When Lot No.'s 1 and 4, which received identical treatment, were compared directly, Lot No. 1 yielded 25 rooted cuttings of which 21 were heavily rooted while the corresponding figures for Lot No. 4 were 16 with only 10 heavily rooted. These differences are attributed to some imperfectly understood juvenile characteristics of the sported or mutated tissues. Increased rootability of such tissues is widely known in such genera as Picea and Abies, but to the best of this writer's knowledge, it has never been reported in the genus Cephalotaxus.

MODERATOR MARCH: Thank you, Mr. Fillmore.

Our next speaker will be Mr. Hurov of Cornell University. His topic is "The Propagation of Semi-hardwood Leafy Cuttings Using Polyethylene Bags and Sheets with Aluminum Reflectors".

THE PROPAGATION OF SEMI-HARDWOOD LEAFY CUTTINGS USING POLYETHYLENE BAGS AND SHEETS WITH ALUMINUM REFLECTORS

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In the wet tropics there is a need for a method in which leafy cuttings of tropical arborials can be rooted directly in situ in containers or in the nursery row. Elimination of transplanting problems and excessive installation costs are the main reason.

Plastic Bags: A number of workers methods have shown that plastics can be used for propagating softwood cuttings. Among these Nichols (1958) showed that, in Trinidad, softwood cuttings of cacao could be rooted successfully in plastic bags. This prompted us to investigate the use of plastic bags in British North Borneo. Our investigations showed that plastic bags could be used successfully for propagating leafy semi hardwood cuttings from 96 different tropical arborials. Some of the more difficult rooting species rooted included: Mangifers indica, Hevea brasiliensis, Achras sapota, Lansium domesticum, Eucalyptus deglupta, Psidium guajava, Nephelium lappaceum, Artocarpus integra, Annona squamosa, Tamarindus indica, Cinnamonum Zeylanicum, Euphoria malaiense and Anacardium occidentale.

The method generally entailed setting cuttings in .02 mm guage, 14 X 8 inch polythene bags containing a mixture of 80 parts decomposed padi husk and 20 parts fine river sand. The bags were set in a position where they received early, cool morning, sunlight until 9:30 a.m. and 50% shade approximately for the rest of the day. These conditions were found on the eastern side of a rubber plantation. Cuttings were taken from adult trees and were treated with several root inducing stimulants prior to setting. Cuttings usually rooted in 1-2 months.

No watering and very little maintenance was needed during the rooting period.

Best results were obtained with cuttings taken from epicormic shoots in the dry season when rainfall averaged between 3 and 5 inches a month and when temperatures varied from 65° F at night to 92° F in the daytime.

The advantages of the polythene bags technique for tropical arborial cuttings includes low cost of installation, no need for transplanting into containers; reduced tropical labor costs, ease of transportation and ease of adaptation.

Polyethylene Bag-Aluminum Reflector Method:

An attempt was also made to root leafy cuttings directly in polythene bags in the sun. To these bags were attached aluminum sisal craft reflectors which faced the afternoon sun in such a manner that the cuttings received sunlight in the early morning and shade thereafter. By this method preliminary rooting successes were recorded with Annona muricata, Citrus nobilis, Eucalyptus deglupta, Acacia auriculaeformis, and Psidium guajava.

Polyethylene Tunnel-Aluminum Reflector Method:

Preliminary results with rooting leafy cuttings in the nursery row in tropical Borneo were unsuccessful. In these trials white plastics and various forms of shade were used. Aluminum reflectors however, were not utilized. These trials were continued at Cornell in the summer of 1961. Initial results showed that tomato, coleus and Forsythia intermedia cuttings could be rooted up to 100% in sand under polyethylene sheeting protected on the top and west sides by aluminum foil. This is somewhat similar to Harvey Grays reflector deflector vapor proof case method.

During these trials various attempts of supporting the polyethylene were tried. Among these the best results were obtained with "Twist Ems". Wire supports proved awkward and expensive. As the summer progressed we found that supports were not needed and that north light was as good as east light. By late summer we felt that we were ready for field trials. Leafy semi-hardwood cuttings were taken on August 23, 1961 and measured approximately 6 inches long. They were set about 3 inches apart in the row. After that they were well watered and covered with polyethylene sheets. Aluminum foil reflectors were placed on the south side. In other words, we used north light. There were 50 cuttings of 6 different ornamentals in the trials. Half the cuttings were treated with Seradix B3 (IBA) powder. Observations after 3 weeks showed that the auxin treated cuttings rooted as well or better than the non-auxin treated cuttings.

The rooting results with the auxin treated cuttings were as follows: (1) Under Dow Handiwrap Film one foot wide, Philadelphus coronarius 22%, cornus alba 22%, and Berberris thunbergia Atropurpurea

33%. (2) Under Dow 401 Polyethylene Film two feet wide and .00075 inch thickness, Rhodotypos tetrapetala 43%, Ligustrum ovalifolium 63%, and Forsythia intermedia (Spring Glory) 85%. There is thus an indication that various plastics may give different results depending on their density and thickness.

In the future the methods of supporting the plastic may prove a problem. However in 1962 we hope to try using humidified airblowers to hold up the polyethylene.

Bibliography

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MODERATOR MARCH: Our next topic "Industry's Role in Screening New Herbicides and Rooting Hormones" will be presented by Mr. John H. Kirch, Amchem Products, Inc., Ambler, Pennsylvania.

INDUSTRY'S ROLE IN SCREENING NEW HERBICIDES AND ROOTING HORMONES

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Probably the most simple way of defining the chemical industry's role in the plant growth regulator field is to say that it is their responsibility to discover, formulate and market new compounds for man's use in regulating plant growth. More specifically, to the plant propagator this means providing chemicals that stimulate the formation of roots on cuttings, inhibit or stimulate plant growth, break seed or bud dormancy, control weeds, initiate the formation of flower buds and regulate fruit set or maturing.

Most people are aware that many new chemicals have been introduced in this field of plant growth regulators during the past twenty years. What is perhaps not too familiar to many are the methods used by industry to find these compounds. The remainder of this paper describes a method used by the author's company in its research toward finding useful chemicals in the plant growth regulator field.

This method involves three steps: 1) primary screening, 2) secondary screening, 3) field development.

Primary Screening