

Complete rooting should take from 3 to 4 weeks, then misting is reduced. This is a must as the roots rot easily. After about 7 to 8 weeks the plants are just kept under shade. To overwinter in our area the plants are placed in a heated pit frame covered with opaque plastic. The white plastic keeps a more even temperature than clear plastic. Night temperature is kept at about 38 degrees.

MODERATOR TUKEY: Our third paper for this afternoon's session will be presented by Mr. Larry Carville of the Rhode Island Nurseries, in Newport, Rhode Island. He will speak on the "Propagation of Exbury Azaleas from Softwoods".

## PROPAGATION OF KNAPHILL AZALEAS FROM SOFTWOODS

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Without question, the most notable addition to the deciduous azaleas for colder climates during the last decade has been the introduction of the Knaphill Azaleas from England. This group of azaleas fills the needs of both the connoisseur and the grower in that these plants are vigorous in growth habit, offer exceptional color during the blooming season, and are dependably hardy in the northeast.

I propose to limit this paper in content since the material I am presenting results from experience and observations gained in growing Knaphill azaleas in the greater Hartford, Conn. area over an eight-year period. I do not propose to disagree with or dispute authorities in the horticultural field who have had vastly more extensive experience than I but rather submit to you for your consideration my personal experiences.

For the purpose of simplification I will refer to this group of deciduous azaleas as the Knaphill azaleas, but please realize that I include the Exbury azaleas as well. Perhaps I might touch briefly on their history so that we may share a common base of understanding. The Knaphill azaleas are predominately North American in specific origin in that six of the species involved in their breeding are native to this country, namely: *R. viscosum*, *R. nudiflorum*, *R. calendulaceum*, *R. speciosum*, *R. arborescens*, and *R. occidentale*. Although the Knaphill azaleas first began to appear in this country around 1950, their origin dates back as far as 1860 when Anthony Waterer began crossing the Ghent azaleas with the Chinese molle and the flame azaleas, *R. calendulaceum*. To these crosses were added additional hybrids, the Albican (*occidentale molle*) and the sweet azalea (*arborescens*). The Knaphill strain originated at Waterer's Knaphill Nursery but was further developed by Goldsworth Nursery; at Ilam Estate, Christchurch, New Zealand; and beginning in 1922 at Exbury by Lionel de Rothschild. This extensive and interrelated breeding therefore gives rise to four

sub-groups of the Knaphill hybrids: the Knaphill, Slocock, Ilam, and Exbury. Most trade publications today make little differentiation other than to list them as Knaphill or Exbury hybrids.

During the period that we have been growing the Knaphill hybrids, we have found them as a group to be completely winter hardy as well as tolerant of extremely dry summers. Although Lee (1) in his book on azaleas makes some rather definite zonal recommendations for growing these azaleas, I feel that they may be grown as far north as a line extending between Buffalo-Albany (N. Y.), Pittsfield-North Adams (Mass.), Concord (N. H.) to Augusta (Maine). There are of course exceptions both above and below this line, but generally speaking I would defend this as an arbitrary northern limit. More difficulty is encountered with these plants as we move south since they do not tolerate the extreme summer heat of the southern states. I would agree with Lee that probably Atlanta, Georgia, is the most southerly point at which they may be grown successfully.

Under normal growing conditions, we begin taking softwood cuttings in early June and have taken them as late as August 28th. We found that the optimum time for us to take cuttings of the Knaphill azaleas was a period between June 10th and June 15th when cuttings are still green, semi-soft but not sticky, and before apical buds are evident. Cuttings are collected early in the day, dipped briefly in a solution of Captan-Seven?Wiltpruf (2). drained, and stored in plastic bags in a cool, shaded area until stuck. In preparing our cuttings for the bench, lower foliage is stripped, the top is pinched and a light side wound is given where necessary. Cuttings are dipped in number three Hormodin and stuck in the beds. I prefer a medium of 100% European sphagnum peat which has been thoroughly shredded, soaked and treated with Aquagro. Intermittent mist is controlled with a time-clock applying an overhead misting spray for sixty seconds every six-and-one-half minutes. This interval is less frequent on cloudy days and is gradually discontinued after six weeks when rooting is apparent. We maintain a bed temperature of 70 degrees F. and have found this to be very beneficial since without heat, bed temperatures have sometimes dropped as low as 55 degrees F. in mid-July. Extreme temperature fluctuation has a delaying and often an inhibiting effect on rooting.

Cuttings are lifted from the propagating benches after eight weeks and flatted for growing on. Growth is continued under lights in the propagating house until Sept. 15th at which time the cuttings are placed in cold sash houses for the winter. Our normal flatting mix for rooted cuttings is pure peat taken out of the benches but we have had difficulty in wintering cuttings since they seemed to dry excessively in the sash storage. After experimenting with various mixes which included soil, perl-ome, vermiculite, sand, peat moss and fertilizer, we



feel that a soil-peat-perl-lome mix is most satisfactory. (1-2-1 by volume.)

A recent method which we utilized is to plant rooted cuttings directly in prepared beds in the sash houses under controlled conditions of heat and light. A minimum night temperature of 50 F. is maintained initially and these plants make continual root development. The minimum temperature is increased to 60 F. on Feb. 1st and lights are turned on Feb. 18th.

Once cuttings have wintered their first winter and begin making new growth in early April (under normal storage conditions), they have passed the most critical period in their development. We have found that our most substantial losses occur in the period from rooting to outdoor bed planting. Unless cuttings make some new growth prior to the onset of cold weather, they are valueless by spring.

Cuttings are bedded out in prepared beds during late April. Fresh peat moss is thoroughly rototilled into a sandy loam planting mix which is then fertilized with a castor pumice-cotton seed meal-triple superphosphate material (at a rate of 5 lbs. per 100 sq. ft.) Cuttings are spaced six-by-six in the beds and immediately mulched with shredded sugar cane prior to shading with snow fence. Weeds have not been a serious problem in the beds with a mulch but we have used Vapam as a soil sterilant on an experimental basis and have excellent weed control.

We pinch the plants at time of planting to induce multiple branching. If new growth is soft, we spray with Wiltpruf and have found this treatment to be beneficial. From time of transplanting until late fall, the plants receive no additional feeding and very little cultural care other than irrigation when necessary. Growth is continuous throughout the growing season and most plants make up into a 10"-12" grade by early fall. We remove the snow fence shade in mid-August to allow plants a gradual hardening process.

When the ground is frozen, we apply a salt hay mulch over the bedded liners and the field-grown two-year-old plants. This mulch is left on the plants until mid-March and is removed before buds begin to break. Larger plants are grown in fully exposed areas, receive no additional mulch in the late fall, and have withstood the rigors of winters in the northeast.

To discourage damage by rabbits during the winter months and early spring, we spray all plants with a solution of Arasan 42-S(3) mixed with a spreader sticker. This spray is applied in late fall and remains effective throughout the winter. Temperature should be above 40 degrees F. when application is made to insure that spray material has an opportunity to dry during the day. Since we began using this repellent several years ago, we have encountered no damage from rabbits on any of our plants.

In closing, I would like to leave with you my personal selection of the outstanding varieties as I have observed them:

red: Krakatoa  
Gibraltar  
orange: Ginger  
pink: Cecile  
Sylphides

yellow: Annabella  
Old Gold  
white: Oxydol, Toucan  
bi-color: Pavane  
Marionette

- (1.) Lee, Frederick P., *The Azalea Book*, 1965.
- (2.) Cutting dip: Wiltpruf 1 part to 20 parts water  
2 TB/gal Sevin 50% WP  
2 TB/gal Captan 50% WP
- (3.) Arasan 42-S 1 gal to 3 gal water  
1 pint sticker/4 gal.

MODERATOR TUKEY: The three papers which have just been presented are now open for discussion.

CASE HOOGENDOORN: Did you try sand for the rooting of the viburnums?

ANDREW KLAPIS: Yes, we did try sand but we did not get as successful rooting as we did when we used sphagnum moss.

CASE HOOGENDOORN: In my experience it has been best to use a bed of about 8 inches of sand and a fog system and you'll get all of the varieties of viburnums to root and to root heavily.

ANDREW KLAPIS: Our problem has been overwintering the rooted cuttings. By rooting the cuttings in flats with sphagnum moss we have been able to overcome this problem.

JOERG LEISS: I would like to ask Mr. Carville if he dips the entire cutting into the Captan-Wiltpruf mixture and does this not clog the stomates on the leaves?

LARRY CARVILLE: Joerg, what we do is to make up a solution of one part Wiltpruf to twenty parts water, two tablespoons per gallon of Sevin (a 50% wettable powder) and two tablespoons per gallon of Captan (50% wettable powder). At the time we are making our cuttings we take this pail of cutting dip with us and take two or three handfuls of cuttings and plunge them completely into the pail of dip. The cuttings are then drained in an empty pail and finally transferred to polyethylene bags. We feel that the Wiltpruf maintains the turgent condition of the cuttings from the time they are taken until they reach the propagation house. We do not feel that there is any deleterious effect of clogging the pores.

MODERATOR TUKEY: We will now move into the second part of our program and the next speaker is Mr. John DeVisser from Rochester, New York. Mr. DeVisser will speak on "Viburnums from Softwoods".