

lar procedures were considered essential to success, and successful we were, to a degree.

But the ease and relative simplicity with which we now propagate vast quantities of plant material under a mist system, or by the Phytotektor method, or perhaps using the Burlap Cloud, makes us realize that we have both simplified our systems and adopted new ideas and techniques which have immeasurably increased our efficiency. This increased efficiency has been due, in no small measure, to an increased understanding of how plants work. We have examined most of the internal and external factors which affect the development of the plant material and have determined, with some degree of accuracy, the optimum conditions for reproduction.

This Panel has been assembled with the thought of considering the four facets which can combine to achieve first class production. We hope to show how these facets react, one with the other, and properly combined, produce a substantial propagating force which can enable us to root, from cuttings, many plants which might previously have been considered difficult.

We have somewhat arbitrarily limited our speakers to five minutes in the hope that they will reduce their comments to pithy and pungent sentences which will arouse your interest and perhaps your disagreement. We want to leave plenty of time for you to exercise your prerogative to speak.

Our first speaker will be Merton L. Congdon.

TIMING AND ITS RELATION TO CUTTING SELECTION

MERTON CONGDON

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I feel most fortunate in having the subject of "Timing" assigned to me because I believe in the past I have devoted as much to timing as to any other problem in propagation. Certainly, we have led off this discussion with the proper topic. If we do not select our cuttings at the right time there is not much point in continuing the discussion because we are not going to have any cuttings to discuss, at least in the more difficult subjects. In the easier subjects we are going to be laboring under unnecessary difficulties.

I should tell you that my experience is limited mostly to a wide range of deciduous shrubs and a few of the easy broadleaves. Also, it is entirely to outside bed work either with conventional sash or intermittent mist. So you see when this discussion turns to such items as Evergreens, Rhododendrons and Azaleas or to elaborate glass-house installation, I am entirely out of my realm. My observations, however, are that a lot of effort has been put into elaborate installations to try to bend the ways of nature to the will of the propagator when in many cases, a more desirable result may be obtained in working more closely *with*

nature in a more natural setting. To digress for a moment more, I must say that in recent travels I have made in the United States and Canada, I see too few propagators working on a commercial scale that are really dedicated to their work. I would not want to suggest that a successful propagator should devote so much time to his work as to constitute drudgery — he should be able to assign out a good portion of the duties. However, the attention to detail, the periodic inspection, the study of environment are all being slighted by too many so-called propagators.

Now back to the subject at hand, "Timing". Anyone who has tried rooting French Lilac from softwoods soon learns that this is one of the first groups to select if you are working under outdoor conditions. In our latitude each day further into June only multiplies our problems in rooting *Syringa*. Taken late in May they not only may be rooted, but they may be taken to the field later in the summer and become very well established.

In western New York we are blessed with a long period of mild weather in the Fall and the first killing frost is generally not experienced until late October. For that reason a whole range of material is rooted and taken to the field without potting. We must, however, draw a deadline of about August 10th for transplanting to the field in order for the stock to become well established. To transplant too late will only lead to susceptibility to winter injury or to heaving out due to alternate freezing and thawing. It only follows then that these cuttings must be selected in early June in order for them to become well enough established to stand field conditions within eight or nine weeks. Timing then is the answer to a successful chain of procedure that often produces material in salable sizes in only a year and a half of field growing.

Poor timing often produces odd results. *Kolkwitzia amabilis* is one of the old time shrubs that no longer should be grown from seed as there has been at least one selection made that is a worthwhile improvement. Take *Kolkwitzia* any time after Mid-June and all you will get is a callous as large as a marble on those little, slender cuttings. Taken in late May or early June and they will root normally.

While I have mentioned a couple items that are rather inflexible in their requirements as to when they should be taken, I should also mention that the advent of intermittent mist propagation has allowed a great flexibility in timing with many varieties in comparison to the comparatively tight schedule required in cold frame or greenhouse methods.

Most experienced propagators use little aids to help them in their timing. They know that the calendar is not the answer because weather conditions vary greatly between seasons and it is the condition of the wood that matters and not the date. Anyone rooting the whole range of *Spiraea* should know that they should be taken when wild blackberries are in bloom. This is an old propagators' trick and I have never seen it fail. Of

course, the test of having the cutting bend neatly between the fingers — neither snapping because of being too immature nor breaking because of being too mature — is so fundamental that it should need no further discussion here. Time and again we read in the old propagators manuals the term, “firming at the base.”

While I assume that this group is mainly interested in soft-wood cuttings, I have devoted most of my time to this subject. However, if we were to consider timing as it applies to hardwood cuttings we would open up another whole range of discussion. One brief comment, however, concerning hardwoods — it is generally better to time the gathering as early in the Fall as the wood is mature, rather than to wait until the rigors of winter have had their effects. Certainly, in practically all cases, wood should be gathered before sap flow begins in the Spring.

To sum up, I wish to emphasize that one should devote a great deal of time to the study of “Timing” as it effects the potential success of propagation, no matter what subject he is working. Correct timing eases the task and produces better results.

MODERATOR JIM WELLS: Timing is one of the few procedures which we carry out in which the real skill of the propagator is called into full force. I would like to call next Mr. Dick Fillmore who will discuss the position of the cutting on the plant.

POSITION IN CUTTING SELECTION

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The position of the cutting in relation to the entire plant is always a consideration in the successful rooting of cuttings. This position may not only affect their potential ability to root but also the configuration and stature of the resulting plants.

Terminal tip cuttings are necessary for the development of properly shaped plants of certain clones of *Taxus spp.* In other instances, such as *Thuja spp.*, where apical dominance is apparently equally pronounced, normally shaped plants may arise regardless of the position from which cuttings are taken and cuttings from all positions may root with equal ease.

Success in rooting *Ulmus carpinifolia* cult. “Christine Buisman” is apparently almost absolutely dependent on the position from which the cuttings are taken.

If root cuttings are made in spring at almost the time when Norway maple blooms in the same area, they will form both roots and shoots concurrently. There will generally be several