COLD STORAGE PRETREATMENT OF CUTTINGS

CHARLES H. PARKERSON

Lancaster Farms, Inc
Suffolk, Virginia 23435

This paper concerns the storage of Japanese holly cuttings *Ilex crenata*, at near freezing temperatures for 10 and 12 weeks before propagating. Dormant tip cuttings were made prior to spring growth and rooted after propagation houses were emptied by spring plantings. This work was done by D.C. Milbocker and T.J. Banko using the research facilities of the Virginia Truck and Ornamental Research Station, Virginia Beach, Virginia.

Although we did not dislike what we were doing, we felt we could do better. Our present method gives us nicely-rooted liners in August, and we usually get a fall flush of growth. The following April the liners are potted 3 to a 3-gallon bucket and moved to the field. We cannot economically compete in the 1-gallon market with growers in the 3-gallon market, and we want our product to be the best available. Since we then get 3 flushes of growth — one in June, one in July, and one in August — we are pleased with our field operation. The plants are 12 to 15 in high and well-branched at the end of the growing season.

We do not see any way of getting an additional flush in the field. However, since we sell by plant size, we could get more return on our investment in the plant by adding one more growth cycle to our system. This gave us an idea that we call our 60 MPH theory. With our present method, growth starts in May, and by the end of the summer the plant is going 60 MPH. It is still ready to go when cold weather comes. If we could take our cuttings in January, we might be able to add an additional flush before moving the plants to the field. The unrooted cutting would be at 0 MPH. When it rooted it would be at 10 MPH and at 20 when the first flush occurred. We could have that plant already going 35 MPH by the time we went to the field in April. If we could go to the field with a 6- to 18-in liner rather than a 3- 4-in we believe we could have a 15- to 18-in 3-gallon plant by that fall. By taking cuttings in January we could also distribute our work load and make better use of our employees' time during the winter.

Our last killing frost is traditionally considered to occur in April. After that time we have greenhouse space available using our present system. We decided to use this space to test our theory, with the help of Dr. Milbocker and Dr. Banto.

During the last week of February, 1980, 12,000 tip cuttings were taken of each of the following 4 cultivars of Japanese holly: *Ilex crenata* 'Helleri,' 'Nigra Upright,' 'Bennett's Compactum'

and 'Wight's Compactum.' The cuttings were 7 in long with basal leaves stripped in the field. The cuttings were placed into bundles of 25 held by a rubber band. Each bundle was dipped in a Daconil (chlorothalonil, Diamond-Shamrock) solution. After draining, half of the bundles were dipped in a 2500 ppm IBA-alcohol solution.

The cuttings were then taken to the Research Station where they were divided into four additional treatments: storage under 8 hours of light per day, or no light, in plastic bags, or in open flats under high humidity. Light was supplied by a single 40-watt fluorescent tube positioned over the cuttings. High humidity conditions were maintained by sealing the cuttings from circulating air and generating humidity from fog nozzles. The temperature was maintained between 1 and 2°C.

Half of the cuttings from each treatment were removed the first and third week in May. Cuttings that had not received a hormone treatment were dipped in 2500 ppm IBA just prior to sticking. They were stuck into 3-in pots, with pine bark as the rooting medium, under intermittent mist.

I am sure that Dr. Milbocker and Dr. Banko have the statistical data to show which treatment was best from the research point of view, but the best visual treatment was no lights, sealed in bags, quick-dip in 2500 ppm IBA hormone added at time of sticking. Most all of the cuttings rooted in a satisfactory percentage.

Our hope was that the cuttings would root prior to top growth. They did this, but we then ran into trouble. The first strong flush of growth came around the first week in June, and we were not ready. We used liquid fertilizer injected into the water lines in the propagation area. The other cuttings that were being made were not ready for fertilizer, so the house with the experiment was starved during a time when we should have been feeding heavily. This resulted in plants becoming off-color and stunted. the advantage we had gained from early rooting was lost.

We believe that we can gain an advantage by taking cuttings earlier than usual. Our results show that we cannot do so by changing only one step in the production cycle. It is critical that all other phases of the entire process be considered as well. We plan to repeat this work next season with modifications. We are going to stick the cuttings directly into an unheated poly house with some form of slow-release fertilizer in the rooting mix.