare-root conifer seedlings is the inconsistency of the seedlings. They will vary greatly with height and caliper. It takes valuable time during the grafting season to go through these understocks and pick the best plants. This is a direct cost to us.

Chamaecyparis nootkatensis. *Chamaecyparis nootkatensis* cultivars (i.e. 'Strict Weeper') grow rapidly when potted into a 1-gal container.

Cornus kousa. *Cornus* and *Hamamelis* seedlings are more vigorous and therefore can be potted up as bare-root seedlings. They will make up and be ready in 4 months for summer grafting with excellent root development and top growth. Consideration must be given in controlling top growth when we have a cool, wet spring and early summer. The tops may need to be pruned back to increase caliper. It is our goal at grafting to match the scion and understock wood.

Though *Cornus* is available in a budded bare-root liner, it is still economical for us to graft it during the dormant season.

Hamamelis virginiana. Consideration must be given in controlling top growth when we have a cool, wet spring and early summer. The tops may need to be pruned back to increase caliper. It is our goal at grafting to match the scion and understock

wood. We will graft *Hamamelis* as a summer and also a winter graft. Summer grafts are under mist, and the winter grafts are waxed.

***Picea abies* and *Picea pungens*.** *Picea abies* plug liners give us a superior understock over the bare-root seedlings. Even though they may be different heights, they still maintain a closer caliper match and less variation in top growth.

Bare-root liners vary greatly in uniformity and root growth size. They require much time to root prune and prune the tops back to work in our pot system. With plug conifer liners we only need to pot them up. No root pruning and no top pruning needed. This makes for a faster growth start in the understock pot. Again the vigor and health of the plant is superior.

Picea and *Pinus* grafts respond better in their growth development when put into a growing condition of good drainage and air circulation. Mesh pots increase our survival rate in 1-gal containers.

Picea pungens cultivars are the slowest of the conifer group to develop. They take more care and attention. Our success ratio is greater with grafting onto a plug liner as compared to a bare-root liner. *Picea pungens* understock tops are left on the first season of growing in the 1-gal pot. They are removed the following early spring before new growth starts.

***Pinus strobus* and *Pinus flexilis*.** *Pinus strobus* is another conifer that shows a wide range of inconsistency with a bare-root seedling. Time is money, and when we can simply inject a plug into its pot and not waste time pruning, we save greatly. Our conifers are grafted December through February. The understock was potted in March of that year.

***Tsuga canadensis*.** *Tsuga* bare-root liners also range in size and may require us to hold on to the liner for an extra year. We find that caliper development can be very slow.