

# AZALEAS FROM GRAFTS

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In this modern age of propagation of azaleas there are very few left which must, or rather, can be grown from grafting. The field is limited primarily to the florist-forcing varieties, of two groups, — the *A. rutherfordiana* and the *indica* varieties. These varieties are hardy in practically all of the State of California, that is, the coastal part of California, the immediate Gulf counties and a part of Florida. However, beyond those areas, they are not comparatively hardy anywhere else in the country. There are a few isolated instances where we will find some growing in Washington, I know, that have been there for some years, but we would prefer to say they are not dependably hardy in such areas.

Briefly, the history of the grafting of *Azalea indica* goes back to the early 1800's, reaching a rather large scale in Belgium around 1870, and in this country since quarantine 37 prohibited their importation about 1920.

Last night, in making my notes, knowing the growers throughout the United States as I do, I added up the quantity of *A. indica* and *rutherfordiana* being grafted at the present time, and I was surprised when I added it up and came to one and a quarter million per year. I am sure that is a conservative number. It could run to one and a half million per year, so it is a rather big industry.

They are grafted primarily on the east coast, in the New Jersey area, and on the west coast in California and the State of Washington.

Why graft all of these *A. indica* and *rutherfordiana* varieties? The reason they are grafted is that in later years the own root plant, for one thing, does not have the eye appeal. It is a low squatty plant, and secondly, which is perhaps most important, it does not develop as well. The inside of it tends to open. It tends to lose its foliage on the inside and, generally speaking, the root system never is strong enough to match its rapid growing top.

Many growers in this country, during the past 20 years, have grown *indicas* quite extensively on their own roots, but I think all of them have now gone back to grafting, that is, in large quantity production.

The understock which is used is *A. phoenicea* 'concinna' erroneously classed by everyone as 'coccinea'. Cuttings of 'concinna' are rooted from about the 20th of May on. Since it is not hardy, we have stock plants growing in the greenhouses which serve as a source of supply of cuttings. Also, the cuttings are available from the one and two-year old grafts, that is, they are allowed to grow as shoots on the side of the understock.

The cuttings root very easily. We do not treat them in any way, mostly because it is not necessary to treat them with any root-promoting agent, and in about six to seven weeks they are ready to be removed from the sand. They are then potted in a mixture of two parts leaf mold, that is, acid oak leaf mold, two parts of imported peat moss, and one-half part sand.

We then let them grow, depending of course very much on the time of the year, until they reach the stage ready for grafting. This is approximately

eight weeks after the time it has been potted. After it reaches that size, which is roughly  $3/32$  to  $1/8$  inch diameter and rooted through the pot, it is ready for grafting.

Now the next step, of course, is the actual grafting and the grafting is begun about October 20th, as soon as it is cool enough, and carried on until it is too warm to graft, which in our part of the country is about the 15th of May.

As to the exact, actual grafting process, perhaps I can demonstrate that by enlarging the motions through which the grafter goes.

To begin with, this is a softwood graft as opposed to a hardwood graft, as is usual in practically all other nursery practice. The scion is in a vegetative state and the understock is also. The graft is a cleft-wedge graft. Taking the understock first, the top is cut off, the top three inches, and then a long cut is placed in the side of the understock. At the point where the cut is to be made the leaves are plucked off. They are not pulled down because of the danger of ripping the bark. Then one straight vertical incision is made. The scion is then cut with two cuts in a wedge shape and it is inserted into the understock, held there with the thumb and tied in place with mercerized crochet thread No. 60, wound with the top down, and the two ends pulled together and twisted. It is not tied because tying would take too long.

As to the actual grafting operation, a good man can turn out about 800 in an eight-hour day. He has to be a fairly good grafter to turn out that many.

No wax or other protective coating is used after the graft is made. We have found that is not necessary and every possible motion we can remove we have removed in this rather large operation.

The removal of the thread later on, incidentally, is quite a chore. It takes up a lot of time. We, along with Dr. Davidson of Rutgers, are now working on a self-disintegrating thread which would last approximately six weeks and pull apart. If we can find one it would save a great deal of time.

After the graft is made, beginning in October, carrying on through the winter months, it is placed in a standard grafting case, which is run at 70 to 75° F. Opaque paper (ordinary wrapping paper) is rolled over the case to keep it dark during the brightest weather. There are times, as at this time of year, when there is a great deal of cloudy weather and the sun is not too strong. Then it is not necessary to use the paper. Incidentally, the grafting cases are in a greenhouse which in itself is light and very lightly shaded.

The grafts are lightly syringed just before placing in the grafting case and it is very seldom necessary to water them at any time after that until they are united. After 26 days the cases are aired very slightly, with a crack of not more than one inch, perhaps from a half to one inch for one-half hour a day. After 38 days we extend the period to one hour per day.

The complete union takes place in from 42 to 48 days. At that time, the thread is removed, the sashes are removed and the heat is kept up in the greenhouse to about 70 or 75° F., then gradually lowered to harden them off. They are left for about two months in the pots during the winter months, but later on not that long. They are removed from the pots and transplanted in the greenhouse benches in sash houses. They are left in the sash houses for

one year and then transferred into beds where they are grown under larger sashes.

The general take in grafting runs somewhere between 85 to 94 per cent. I say 94 per cent because in my 16 years with Bobbink and Atkins that is the very highest we ever had. That is a 6 per cent loss. Most of the time it runs around 85 to 90 per cent. We would like very much to increase that, but don't know just quite how to do it.

Now this procedure, as I have outlined to you, is old. It is old-fashioned. There is absolutely nothing new about it. It has been used for 20, 30 or 40 years. However, we are continually experimenting and I thought perhaps some of our experiments might be of interest to you because only by experimenting can we find something that is really worth while and use it.

First of all, we know that light is a factor. During this time of year when it is not necessary to shade the grafting case with opaque paper we get a relatively quicker union. When it is necessary to use this paper or to shade them, the time is prolonged and it seems to be almost in direct ratio to the length of time that the paper is on or off.

The time saved is perhaps only 3 or 4 days, but nevertheless, it proves to our way of thinking that light is a factor.

Secondly, we are trying a little foliar feeding. Now, I hasten to add right here that we do not believe in foliar feeding in the greenhouses or in the fields. We don't like it. We don't think there is any need to use it, but we do feel that a little foliar feeding just before the time of grafting adds sufficient food which is necessary to complete a better and quicker union. During the time it is in the grafting case, of course this is impossible because the foliage is covered with moisture all or most of the time.

We would like very much to graft 12 months of the year. We could very easily prepare the understocks. We can easily obtain the scions, but during the hot months of June, July, August and September the mortality is too great to warrant doing it at that time of year. We think there is a possibility in the use of misting, either constant or intermittent misting in an enlarged grafting case. By that I mean perhaps a polyethylene tent for lack of a better name, which is 6 to 8 feet high above the bench in which there is constant or intermittent misting. With nozzles, it would reduce the temperature and we might get the results we like to get during the summer months. Next summer, we shall experiment a great deal more with this method.

There are many times of the year when scions are obtainable, but the understocks aren't ready. So we have experimented a little bit with cold storage of scions and we have found that these scions stored at 33 to 34° F., in a polyethylene wrapped envelope with the tops exposed, and with peat moss, sphagnum moss or any other moisture-containing substance about their bottoms will keep in good condition for about four weeks. After that, they looked all right but the losses were great.

In the use of Wiltpruf or other antitranspirants, for spraying the grafts immediately after the grafting process, we noticed no difference between treated cuttings and grafts and those that were untreated.

I think that pretty well covers the field of *Rutherfordians* and *indicas*.

Now I shall touch very, very briefly on the grafting of the *mollis*, *pontica* and *rustica* varieties. To begin with, we are probably one of the two

or three concerns in this country that still graft. We graft a very, very limited amount, primarily because, as Dr. Skinner said earlier, we can import them a lot better and a lot cheaper than we can graft them ourselves.

We do feel, along with Roland deWilde, that a new strain, a new and better strain, based primarily on our native varieties of *A. calendulacea* and so forth, would certainly be welcome in this country. There is too much *A. pontica* in our opinion in the varieties that are available in the European countries at the present time. I think we would all like to see some hybridizing work done along these lines.

Now, the actual graft. This is a hard graft done in January and February. It is a heel graft done very much in the same way as you graft your evergreens and other things. The understock that is used is - *Azalea pontica*, or in better terms, *Rhododendron luteum*. It is unsatisfactory as Dr. Skinner pointed out. It is never quite the same. You are never, quite sure what you are going to get. I have seen rather large quantities of them go into small leaves and yellow leaves, mildewed and in such bad shape we wouldn't use them as a stock. Other times they will come through with hard, shiny, good foliage.

I think I have fairly well covered the field. This grafting or reproduction of azaleas, as is true of all things, you have got to give it some thought. First, you have to think. You know there is an old saying we are all equipped with two ends—one to think with and one to sit on. It is up to you to choose. Heads you win and tails you lose. Thank you.

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MODERATOR SKINNER: Thank you, Mr. Conklin for a very nice talk on grafting. Let's have just a few questions preferably on the last topic. Then we can throw it open.

MR. HOOGENDOORN: Mr. Conklin, one of the reasons I graft these Belgian Azaleas is to have a better plant but also to secure uniform blooming. I have seen plants where half the plant is over and the other half coming into bloom, because it was cutting grown.

MR. CONKLIN: There is a great deal of truth in that. However, that is especially true of the early flowering plants. Lately we pre-cool during the month of October for a 30-day period, which results in uniform flowering at Christmas time.

MR. HOOGENDOORN: You mean you put those in storage?

MR. CONKLIN: Yes, that is right. We do it on a limited scale because storage space is expensive and it must be done at an exact temperature. That is a big field. I could go into it but I won't take the time.

MR. HOOGENDOORN: One more question. You say you graft your *Azalea japonica* in the winter, dormant. What is your percentage?

MR. CONKLIN: Yes we do, but it is not good. It is less than 50, however I don't know exactly.

MR. HOOGENDOORN: We tried over 30 years ago grafting in the summer, just as we did it in Holland. The only trouble we found with the

*A. japonicas*, you thought you had a good scion and you put it in the bench, three days later it would be hard as a brick and it would never callus. They turn hard very quickly.

MR. WELLS: I would like to ask Mr. Conklin, do you bury the point of union when you put the grafts under the case?

MR. CONKLIN: No, the level of the peat moss or cinders, is never above the lip of the pot.

MR. WELLS: Would it be harmful in your opinion if the point of union were buried?

MR. CONKLIN: I am not sure. I don't recall ever having tried it.

MR. WELLS: The purpose of the question is that if you try grafting in an open bench without double glass but with the point of union buried you could add intermittent misting. On the work we have done, not on your plants, all indications are that higher percentages are achieved in that way.

MR. CONKLIN: That is a good thought. We shall try it.

MR. LESLIE HANCOCK (Woodland Nurseries, Cooksville, Ont.): You mentioned *Azalea 'concinna'* as a stock. Is this a clone?

MR. CONKLIN: Yes, I would say so. It does not set seed.

MODERATOR SKINNER: Mr. Conklin, I think to stick to schedule we will stop now. Thank you very much for your talk.

I will now turn the meeting back to Dr. Chadwick.

PRESIDENT CHADWICK: Thank you, Dr. Skinner, for conducting a very interesting session this morning on propagation of azaleas, and I also want to thank all of those who participated in the meeting this morning.

The session recessed at 12:00 noon.