REPORT ON MIST PROPAGATION TRIALS FOR 1955

SATURDAY AFTERNOON SESSION

December 17, 1955

The session convened at 1:30 o'clock, President Fillmore calling the meeting to order.

PRESIDENT FILLMORE: The Field Trials Committee, under the guidance of Dr. John Mahlstede of Iowa State College, has been very busy throughout the past year gathering an analyzing information on mist propagation. Those of you who have attended previous meetings of this Society know the intense interest which has attended discussions on this relatively new method of rooting cuttings. It is therefore with a great deal of pleasure that I turn this afternoon session over to Dr. Mahlstede for his report.

Dr. Mahlstede took the chair.

MODERATOR MAHLSTEDE: Thank you, Mr. Fillmore.

Mr. President, fellow propagators and guests: The first project that was undertaken by your Field Trials Committee this past year was a survey of the membership in regard to the availability and cost of all equipment in use for propagation purposes. An excellent return to this questionnaire was received. The information gathered was then summarized and distributed to the membership in the first NEWSLETTER edited by Dr. Snyder. In addition, this NEWSLETTER carried a description of a "typical" intermittent mist system which could be used for rooting softwood cuttings out-of-doors.

The second NEWSLETTER carried a suggested procedure which could be used to evaluate the results obtained from using an intermittent mist system controlled with the Electronic Leaf. From this survey we hoped to establish such practices as: (1) the importance of timing, (2) importance of hormones and (3) procedures for handling cuttings after rooting. To have some common ground for comparison, a list of 12 shrubs grwn commercially in nearly all sections of the United States was suggested. Cuttings from these shrubs were to be stuck within a specified period based on zoning and the advance of the season from South to North.

In the Fall a final questionnaire was circulated on which members who had used intermittent mist were to list their results. Thirty-five replies to this questionnaire were received as well as many letters. From these returns a combined report was prepared, a copy of which will be distributed at the end of this session. In order to make this summary more accurate we have included a zoning number before each reference, this to reflect to some degree the influence of location and timing on expected results.

The final report also contains a general summary which was reached after careful scrutinization of the returns and of the comments made in conjunction with them. These were as follows:

1. Fifty percent of the nurserymen who are using intermittent mist installations are potting the cuttings immediately after they have rooted and have been hardened-off. Another 25% are leaving the cuttings in the bed overwinter.

2. In general, the plants which have been difficult to root from softwood cuttings by other known techniques are also difficult to root under intermittent mist facilities.

Those giving trouble include: *Chaenomeles japonica, Clethra, Cornus florida rubra, Cotinus coggygria purpurea, Evergreens (slow to root, not particularly difficult), French Lilacs, Kolkwitzia amabilis, Malus spp., Prunus spp. (cistena, glandulosa) Rosa spp., Syringa rothamagensis, Viburnum macrocephalum sterile.*

Discussion: A wide variety of explanations can be advanced for the difficulties experienced in rooting these sorts. Some of the difficulty can be attributed to improper timing. Certain cutting types show retarded or inhibited rooting as a result of the application of rooting powders; still other types, when placed in beds having poor drainage throw abundant callus as a result of the high moisture content of the rooting medium.

In general, however, given enough time, most of these difficult to root types will throw roots when propagated under intermittent mist facilities.

3. Types giving trouble because of leaf drop either during rooting, or immediately following, include:

Acer palmatum, Berberis, "Crimson pygmy," *Cotoneaster (adpressa, apiculata), Elaeagnus rotundifolia,* Franch and Persian Lilacs, *Ilex* (those with pubescent leaf surfaces), *Kerria japonica plenaflora, Magnolia stellata, Philadelphus (coronarius aureaus, virginalis), Platanus acerifolium, Prunus, (cistena, glandulosa, triloba), Pyrcantha lalandi, Rhus acromatica, Ribes alpinum, Rosa spp., Spiraea (b.A.W., prunifolia) and Viburnum lantana.*

Discussion: Probably a case of maturity which is regulated by the physiological condition of the cutting at the time of sticking. If a cutting is taken too early many types are difficult to harden-off, and/or are slow to root; if taken too late they have a tendency to drop their leaves if environmental conditions are favorable.

Types such as *Prunus spp.* will defoliate regularly if the cuttings are allowed to remain under mist for any period beyond that required to root the cutting.

It has been generally noted that there has been less trouble with defoliation during the rooting sequence by nurserymen using the Electronic Leaf than by those using an interval timer.

4. Cutting types which have given trouble after rooting are essentially those which defoliate either during the rooting sequence or immediately after rooting; these include:

Cornus florida rubra, Hydrangia P.G., Ligustrum ibota vicari, Philadelphus (coronarius and *c. aureus), Prunus (cistena, triloba) Rhus aromatica, Weigela (Vaniceki, wagneri variegata).*

Discussion: There are those types such as *Prunus spp.* and *Hydrangia P.G.* which should be hardened-off as quickly as possible once rooting

has taken place. There are other types which have a broad leaf blade, such as *Forsythia* and *Chaenomeles lagenaria* which are particularly subject to leaf burn if not properly shaded during the hardening-off process.

It has been reported that cuttings treated with one of the rooting powders have been generally easier to transplant than those not treated at the time of sticking.

As has been previously pointed out the propagator should attempt, as nearly as possible to keep the cutting growing. Any protracted delay in this growing process, before the end of the season imposes a period of delayed activity, during which the cutting may be lost or severely setback. Since the ability of a cutting to grow is tied up with maturity, timing again is very important.

Since eighty-five percent of the nurserymen using the Electronic Leaf control experienced some trouble as a result of the malfunction of the unit, we have asked Mr. Harvey Templeton, its originator, to describe how it functions, temporary repair methods, and the progress he is making in its improvement.

Mr. Harvey Templeton, Winchester, Tennessee presented his paper entitled: "The Electronic Leaf." (Applause)

THE ELECTRONIC LEAF

HARVEY M. TEMPLETON
Phytotector, Winchester, Tennessee

From the reports that I received this summer, those of you who tried it were pretty disappointed and discouraged with the Electronic Leaf control. I sympathized with you, for I was experiencing the same difficulties myself.

Although we developed the "Leaf" and had an experimental model working in the early Fall of 1953, we didn't have the nerve to depend on it for our 1954 production. So it was in March, of this year before we began to use it on our main production.

We immediately ran into difficulties. At first we had the wires between the "Leaf" and the control box too long, and the control acted in a very erratic manner. A little experimentation proved that the trouble was due to the capacity effect between the two long wires. By using a very short connection, that trouble was permantly cured.

By spring we were using 4 or 5 separate Electronic circuits with 3 or 4 beds on each circuit, attempting to provide a variety of mist conditions, including a hardening-off circuit. We were occasionally running two Electronic Leaves in parallel on the same circuit so that either one saftied the other and either would automatically take over correct control if the other failed.

We finally concluded that we weren't going to succeed until we knew exactly what each Electronic Leaf was actually doing throughout the day and the night.

Confronted with the problem of a 24-hour a day vigilance we built three recording devices, using time switch mechanisms, bailing wire,