

OUTSIDE GREEN GRAFTING OF RHODODENDRONS UNDER POLYETHYLENE

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I am going to talk this afternoon very briefly about still another method of propagating rhododendrons.

Green grafting of rhododendron is a kind of a special situation, because I think almost anyone agrees today that a rhododendron is better off on its own roots. There are a few situations, however, where it is just about necessary to graft. There are a few rhododendrons that are not vigorous enough on their own roots and there are a few, that will not root from cuttings. Mrs. C. S. Sargent, for example, which is just about universally recognized to be about the finest often is described by the nurserymen as being impossible to root.

Rhododendrons have traditionally been grafted in the winter in the greenhouse. A few years ago I read about topworking old plants by grafting. I then adapted this technique to the propagation of new plants by green grafting, since it seemed to me to be far superior to dormant winter grafting technique.

The understock can be almost any kind of a two or three-year seedling rhododendron. The understock can be potted, although there is a wide variety of ways in which this can be done. The understock can also be dug for making the graft and then replanted in a ground bed. The grafts can be made on seedlings which are growing in flats. If you do this, you grow 18 seedlings to a flat for the specific purpose of grafting. You can even grow your seedling in a ground bed without ever digging it. The saving in labor and convenience is very great, since the grafts are made when vegetative activity is at the year's high. You can do many things with this at a time when it is impractical to do the dormant season grafting. I might say to you fellows that don't grow rhododendrons that I have tried this same method with one or two other plants and it does very well.

In making the graft the top of the understock is first lopped off. After making these grafts during the summer at weekly intervals from mid-June to early September I find the best period is from June 20 to July 10. The scions should be at least half ripe and the leaves should be fully developed and firm after the first flush of growth. It is desirable but not necessary for the understock to be a little bit less mature. I have had perfect results with the understock and the scion at the same degree of maturity. It is apparent *Rhododendron maximum* is ideal for this purpose because it starts a little later than most other species. The new growth of the stock is lopped off just above the lowest leaf leaving a stub.

The next step is to split the understock right down the center of the stem. I suppose some of you old timers of grafting will get a kick out of my using a razor blade. I only make about 50 grafts a year, and I can always find a razor blade around.

The scion when ready for use will have three leaves. It is wedge-shaped at the base for insertion in the split understock.

Now if the scion is slightly larger than the understock there are inevitably four points of union between the cambium of the understock and scion. In my opinion it is better to have the scion a little larger than the stock rather than to have it perfectly matched. Of course, having both units the same size is also a good situation. It is especially important to set the scion firmly in the understock at the bottom of the split, because this is where the healing begins.

The reason I leave a short stub above the leaf on the understock is because it provides a point of anchor for binding up the split with a rubber grafting strip. That little stub above the lower leaf is more for convenience than for anything else.

The next step is to take some damp sphagnum moss and wrap it around the point of union. All of the free moisture should be squeezed out of the moss before it is covered with a polyethylene plastic bag which is tied at the bottom with a "Twist-Em" or rubber grafting strip. These bags are very cheap and have the added advantage of visibility. Each graft is in its own little miniature greenhouse. The damp sphagnum moss provides the moisture and the polyethylene bag acts as a vapor barrier while permitting the interchange of oxygen and carbon dioxide. Further, the sphagnum moss is famous for its antibiotic properties and therefore prevents decay fungi from multiplying at the graft union. From this point on, the sun must not directly strike the grafts in the closed bags, because if it does, the result is fatal. It is therefore necessary to shade the grafts.

These grafts heal very quickly. After several weeks, lay aside the shading, and open the bags at the bottom, at least enough to give them some ventilation and air circulation. A week or ten days later remove the plastic bags and replace the shading but leave the sphagnum tied around the union. In a week or ten days remove the sphagnum. A week after that reduce the shading and start to acclimate the plants to normal exposure.

In my opinion the advantages of summer green grafting over dormant season grafting are these:

(1) A great deal less skill is required. The fitting of the cambium layers between the scion and understock is not nearly so critical when the tissues are inactive, vigorous growth and the wounds heal more quickly.

(2) Some rhododendrons which can't be propagated by dormant winter grafting, succeed very well as green grafts.

(3) Expensive greenhouse facilities and the cost of heating them in winter are eliminated.

(4) There is a great saving in labor by eliminating the endless syringing and ventilation which are costly features of winter greenhouse grafting.

(5) There is almost no disease problem. The oldtimers know that whole crops are sometimes lost in the greenhouse because of *Phytophthora* sp., especially when *Rhododendron ponticum* is used as the understock.

(6) The percentage of successful grafts is so nearly perfect it is marred only by mechanical errors in aligning scions and understocks which are poorly matched in size.

(7) The cleft growth is faster and easier to make and subsequent growth of summer green grafts outstrips that of winter grafts.

If you want to make grafts lower on understocks, you can do that by cutting back the seedlings the year previous to within 1/2 inch of the ground. The next spring rub out all but the strongest sprout and make your graft on this. Even using the two-year seedling the graft is only two inches above ground level. I feel myself that is a perfectly satisfactory situation.

I have used this method for hollies and I suspect that it could be used for particular clones of many other plants that are difficult or impossible to root.

Now as a matter of academic interest, green grafts can also be used on mature rhododendrons. The only requirement is that the mature understock plant be in a shaded position, or you must erect a shade over it. In this case, in making the graft on a mature plant, you remove all but the strongest twig produced in the first flush of spring growth and make the graft on this remaining shoot, exactly as you would on the two-year seedling.

Here is a mature plant with six different clones grafted onto it. I suppose there may be some market for these multi-grafted specimens, but to me the result is only bizarre. The reason I do it is because I am a breeder and by grafting the seedling onto a mature stock, they set buds the year following grafts, thereby speeding up the hybridizing work.

Green grafting is cheap, easy, and consistently successful for special situations. I commend it to your consideration for your own purposes. Thank you.

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MODERATOR MAHLSTEDDE: I am sure there will be a number of questions on this paper.

PRESIDENT TEMPLETON: Dave, have you ever tried instead of wrapping the union with sphagnum moss, taping it or waxing it?

MR. LEACH: Yes, I have tried that but the sphagnum moss is much better. You really need some moisture, Harvey, inside the enclosed polyethylene bag, and the sphagnum moss provides that moisture and saturated atmosphere inside the bag. Aside from that, I suppose you could sprinkle water inside, because the bag would be closed. This seems to work better than waxing. I have tried spraying with Wilt Pruf but this seems to be the best of the methods I have tried.

PRESIDENT TEMPLETON: The reason I was interested, goes back to the subject of grafting under mist. Apparently with sphagnum moss the union is coated continuously with a film of water. Would you assume they are? Is the moss that wet?

MR. LEACH: No, it isn't that wet. You wring out all the free water so there isn't a film of water around the junction of the understock and scion at all.

PRESIDENT TEMPLETON: Thank you.

MODERATOR MAHLSTEDDE: Any other questions or comments?

MR. LOWENFELS: Why should you graft holly? I haven't had any trouble with the ordinary method of propagation.

MR. LEACH: Just as a matter of curiosity.

MR. HANS HESS: Dave, you say that the union of this graft was approximately two inches in the ground. When this is planted, that union remains above the ground at that point. You don't plant that with the union below the surface do you?

MR. LEACH: No, you do not.

MR. HANS HESS: What has been your experience as far as suckers from the understock?

MR. LEACH: I have had no trouble with them but I can't explain why I haven't because with the understock that I use you will always have some. I almost always use *Rhododendron maximum*. Whether that accounts for it, I don't know.

MODERATOR MAHLSTEDDE: Any further comments or questions?

MR. JIM WELLS: Dave, how long do these grafts take to unite and when do you remove the bag?

MR. LEACH: I usually ventilate the bags in something less than three weeks when there is a good callus formed.

MR. WELLS: How quickly can you make these grafts?

MR. LEACH: I do them very quickly because I think the cleft graft is the quickest and easiest of all grafts to make.

MR. WELLS: Have you tried any other understock than *R. Maximum*?

MR. LEACH: Yes, I have tried a variety of understocks, but *R. maximum* is the best. It is a little softer as a seedling. I have tried all sorts of miscellaneous rhododendron lines and they all work fine.

MODERATOR MAHLSTEDDE: Are there any questions you might have to ask? If not then, we stand adjourned until 8:00 o'clock this evening.

The session recessed at 4:05 o'clock.

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