

We transplant in December or January into a 48 fluid ounce plastic container. It is actually a container made for Ricotta cheese which you may have seen in supermarkets. It is 7" deep and the roots use all of it.

After transplanting, we chill the plants for 40 days, trying to stay under 40° F but taking what we get in the way of sun heat. After the chilling period, we raise the heat to 65° F night and use cyclic lighting. We begin constant feeding at this time. In the transplanting mix of 75% peat and 25% perlite we add 3 lbs. of dolomitic limestone. This helps prevent an ammonia build up by enabling nitrifying bacteria to go to work because of the rise of the pH.

We can the plants in June, into a 3 gallon Swiss cheese pot. We are now using a mix of 60% peat moss, 40% sand. It is in this area that I believe we might change our system. Impressive work is being done by Dick Bosley, and separately by Drs. Hoitink and Gardner, in the use of hardwood bark as the major component. Bark is producing fantastic root systems for these people, better than anything I have ever seen with peat moss. Dr. Hoitink is filling a 3 gallon Swiss cheese pot with roots in 3 months. It looks to me that a 55 gallon drum would be the logical container for a 2 year old! We maintain our feeding at 100 ppm N P K until the plants are sold a year from the next spring. We are using Benlate and Truban as drenches and find them useful. Our spray program includes Manzate D, Phaltan, Diazinon and Kelthane. The rest of our system is the same as I described at the 1967 meetings.

A SYSTEM FOR PRODUCING RHODODENDRONS

JEREMY WELLS

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As we are a specialist grower, our problems are unique. We have three major cash crops: rhododendrons, deciduous azaleas and evergreen azaleas; 95% of our income comes from these crops. Thus, it is imperative to keep certain production procedures definite in our planning:

1. The plants must be alive, healthy and in good salable condition at the end of the growing season.
2. The crops must be sold at a variety of ages and sizes.
3. Management must carefully plan to see that the first two criteria are met with the least amount of expenditure in labor, time and money.

The control of disease has become very important throughout every phase of rhododendron production, especially propagation. Strict sanitary procedures, plus the use of certain chemicals, has produced a great reduction of disease incidence. Our propagation takes place between May and December. When the propagation houses are empty in April, we wash them down with a solution of chlorine granules in water. The houses are then fumigated with formaldehyde at the rate of 1 gal of 100% concentrate per 50 gal of water. They are then sealed for 24 to 48 hours and are aired for an equal amount of time. Fifty percent peat and perlite is placed in the benches and again formaldehyde is sprayed lightly on top of the medium. Houses are then sealed and aired for 24 hours, respectively.

There are approximately 25 to 30 different hormones used in our propagation. These have been developed over years, of testing and observation; the proper hormone is used on a variety to produce the highest percentage of root initiation. The basic hormone is indolebutyric acid plus other hormones, according to the variety being treated, plus a 5% Benlate fungicide additive. After wounding, the cuttings are stuck into containers, flats or benches under intermittent mist, the initial mist period being 6 sec every 3 min. The mist is applied according the conditions of the day; clear, sunny days will have more mist than dull, rainy days. Our mist is controlled by a time clock; it is a Tork unit with a 24-hour clock and a 6-minute timer. An electronic leaf unit is used during the summer in our outdoor mist beds. The cuttings are watered-in with a solution of Benlate-Truban fungicides in water which are mixed at the rate of 6 oz / 100 gal of water. These two fungicides are an important part of our sanitary procedure both in the greenhouse and container area. Root initiation should take place within 5 to 6 weeks and cuttings should be ready to move within 8 to 10 weeks. During this time the cuttings will be weaned until misting is approximately 6 sec. every 18 min. After 10 weeks, all cuttings which are ready to be moved will be placed in 4 inch cedar flats containing a peat and perlite mixture, the ratio being peat; perlite, 2:1. Any cuttings that do not have a proper root ball will be re-stuck into the rooting medium, hopefully to be ready within another month. All flatted cuttings will be watered-in with Benlate-Truban and with 2 lb of 20-20-20 fertilizer per 100 gal of water. It is at this point that our production methods deviate into two different paths.

CONTAINER OPERATION

Because of our moderate size, we find that not only are we maintaining a container operation as well as a field operation, but that we are intermingling the two in order to follow land rotation procedures. Because field work can only be done in frost-free conditions, we try to do as much of our canning in mid-winter, requiring

all plant material, containers and canning mixes to be available ahead of time. Plastic houses must also be available to take the newly canned material. All rhododendrons are canned into a peat-grit mixture at the ratio of 60% peat to 40% grit. The mixture has 5 lb of lime and 24 oz of granular Aqua-gro wetting agent per cubic yard. Any mixture that is to go into 1 gal cans will have 6 lb. of powdered superphosphate incorporated into it. Older plant material that will be canned into larger containers will have 6 lb. of coarse MagAmp fertilizer incorporated into the mixture. All plants will be treated with Benlate-Truban fungicide after canning. The plants are then placed in plastic houses on a gravel base with a permanent overhead watering system. At the beginning of the growing season the plants will be fed through a proportioner with an injection ratio of 1:200. The plants are fed every watering with 20-20-20 soluble fertilizer at the rate of 200 ppm nitrogen. With our proportioner this figures to be a stock tank of 83 lb fertiler in 50 gal of water. Our liquid feeding is mostly done in the late afternoon, early evening or early morning. At these times, weather conditions are such that the calm air will allow for even distribution from the overhead sprinklers. Our feeding schedule continues throughout the summer, changing according to the needs of the plants. This is determined by a weekly soil test that is sent to a laboratory telling us all required statistics and giving us the proper information for future feedings. Fertilizing ends in the early weeks of September.

FIELD OPERATION

We maintain a land rotation for our field crop. The one-acre blocks that will take our liners and 3 yr old plants will be rested for one season. In this time, manure and two summer cover crops of Sudan grass and one cover crop of winter wheat are incorporated into the land. In the spring, the land for our liners is prepared by fumigation with Vapam. This takes place at least 4 wks before actual planting. Two or three weeks after fumigation, the land is opened up to allow aeration of the fumigant and to permit the construction of the raised beds. This is accomplished by first marking out the acre for all walkways between beds. Then a specially constructed plow secured on the back of the tractor plows the walkways out, raising the beds. We try to maintain 34 to 36 beds, 150 feet long per acre block. The beds are then smoothed and rototilled in order to get them into a friable planting condition. A dressing of 5% Benlate is then put on the top of the bed and it is then marked out with specially constructed markers so that we can plant approximately 1200 liners per bed. Two men work on either side of the bed and plant to the center; this reduces compaction and allows the young liners to re-root rapidly. All young liners are shaded as they are planted with a 50% lath shade with these units remaining for one full season and being removed at the beginning of the second season.

The planting of larger material takes place in the same manner with the following exceptions: One, we do not provide shade; two, the plants are planted in the fall; three, the plants will remain in the field for a period of 3 yr as compared to only two for the liners.

Weed control is very important in any nursery. It is of vital importance to us because we do not have the large amount of labor to control it by hoeing. All field areas that remain undisturbed over the winter are treated with Casoron at the rate of 100 lb/A. In early April, we begin a very intensive program with 5% Dacthal granules. They are applied at the rate of 4 lb/1000 sq. ft. every 30 days; this rate is lower than the recommended dosage. This procedure is done because we feel it to be very important to be constantly observing the conditions surrounding the crop so that no problems will catch us by surprise. We maintain this schedule of weed control on containers and field plants expecting about 85% control of weeds; in the field the remainder are killed by the use of Paraquat in knapsack sprayers. The remainder in containers are removed by hand.

The control of insects is also important. We follow a very stringent spray program, spraying every 30 days from March 1 through September 30. Included in this spray are two to three general insecticides, two fungicides including Benlate, as well as chelated iron and manganese, and soluble 20-20-20 fertilizer. Additional chemicals may be added at certain times to control specific insects.

SYSTEMS FOR RHODODENDRONS

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At Summer Hill rhododendron production accounts for about 40% of our business. We are at present propagating between 60 and 80 thousand rhododendrons a year. This involves 14 varieties of Catawbiense hybrids and seven varieties of what we call small-leaf varieties, such as 'Purple Gem' and some of the Carolina hybrids. These are all produced from cuttings taken primarily in October. We also grow a relatively small quantity of Carolina rhododendrons which are propagated from seed. However, I will not get into our seedling production as it is such a small item with us.

Our rhododendrons are sold as three basic size crops — 1 gal containers, 2 gal containers and half-bushel baskets. It all starts, of course, with propagation. We do not have a stock block but take our cuttings from 1 and 2 year old plants that are in production. We feel this gives us a far superior cutting to cuttings taken from old stock plants. They usually root readily and we shape our plants that are in