

MIST PROPAGATION — RECORDING OF EXPERIMENTAL RESULTS

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Many members will know that for some time I have been compiling a book on "Mist Propagation". A task of this kind is beyond the capacity of one individual, so an author has to turn for help to so many persons that he becomes merely a kind of editor.

My publisher, being an amateur gardener himself, has pressed for the inclusion of lists of species and varieties, with best dates, percentages rooting, etc., but I have resisted this. There is much published data of this kind which I could have drawn on but, in general, it is so conflicting and inconsistent that no really useful purpose would be served, other than broad conclusions that certain varieties are "easy", certain "medium" and certain "difficult to impossible".

To be scientific an experiment needs to be carried out under conditions so well known that it can be repeated elsewhere, later, by another operator with identical results. But where, in all the welter of recorded results of mist propagation experiments, can there be found data which any of us would undertake to repeat with confidence in the results?

In my book I have therefore put forward a case for the documenting of all experimental work on mist propagation in a very much fuller way in the future. I suggest the use of a standardised record sheet to facilitate this work. A good deal of work will need to be done by someone before my "standardised presentation" is ready for use, but as a start — a kind of Aunt Sally — I suggest the following as the minimum requirements. Information shall be in quantitative terms rather than qualitative. Terms shall be as precise as possible, avoiding unsupported words such as soft, large, coarse etc. Obviously any unusual circumstances surrounding the experimental work shall be recorded.

The data is divided into main heads as follows: —

1. *The mother plant*

Here we require the authentic cultivar name (any uncertainty on this point or the presence of disease is of course fatal); the size and (most important) age of the plant; its cultural and nutritional state and any special treatment (e.g., feeding, hard pruning or stooling) recently applied to it.

2. *The cutting itself*

We need of course the size, number and description of the cuttings, and the date of taking with a note of the time of day and the prevailing weather; the place of origin (i.e. relative to the mother plant) and the physiological condition. On this last vital matter no absolute standards of general application are possible. General terms are of very little value, but the factors that influ-

ence a skilled propagator's choice of one cutting and the rejection of another can *always* be reduced to more or less precise phrases of the kind "terminal bud just visible" — "stem turning brown at base" — "stem snaps before crushing at middle of cutting". Where "internal evidence" is lacking "external evidence" i.e. the stage of development reached by some other plant may be of value in defining the condition of the cutting wood.

. *Pre-treatment*

We need to record details of any wounding treatment and of any hormone or other dip given to the cutting (quoting method used, formulation, strength, freshness, etc.); the depth of insertion in the medium and degree of firming.

. *The medium*

The physical properties of the ingredients used will be required and the mixture used (and how ingredients measured and how mixed). In experiments of long duration (or where change is evident) the changes in physical properties during the experiment. The record must state whether containers or "in bed" system was used; the pH (recorded *weekly*) and what method for the measurement and/or control of the moisture content was used.

. *The water*

We need to record the total hardness, expressed as CaCO_3 in ppm, and the pH. As many members will already know, I personally regard this factor as one of the most, if not *the* most, important environmental factor affecting mist propagation of cuttings. If the water is dosed or treated give the details, with resulting pH. Where an impotable water (i.e. one not of drinking quality) is used an analysis should be obtained and any abnormality included in the record.

. *The environment*

Here we require the soil temperature (including measurements of diurnal or other fluctuation); the significant reading being that at the base of the cutting, not that at the thermostat. We also require the average ambient (air) temperature by (a) day and (b) night with particulars of extreme temperatures recorded and a description of the degree of control exercised. We need a record of the CO_2 content of the atmosphere; details of the misting apparatus (spacing height and description of nozzles with water pressure and discharge rates) and particulars of daylight (expressed as a percentage of full day light) and full details of any artificial lighting.

. *Recording of results*

Records of numbers rooted must *always* be related to the period of rooting; "rooting" here being defined as a simple separation into what a commercial grower would

bother with and what he would chuck out in the case of this particular cultivar.

If each "number rooted" figure be expressed as a percentage of the total number originally taken, and the corresponding date be expressed as the period from when the cuttings were taken, the former figure divided by the latter will give a series of indices which reduce the complicated number/time concept to its simplest form.

The question has probably arisen in many minds, whilst I have been talking, "What is all this going to cost?"

The answer is "Nothing at all, if I get my way". I visualise a central body of some kind (if possible I want a world-wide one — since as some of you know, I do nothing by halves) to co-ordinate research on mist propagation throughout the world. As well as licking my proposed "Standardised Presentation" into shape this body would be able to say to Mr. Martyr here, "You do so-and-so at Pershore" and to Mr. Macdonald "You do such-and-such at G.C.R.I., and make similar allocations of responsibility to our friends at Boskoop, Tokyo, Arnold Arboretum, Cornell University etc. In this way the present duplication, *ad nauseam*, of cost and effort would be saved, and instead of the present flow of more or less useless data from the printing presses everywhere there would soon begin to build up a bank of reliable, standardised, complete and therefore usable information. Every effort then would be of immediate and cumulative value, thereby cutting out the present waste or duplicated and abortive effort.

A centralised study of the universally applicable standardised records of research resulting from this procedure would soon point the direction for further research, again saving cost, and my fond dream is that the results of my suggestions will be — at least it could be — such a building up of our actual knowledge of mist propagation of plants that even the humblest of us propagators will soon have no need to rely on the "good luck" in which even such an eminent propagator as Mr. James Wells confessed to putting some reliance, when he visited us at Syon House.

Whether, by giving this paper, I shall have stimulated extra sales of my forthcoming book, or have lost many potential buyers of it, is an interesting question which time alone will resolve.

YEAR-ROUND CHRYSANTHEMUM PRODUCTION

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Year round Chrysanthemum growers produce flowers each week of the year by growing to a previously agreed written programme. This programme sets out the details as to when