Summer Grafting

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The topic I would like to present today is grafting deciduous plants during the peak summer growth period. Typically grafting is completed during the dormant season; however, we have found that in Maryland USDA Zone 6, that grafting deciduous plants during the summer season can be quite successful. As we prepare to go into the next millennium we are forced to improve the use of our time and dollars spent. We also must strive to increase the quality of plants we produce and how we produce them. Our summer grafting program began 20 years ago, working only with *Acer palmatum* cultivars. As time went on we improved our methods of grafting and our quest for the optimum time to graft. Though there are many taxa that can be grafted during the summer, I would like to concentrate mainly on the following groups: *A. palmatum*, *Hamamelis*, *Cercidiphyllum*, and *Cornus kousa*.

Acer palmatum cultivars are one of the easier groups with which to work. Timing is not as limited as one might think. Basically as soon as the current new growth has hardened off the scions are ready to collect and graft. August and September are the best months for us to do our summer grafting. Scions are collected in the early morning before the heat of the day becomes a factor. We take only the quantity needed for that particular day. We have found in the past scions have desiccated if held too long even in cold storage. The leaves are removed with the exception of the petiole. The petiole stub is used as our indicator for callusing. After 5 days you should be able to barely touch the petiole and it will drop from the bud. This is due to the swelling of the bud which is in direct correlation to the callusing taking place at the union. Our scions are now prepared and ready to graft. The understocks are *A. palmatum* 2-year seedlings which were potted in April of that year in 2⅝-inch pots. All lateral buds and branchlets have been removed with only the top ⅓ remaining in leaf. It's very important that the understocks are at a moderate moisture level. Extreme dry or wet soil conditions can cause quick failure. A soft cloth is used to clean the understock at the point of grafting. We use a simple modified side-grafting technique and wrap the union with budding strips. As the grafting takes place the newly grafted plants are hand misted until they go into the greenhouse. When a flat is full it is placed in the greenhouse under automated mist programmed to mist for 6 sec every 10 min. This is a critical point because the mist system can easily overwater the understock, causing graft failure. Even with today's automation we still check the mist conditions every hour during the first 2 weeks. Shading on the greenhouse is 47% and air temperature control is set at 85F. It's important in the first 2 weeks to have high humidity, heat, and sunlight. After 2 weeks we push on the petiole to see if it is ready to drop off of the bud. If it does and callusing of the union is evident, then the mist is slowly reduced. If our unions are healed and white callus tissue is evident, then we begin cutting the understock back. At the end of 4 weeks the understock is cut back to meet the same length as the scion. This gives the graft mechanical support and relieves moving or bumping the new union. At the end of the 5th week the grafts are completely removed from the mist and the houses are cooled down to harden off the plants. They are then removed to an overwintering house where they will remain until the following spring for shipment.

Grafting of *Hamamelis*, *Cercidiphyllum*, and *C. kousa* are completed in the same method as *A. palmatum*. The only exception is that the leaves remain on the scion but are reduced by ½ to ⅔ surface area. We have found in the past that complete removal of the leaves reduced our take by 45%. More attention is paid to the mist system so that the foliage does not desiccate. After 2 weeks we look for callus formation at the union. *Hamamelis* and *C. kousa* have strong fleshy callusing but *Cercidiphyllum* callusing is similar to that of *A. palmatum*. It is not uncommon after 3 weeks to have defoliation take place. If this does happen it should be a result of the scion buds swelling.

In summary, we feel that the quality of the grafts, and the increased percentage rate, as well as and following season's increased growth rate are important factors when considering summer grafting. Summer grafting allows us to take advantage of warm summer temperatures for our heat source, long days for our daylight requirements, and almost total elimination of fungus problems. It has been our choice to go with this program and we feel it has been a great success.