

6. Difficulty in coordinating work load and water schedule especially during warm weather and heavy shipping periods.

CONCLUSION

We feel that our overhead watering system is the backbone of our plant cultural program. The system is definitely not perfected, but so long as we can continue to produce the type of plants that we have in the past then it is by far the best system for our situation.

LARRY CARVILLE: Thank you, Dave, for taking us to Greenleaf Nurseries and showing us your system of watering. Our next speaker needs no introduction. He is our own Jim Wells, who is going to tell us about his experience with wetting agents and watering.

USE OF A WETTING AGENT TO HELP CONTROL THE APPLICATION AND USE OF WATER

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Good growers have always realized the vital role that water plays in their daily operation, but it is comparatively recently that we have come to know with some degree of certainty how water can affect a plant, can control its development and can change the final result substantially. This we now know to be true in every phase of plant growth.

Our main crop, of course, is rhododendrons, and we have always been aware of the need to control the frequency and quantity of water and to provide growing conditions which would allow surplus water to be removed as quickly as possible. This is true in field culture and even more important in container culture. The need for controlling the growing medium, whether it be in the field or in a can, to as close to field capacity as possible under wet conditions is, of course, based upon the effect of surplus water on the development of the rhododendron wilt disease, *Phytophthora cinnamomi*.

With the high temperatures which are almost inevitable in the growing medium in the can, the need for limiting the application of water and, when applied whether naturally or artificially, to bring

the growing medium to full field capacity rapidly is of paramount importance.

Two years ago, while attending the Concord Meeting, we found ourselves seated at the same table with Bob Oechsle, representative of Aquatrols Corp. of America, producers of Aqua-Gro, and he took the opportunity to explain to us in detail what he thought a wetting agent could do, and why we ought to be using it. Simply stated, his arguments were these: if the growing medium is treated with a wetting agent, a relatively small amount of water applied to the top of the growing medium will rapidly disperse through the whole mass and bring it to an even state close to field capacity. If inadvertently a surplus of water is applied, this surplus would rapidly drain out. It was his contention that by using a wetting agent we would attain two things:

- 1) we would maintain in containers field capacity by the application of one third less water at any given time.
- 2) if too much water was applied, either naturally or artificially, it would rapidly remove itself by natural drainage through the medium and out the bottom of the can.

These arguments fitted in with what we believe to be an important factor in the growing of our crop in containers and we decided to test this material thoroughly. We learned that it could be obtained in dry form. The wetting agent in this instance is sprayed onto fine vermiculite and when this material has dried, the vermiculite can be mixed with the growing medium and the wetting agent will naturally disperse through the mass in the same manner as if it had been applied in liquid form.

We had a rather remarkable demonstration of the effect of this material when we first commenced to use it. We had mixed up a large heap of peat and grit, our standard growing medium, which had been thoroughly mixed with the tractor bucket. We then obtained the dry Aqua-Gro and commenced to mix in the required amounts and did so to one half of the large heap. At the end of the working day, therefore, we had two fairly substantial heaps of peat and grit resting on the black top. These were conical in shape and were 6 or 7 feet high, each containing probably 20 cubic yards of material. One heap had received Aqua-Gro and the other had not. That night we had a brisk rain with about an inch of water falling through the night. The following morning we commenced work and, using the tractor bucket, dug into the heap which had not received any Aqua-Gro. We found that the rain had penetrated the peat and grit for about 2 feet, but that beyond this point, the center of the heap was quite dry. Examination of the adjacent heap, which had received Aqua-Gro showed that the whole mass was uniformly moist, right to the bottom of the heap.

We commenced using Aqua-Gro 2 years ago, first by dry mixing the material into our canning mix; everything that we canned received this treatment. In addition to this, we have been pursuing a sanitary procedure which requires a regular application of Benlate-Truban. This has to be applied at about 8 week intervals. To this mixture of Benlate-Truban we have also added the required quantity of Aqua-Gro. The crops that are in containers receive essentially three treatments — one at the time of mixing and canning, and at least two further liquid treatments during the growing season.

We believe that this has substantially reduced the amount of water that we have had to apply at any one time. It has allowed the cans to drain out far more rapidly after the application of water, either naturally or artificially, and results have, in our opinion, been quite substantial. It is one additional measure leading to the degree of control of the rhododendron wilt disease.

We believe also that wetting agents have a real value in the successful reestablishment of container grown plants in their final growing position. There is no question that the education of the customer to deal with this problem is going to be a continuous one and this education must flow from the grower through the retail outlet to the final consumer.

We are all agreed, I think, that at the very least the rootball of the container grown plant should be disturbed and loosened at the time of planting, but if the growing medium in the container is also treated with a wetting agent, then the flow of water into and out of this mass is greatly facilitated and the chances of the plant drying out completely in its somewhat isolated mass of special growing medium is much less. All the experiments, therefore, suggest that there is an accumulated value in the use of a wetting agent in all aspects of plant propagation, production, and growth.

LARRY CARVILLE: Thank you, Jim; the use of wetting agents certainly seems to fit into the systems of watering. Our next speaker is Ralph Freeman; he is going to discuss some of the aspects of water quality which we should be thinking about in our operations.