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

MICHAEL D. JOHNSON

Summer Hill Nursery, Inc.
Madison, Connecticut 06443

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

production when we take the cuttings. Our cuttings are taken in October and made the same day they are taken. We use a single wound, made with a sharp knife, and try to keep it from extending all the way to the base of the cutting. Normal hormone treatment is Hormodin No. 3 for easier to root varieties. For still other varieties we use four parts 2% IBA in talc to one part Phygon. We also have been using Jiffy-grow in different concentrations, more or less experimentally, for the last couple of years and find the results quite rewarding when used properly. We are also constantly experimenting with other brand name hormones, such as Hormex, as well as other fungicide additives such as Captan and Benlate. Benlate is now used to such an extent that I should really include it as a normal treatment.

Most of you saw our propagating houses on the tour. They are cement block houses, 11 ft wide, with two 4 foot benches and a 3 ft aisle in the center. They are covered with Amerex UV polyethylene which allows good light intensity. We use mist, run by a time clock, approximately 6 sec every 6 min. Our rooting medium is two parts German peat to one part coarse perlite. The medium is about 5 inches deep with bottom heat; we try to keep it about 75° F. However, we will, on occasion, push the bottom heat up to 80° F if rooting appears to be slow.

Some of these cuttings should be rooted well enough so that we can start transplanting in January. We continue to transplant, as the different varieties are rooted well enough, right through February. We transplant the cuttings into the same medium (2 parts German peat to 1 part coarse perlite) in larger polyethylene-covered houses. Catawbiense hybrids are spaced approximately 4 inches apart — small-leaf varieties, closer together, depending on their size. 'Purple Gem' are generally put in flats — 48 to a standard 20 x 14 in. flat. All the other varieties, however, go into benches that are about 5 inches deep. We keep these houses at approximately 40° F until the end of February when we push the heat up to 70° F. We are looking for one flush of growth and no more, as our 4 inch spacing will not allow it.

All these rooted transplants will be moved into 1 gal containers in June. The medium in the can is one part Canadian peat and one part coarse sand. Catawbiense hybrids are spaced in beds — five plants across a 4 ft bed. They are given no shade and, although the leaves do sunburn to some extent we find in our climate that shading is not necessary. The small-leaf varieties are placed out in beds, can-to-can, as the growth the first year does not warrant spacing. These are shaded for 2 to 3 weeks with snow fence, as the shock of coming out of the greenhouse can be a bit too much for them in certain years. All plants are pinched between flushes of growth or, in the case of the small-leaf varieties, sheared with hedge shears.

These plants are fertilized, as are our 2 and 3 year old plants, through irrigation water once a week. We mix our own fertilizer using urea, mono-ammonium phosphate amd muriate of potash. The rates of the different materials vary with the time of the year. In early spring before growth starts, and in the fall, the rate of urea will drop as low as 30 lb / A. However, in early summer when growth is optimum we push the urea up to 80 lb / A / wk. Mono-ammonium phosphate remains standard at 50 lb / A / wk throughout the season, but muriate of potash is raised from 25 lb / A / wk early in summer, to 50 lb / A / wk during late summer and fall. Irrigation is from a pond and can be daily during the middle of the summer, depending on weather conditions, and is of course reduced in the fall as needed.

Many of the Catawbiense hybrids are sold in 1 gal cans at the end of this first year. However, the great majority are transplanted the following spring into 2 gal cans or half bushel baskets. The mix for the 2 gal container is the same as the 1 gal , that is, 1 part Canadian peat to one part coarse sand. They are handled the same way as the 1 gal container, pinched after the first flush of growth and, of course, spaced further apart. Some varieties should be well budded at the end of the second year; however, we sell our 2 gal cans as vigorous 2 yr old and do not promise buds. The balance of the 1 gal containers go into half-bushel baskets. These are baskets made specifically for this purpose by the Marshall Basket Company, Marshall, Texas. They are treated with copper naphthenate and we expect them to last 2 years The medium we use in the baskets is different from that used in plastic containers. It is 2 parts native peat, similar to what is known in the trade as Michigan peat, and 1 part sand. Since the native peat has a very low pH, we add 5 lb of lime per yard and, since there is also a very high weed content in the native peat, we mulch our baskets with an inch or so of sugar cane. These are placed basket-to-basket for the first year in beds that will allow them to be covered by a 14 ft quonset without moving the baskets. They are pinched as needed and a good many of our cuttings come from these plants, thus shaping them before their final growing season. The second year in the basket, they are spaced approximately 2 ft apart and should give us well-budded plants up to 2-½ ft, depending on the variety.

Small-leaf varieties, are handled exactly the same way except they remain in the 1 gal can for a second year and a larger proportion of them are sold in this size. For instance, all our *Rhododendron impeditum* are sold in 1 gal.

In regard to winter protection, all these rhododendrons are covered with polythylene in mid-November. We use clear polyetheylene but give it a light coat of latex paint as soon as the greasy sheen is washed off. Most of our quonsets and A-frames need

one or two irrigations throughout the winter depending on weather conditions that particular winter Our houses are sealed houses with no ventilation in order to conserve moisture. One problem we've had in certain winters is an excessive build-up of moisture on the leaves of certain varieties. This can be disastrous if the temperature drops very low while the leaves are in this condition. We find that by venting each end of our quonsets when we see this condition starting, we manage to get the water out of these leaves and solve the problem. Using overhead irrigation, as we do, insect control can be somewhat of a problem as we are constantly washing insecticides away with each irrigation which means we have to keep our eyes open and spray a bit more often than under normal field conditions. Diseases, fortunately, have not been a great problem for us as yet. We have had some trouble with *Phytophthora cinnamomi.* However, this seems to be definitely related to the aeration of the medium. The only variety that we've had real trouble with is *Rhododendron laetevirens*, (R. Wilsonii). We have tried using some bark in the medium; however, the results so far don't seem to warrant a change from our present methods.

We do not use any herbicides on our containers and rely on hand weeding to keep the containers clean. However, we do use a great deal of Simazine, Treflan and/or Casoron around the outside of our container area in order to keep down the weeds that would be producing seeds that would blow into the containers and, as I stated before, we also use sugar cane mulch on the baskets.

We do not believe that our method is perfect or the right one for everyone else to use. There are improvements we would like to make but in some cases we cannot because of our limited space or conflicts with the production of other items. We feel that what we are doing now is the right method of production for us, although 2 or 3 years from now we might be doing things quite a bit differently.

MIKE JOHNSON: Now that the three of us have had our say, we will give you a chance.

PETER VERMEULEN: I would appreciate having you and Dick comment on your systems of cutting choice.

DICK VANDERBILT: As I stated, we maintain separate stock blocks and we stop feeding in the middle of July. By doing this, the cuttings have hardened off by the first of September and we can go in and cut whatever we need for cuttings; we do not have to wait for the tissue to harden off any more. We handle the stock block so as to get long cuttings and a lot of multiples. The stock block will set flowerbuds in July. We go through and knock out the flowerbud and

get two, three and sometimes four breaks on the cuttings. This gives us a branched rooted cutting; if I did this on my saleable plants I soon would not have any. I believe I can bud the saleable stock better and root the cuttings better by treating the two on different programs.

MIKE JOHNSON: I do not use a stock block because I feel it takes up too much room and, with the type of terminal cutting we get from container-grown plants, we get more buds around the terminal. I have observed where they do use a stock block they take cuttings from the lateral parts of the stock plant and may have only two buds, whereas terminal cuttings from our container stock will have as many as seven or eight. In addition, our system helps us in the shaping of our plants With our system our houses are so full of other materials that we cannot start sticking rhododendron cuttings until October. By this time, the wood is ready and it works out as a nice progression for us

JEREMY WELLS: I feel that Dick and Mike are too concerned about their type of cutting. We get the wood which is good at the time it is ready, I think this is the most important thing. I am not too concerned where it came from, whether it be a stock plant or a container plant. Then one must carry on with good growing procedures to get a saleable plant.

JOHN AHRENS: Mike, would you comment on the weed control you use in your ponds?

MIKE JOHNSON: At one time, our pond got so weedy that we could hardly get water out of it and so we called on John Ahrens for his advice. He advised using Casoron at the rate of 200 lb/A of water. We apply this with a cyclone seeder from a row boat in November. We now use it on all four ponds and have no weed problem with them. The residue remains in the water for about 3 months and so this must be done at a time when the pond is not going to be used for irrigation.

ARIE RADDER· What about copper sulfate for weed control?

JOHN AHRENS: Copper sulfate is strictly for algae control and Casoron is strictly for higher plant control.

GIED STROOMBEEK: Mike, you mentioned the effectiveness of your spray program was reduced by the amount of irrigation you have to use, I have been using a new sticker which I feel is quite effective since it seems to cut down the frequency of applications required by almost one-half. It is called Newfilm 17 and is made by Miller, the same people who make Vapogard.

CHARLIE SCHEER: I believe the active material in these compounds is pinolene, a resinous material which forms a vapor-proof coating

JIM CROSS: Would one of you on the panel who is using Benlate and Truban comment on the rates at which it should be used?

DICK VANDERBILT: We use Benlate at the rate of 8 oz / 100 gal once a year. We now use Truban emulsified which we feel is superior to the wettable powder. I believe the rate we use it is 32 oz / 500 gal and this is applied every 6 to 7 weeks.

JEREMY WELLS: We feel that there are two times when it is particularly important to use Benlate and Truban. The first is when the unrooted cutting is stuck into the bench or container and the second is when the rooted cutting is moved to either containers or flats.

BRUCE BRIGGS: Have any of you on the panel tested either Benlate or Truban at one half the rate — that is, about 3 oz / 100 gal?

JEREMY WELLS: We did not test it as such, but we did use the material at one half the rate and it did seem to be effective for us.

BRUCE BRIGGS: When taking your cuttings do any of you on the panel pinch out the terminal bud to give branching when the cutting roots?

JEREMY WELLS: We try to remove the terminal bud on all of our cuttings because we get much better rooting and we have a branched plant when the cutting does root.

HARVEY GRAY: I have removed the terminal bud for the past 15 years but recently I began allowing the bud to break and grow out to about 3 inches and then pinching it back close to the cluster of leaves, all of the encircling buds will break and we get a very well branched plant.

ARIE RADDER: I wish to make two comments. Someone mentioned that Phygon is no longer available, but this chemical is now available from Niagara under the name Dichlon. We also tried Newfilm 17, but found it very expensive. Miller makes another compound called Miller's Aid; we found this nearly as effective and less expensive. Also, I should comment that in a publication I received from Boskoop they report that there is some caution needed when fungicides and hormones are mixed for rooting. They find that under certain circumstances, these materials used together can reduce or slow up rooting; they use bottom heat of 64° F for the initial rooting and when the cuttings are callused or rooted, they increase the bottom heat temperature to no higher than 67° F.

WAYNE MEZITT: Mike, with all of the work which John Ahrens has done, why do you not use herbicides in your containers?

MIKE JOHNSON: Basically, we are still afraid of them and if we can get by without using them I would just as soon do that.

JEREMY WELLS: Two or three years ago I looked over our records and found that we were spending between $10,000 and $11,000 for labor to pull weeds and still had a lot. We had used Casoron on containers but we were afraid to apply it in March when they would be under poly so we went to Dacthal. It does not give us complete control, but one man can go out and pull the weeds which are missed from 10,000 cans in 4 hours. This is a considerable saving over what we were doing. We used the 5% granular material at a rate of 4 lb / A every 30 days.

MIKE JOHNSON: We are going to have to cut off questions at this point. Any further questions can be put into the Question Box.

At this time, we are going to have papers by Bruce Briggs and Dr. Wott concerning how to attract young people to horticulture. Bruce will discuss this from a nurseryman's view and Dr. Wott will discuss it from a University view; we will begin with Bruce Briggs.

ATTRACTING YOUNG PEOPLE TO HORTICULTURE — FROM A NURSERYMAN'S VIEW

BRUCE A. BRIGGS

Briggs Nursery

Olympia, Washington 98501

As a nurseryman, I am interested in attracting young people to horticulture for more than one reason. First, as potential customers, as citizens who are sympathetic to our industry's goals, and as citizens who are concerned about creating a better life in a better world. Then, I would also like to interest more young people in continuing further research in horticulture and in becoming an active part of some segment of the industry.

As members of the I.P.P.S., we can go back to our motto "To seek and to share". We can start by seeking more knowledge, better techniques, additional applications and new fields of endeavor. We can share this knowledge, the materials with which we work, and our own enthusiasm for horticulture. We can use the current interest in ecology to advantage and share our knowledge with those from other fields who have just recently jumped on the ecology bandwagon. By serving on planning boards for parks, cemeteries, highways and cities, we can help create beautiful surroundings in our communities. We can bring our children into an environment made more pleasant and interesting by the presence of trees, shrubs and flowers We can, in a sense "condition" them to want and to expect these beautiful surroundings wherever they may go.