

TECHNICAL SESSIONS

Tuesday Morning, December 6, 1983

The thirty-third annual meeting of the Eastern Region of the International Plant Propagators' Society convened at 8:15 a.m. in the Constellation Ballrooms of the Hyatt-Regency Hotel, Inner-Harbor, Baltimore, Maryland.

PRESIDENT SHADOW: I would like to welcome everyone to the 33rd annual meeting of the Eastern Region of IPPS. We have a very informative program and I hope everyone has a very good stay. We have a distinguished guest with us today. He is president of the IPPS International Board, Charlie Parkerson. I would also like to welcome members of the Southern and Western Regions who are here. I will next introduce our program chairman, Leonard Stoltz.

LEONARD STOLTZ: I would just like to point out to you that this program is not put together by one person. The program chairperson needs your help. The help you give is very appreciated. I mention this to you for the future program chairpersons to come. I will now turn the program over to Kathleen Freeland who will moderate the first session.

WHAT IPPS HAS MEANT TO THE NURSERY INDUSTRY

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How does the International Plant Propagators' Society relate to the American Association of Nurserymen (AAN)? For one thing, IPPS is an international association while AAN is a U.S. body with a close affiliation with Canada. AAN is an association of nursery firms while membership in IPPS is composed of individuals from the commercial field as well as from academia.

AAN, in addition, has broad concerns with business, management, government relations, nursery stock standards, marketing, public relations and educational services. AAN administers such allied groups as the Garden Centers of America, Horticultural Research Institute (HRI), National Association of Plant Patent Owners, the National Landscape Association, and the Wholesale Growers of America.

AAN, while obviously vitally dependent upon research and progress in plant propagation and culture, is structured to stimulate and encourage such progress rather than to directly

engage in such study and research. For example, the seed money provided through the Horticultural Research Institute is paying handsome dividends in providing needed technical information to the nursery industry. It can be said without reservation that members of the AAN look upon IPPS as a vital well-spring of data and information on better plant culture.

I might point out that state and regional nursery associations have much the same interests and emphasis. The power-house nursery trade shows are wholly devoted to marketing, not growing.

WHAT IS PLANT PROPAGATION?

The narrow interpretation entails putting roots on a cutting, budding and grafting, micropropagation, producing a seedling, or otherwise birthing a plant. But my enlarged Webster's Dictionary is not so restrictive. It defines *propagate* as "to cause a plant or animal to multiply by process of natural reproduction from parent stock; to reproduce itself as a plant or animal does; to transmit hereditary features or elements to, or through, offspring; to cause to increase in number or amount; to multiply by any process of natural reproduction." I see nothing in these definitions that would restrict the term to the initiation of the plant.

Indeed, a review of IPPS Proceedings in later years finds many discussions pertaining to a broad range of production topics beyond the birth of the plant. This seems entirely logical and proper. There is no other forum so uniquely qualified to study and share plant culture information.

IPPS AND THE SUPPLY-DEMAND SITUATION

Certainly our Society has facilitated the production of a broad spectrum of plant species, types, cultivars, and clones. This is sort of a good-news bad-news situation. Our gardens, landscapes, orchards, vineyards and other areas of horticulture have reaped the reward from the experiments, observations, studies and reports of our members. The nursery industry, at this time in history, can be forgiven for having mixed feelings as to this facilitation of plant production.

I recall, a number of years ago, when a rather elaborate prank was concocted by some of our more exuberant members. Leslie Hancock, rest his soul, had been repeatedly describing with glowing enthusiasm his burlap cloud method for rooting softwood cuttings. It was to Leslie, and others caught up in the fervor, a limitless means of mass producing a broad range of woody plants. Our pranksters drafted a fake telegram

from AAN headquarters urging immediate cessation of Hancock's process lest the country be flooded with surplus stock.

Today the joke wouldn't be quite so funny. From tropicals to *Taxus* there is today scarcely a category of plants not in overproduction, or under-consumption, if you will. The resulting shake-up in the nursery industry has been and continues to be profound. We see jarring examples of old, established firms going bankrupt, or seeking refuge in Chapter 11. Many more are simply fading from the picture. We see consolidation with major corporations taking over sizeable chunks of the industry while struggling for profitability as they do.

But examine this supply-demand situation. It isn't knowledge of propagation that has caused over-production. It has been investment decisions. From the smallest grower to major corporations, production of nursery crops had been generally profitable for most of the post-World War II period. Consumption of these products had been increasing. Growing of nursery stock has been an attractive enterprise. Few had the foresight to trim sales as the economic downturn coincided with the cornucopia of supply that hit the market.

IPPS AND CHALLENGES AHEAD

I don't pretend to have any kind of a crystal ball to foretell the future of our industry. But I am optimistic that the prudent operator, the good planner, and the capable manager can look down the road with confidence. I am placing my money where my mouth is and encouraging those at our nursery to proceed with a propagation program that will gradually increase our volume. I expect they will kick me out before many of the plants we are now starting reach market size. But a significant production nursery is seldom a one-generation affair.

I think the challenges we as a Society have today are to encourage *quality* rather than *quantity* and to foster good husbandry of resources rather than exploitive production. Indeed, I think that is the track we are on.

Here are a few examples of challenges we, as propagators or plant scientists, face to improve the quality of our product or our production practices.

In the fruit field virtually every type and cultivar needs a virus clean-up. The improvement in quality and productivity of plant and fruit is then often amazing. Quarantine regulations will almost force virus-free certification in the future. At our nursery we expect to have all grapevine production virus-indexed within a year and now our fruit tree understocks are grown from certified virus-free seed produced by us.

A propagation revolution is proceeding apace with shade and ornamental trees. Many of the foremost growers express the view that the classic methods of budding on seedlings will generally be replaced by clones on their own roots. This would immediately overcome the scion-stock incompatibility problem and will, at the same time, present a new set of as yet unanswered problems. Will own root trees possess a root-system resistant to wind-throw? Will they be as hardy as the replaced seedling stock? Will they have other satisfactory characteristics? William Flemer's classic article on the subject in the 1982 *Proceedings* (Vol. 32) reviews the situation in depth.

The need for improved timber types has long been recognized by foresters, and decades of work have been performed on selection, breeding, and propagation of superior types. Yet I think workers in this field would agree that the surface has little more than been scratched. As our timber resources continue to be depleted, greater emphasis on improved forest tree types and their propagation will be accentuated.

Even now in timber tree regeneration we often do not exercise simple methods that have been established as superior. For example, in our state of Missouri, the state nursery churns out hundreds of thousands of black walnut seedlings for planting by landowners. Yet it has been repeatedly demonstrated that black walnut trees regenerated by direct seeding grow-off much better than seedlings, which suffer a severe growth setback due to unavoidable stubbed-back roots.

Despite the voluminous work done with tissue culture, the early prospect that much or most woody plant propagation would be performed by micropropagation has not been realized. Obviously, we have a ways to go here.

Property owners in highly populated USDA Hardiness Zones 5 and 6 desire to have some of the broadleaf evergreens enjoyed by their more southern cousins. Time and again certain candidates have looked promising only to be blasted by a winter like that of 1981-82. Continued selection and testing is needed.

Another problem and challenge before us as propagators is to grow a tree in a container without developing a ruinous root circle or potbound condition. This problem is definitely more critical with deciduous trees than with usual conifers, broad-leaved evergreens, ericaceous plants, shrubs and the like.

BRINGING HOME NEW TECHNIQUES

One of the great benefits of IPPS to the nursery industry is the opportunity to visit and inspect operations of other growers across the country and around the world. This picking of

brains and sharing of ideas is invaluable in keeping abreast of new developments and techniques. By way of illustration may I mention some practices we have brought home to our nursery.

There is nothing new about windbreaks and, indeed, we have been planting them for years. But when our Wayne Lovelace was so impressed with windbreak protection after inspecting nurseries in England and Scotland during the recent IPPS G.B.&I. meeting in Aberdeen, he has been installing windbreaks all over our place.

As many who have visited our nursery know, we have long used mulch culture rather than clean tillage. This involves the use of hundreds of truckloads of bark-sawdust mixture annually. With our hilly, highly erodable soils and climate characterized by frequent, intense thunderstorms a clean-tilled culture would be disastrous.

Even with our mulch culture and green manure rotation crops following each nursery crop, soil erosion is still a problem in such heavy rainfall periods as last winter and spring. Accordingly we are now testing companion grass crops with our tree and shrub seedlings — a concept made feasible by post-emergent herbicide techniques pioneered by other propagators. Most of our woody plant seed is sown in summer or fall for germination the following spring. We are now seeding such grass plants as oats or annual rye grass over the beds and in the paths between the raised beds as our tree and shrub seeds are sown.

Normally, oats will be killed when there is no snow cover and the temperature falls to 0°F. Annual rye grass and similar grasses will live through the winter. We anticipate no problem in taking out the grasses before our crop seeds germinate with either Roundup or Paraquat or with grass herbicides, such as Poast or Fusilade.

We have observed another benefit of a companion herbaceous growth prior to crop seed germination. A sawdust mulch tends to cake and crust due to fungal mycelium knitting the sawdust particles together. This crusting is difficult to break up and can be very deleterious to seedling emergence. The dead and decaying tops and roots of the companion crop appear to alleviate this problem.

Because of the increasing scarcity and skyrocketing cost of bark we have taken a leaf from the vegetable and strawberry growers visited on IPPS trips and have been testing plastic mulches for seedbeds and especially, transplant beds. The new photodegradable plastics, pioneered by Israel, look especially

promising. These deteriorate after specified periods, opening the beds to rainfall or irrigation and leave no mess to clean up. This year chrysanthemum plants planted through plastic were superior in color and growth to those grown with our standard mulch.

Yes, IPPS has indeed had a profound effect in improving nursery practices. But even greater challenges lie ahead.

PROPAGATION BY SOFTWOOD CUTTINGS FROM ROOT PIECES TO REINTRODUCE JUVENILITY IN A NEW DWARF ROOTSTOCK (OTTAWA 3)

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Abstract. Softwood cuttings of the dwarf apple rootstock *Malus* 'Ottawa 3' were successfully rooted using material obtained from shoots grown from root pieces of plants which were in an adult (fruiting) state. The data showed that the reversion of the material to a juvenile condition was directly related to the changes brought about in the root piece process. Rooting percentages were increased by using 0.8% IBA, wounding of the cutting bases, and using terminal cuttings.

INTRODUCTION

The use of size-controlling rootstocks in the apple industry has had a profound impact on the productivity of modern orchards. The Malling series of dwarf and semi-dwarf rootstocks has been the most important and readily available. However, in the province of New Brunswick, Canada, and in similar regions on the northerly limits of commercial apple production, problems with winter hardiness have hampered efforts to introduce these rootstocks. Complete or partial winterkill has kept production levels far below those which were initially expected, and the search for comparable but hardier dwarfing rootstocks has intensified.

One rootstock, introduced by Agriculture Canada, which seems to offer promise is 'Ottawa 3', a cross between Malling 9 and the hardy, semi-dwarf 'Robin' crabapple. Trees budded to 'Ottawa 3' will have an ultimate height of approximately 3 m, be exceptionally precocious and very productive (1). Semi-dwarf trees can be produced by using 'Ottawa 3' as an interstem between the desired cultivar and a hardy, well-anchored rootstock. The height of the tree can be adjusted by the length of the interstem piece (2).