

THE INTERNATIONAL DWARF FRUIT TREE ASSOCIATION -
ITS LEGACY FOR THE FUTURE

Paul Larsen
Tree Fruit Research Center
Washington State University
Wenatchee, Washington 98801

It is a genuine honor to be invited to present this first Ray Klackle Memorial Lecture, in honor of the man who was the able and distinguished second president of the International Dwarf Fruit Tree Association. I accepted gratefully, but with much humility, because I well recognize the importance of the occasion. My sincere thanks to Mrs. Klackle for commemorating her husband by providing the Dwarf Fruit Tree Association with such an appropriate endowment, and to the officers for providing me with the signal opportunity of this first presentation in his honor.

The purpose of this discussion is not to eulogize Ray Klackle. But I cannot help but make a few comments about him. Ray was a remarkable man, and many of you knew him in varying capacities. When I came to Michigan, more than a quarter of a century ago, Ray was extension horticulturist in Indiana. His influence and knowledge were widely felt and appreciated throughout the Midwest. I first met him at his Belding Orchard, which was managed by his kid brother, Frank. From that day forward, I considered both of them good friends and teachers. After a few years, Ray joined the Indian Summer apple juice company. And, of course, from that base of operations, he was influential in many capacities, including the Dwarf Fruit Tree Association. Ray left a great legacy for his family, for the fruit industry in general, and for this International Dwarf Fruit Tree Association. It is in the spirit of Ray Klackle that I hope to present here, tonight, some interesting aspects of our past, with perhaps a thought or two on this association's legacy to the future.

Looking Back

Exactly twenty-three years ago, today, on March 5, 1958, over two hundred enthusiastic fruit growers met in an empty fruit storage room at Hilltop Orchards in Hartford, Michigan. To my knowledge, this was the first extension meeting for the exclusive purpose of discussing dwarf fruit trees and their management.

I well remember that first meeting, not only because of personal involvement, but more so because the seeds of success of the International Dwarf Fruit Tree Association were sown there.

Let's go back, for a few moments, to that period of time, and look at a few of the motivating forces and people behind the dwarf fruit tree movement.

During the 1950's, the apple industries of Michigan and other states were in the infancy of change from big trees to smaller trees. Remember that this was the first decade following World War II, and, before that, the Great Depression of the 1930's. Because of the Depression, lack of capital, and war, most of our American apple orchards had old trees and had been developed under a type of pioneering technology.

In the 1950's, new science, new technologies, and new trees started to take over. Many factors precipitated this gradual evolution. For one, increasing labor costs and decreasing availability of skilled orchard workers were making it more costly and difficult to prune, pick, and manage the enormous trees then predominating in most orchards. Secondly, those kinds of trees simply were not adapted to new machines and new technology, including air blast sprayers, concentrated pesticide mixtures, and so on.

Rising land costs, taxes, insurance, interest, and other overhead items were making a tough squeeze on the orchardist who was planting 27 (40 x 40) or 48 (30 x 30) trees per acre and then waiting fifteen years for them to reach the first paying crop. Many schemes were tried to reduce tree size and make them more adaptable to modern methods. Orchards were interplanted to get more trees per acre, in order to shorten the time from planting to reasonable production per acre. But none of the approaches by themselves were satisfactory.

Fortunately for this industry, there were people among us who were seeking better solutions, and biological materials were becoming available to assist in this search. It would be needlessly redundant to go back over the history of the clonal development of dwarfing apple stocks because their emergence in Europe, and particularly at East Malling, England, is illustrious and well documented. But a brief reference to some of the landmark developments in the United States is appropriate in this discussion.

One important segment in history was in the 1920's, when H. B. Tukey, Sr., brought to Geneva, New York, a full complement of Malling stocks. From Geneva, the Malling series was disseminated to experiment stations, nurseries, and prominent growers all over America, where they were tested under multiple climatic conditions. Between 1938 and 1945, the Geneva station distributed over 150,000 dwarfed rootstocks and trees to 239 individuals and experiment stations in 36 states and Canada. The Tukey enthusiasm and interest in such stocks was gradually absorbed by researchers, nurserymen, and orchardists.

In 1945, Dr. Tukey came to East Lansing as head of the Department of Horticulture at Michigan State University. He not only brought with him an unabated interest in apple rootstocks, but he brought along a young man to do the work, namely, Robert Carlson. Additional research plantings were established at East Lansing and in other Michigan locations. Tukey students, including Wally Heuser, became interested, even enthused, about the future of dwarfing apple stocks for commercial orchards. The Heuser family (Hilltop Orchards) was among the first to establish commercial-sized orchards on Malling stocks. This point brings me back to that first meeting on March 5, 1958.

How the IDFTA Came About

In 1955 or 1956, Wally Heuser planted a fairly large block of Red Delicious, Jonathan, and Golden Delicious on EM 7. Jerry Mandigo, extension district horticulture agent for southwestern Michigan, was working with Wally on tree training. I was involved in some of the training demonstrations during the early development years. In January, 1958, Jerry suggested that the 1958 pruning demonstrations should be expanded to an all day meeting on dwarf tree management, and that H. B. Tukey should be the featured speaker. This was a first for such a narrow topic, but we hoped that seventy to one hundred Michigan growers might

be interested. The Heusers volunteered the use of their storage and packing room for the meeting. Tree training demonstrations were to be held in the orchard following the general meeting.

Needless to say, we were all astounded to arrive at Hilltop on that morning of March 5, and find the place packed, not only with Michigan fruit growers, but from several other states. The morning program was filled with vital and interesting information for the growers. We ate a barbecue lunch, sitting on apple boxes with four or five people gathered in little clusters. I was in a small group with Dr. Tukey. During lunch, he tossed out to the luncheon group a trial balloon, suggesting the immediate establishment of a dwarf fruit tree association. As I recall, our response was that of cautious approval. He further suggested that Bob Carlson (then on an assignment in Okinawa for Michigan State University) should be secretary; and Wally Heuser, president. After lunch, Dr. Tukey recommended this to the assembled audience, and, at that point, this association was officially and unanimously adopted.

I cite these rather detailed points for two purposes. One is for the historical record. Dates, events, and places frequently become lost or changed as time goes by. For example, Dr. Tukey's magnificent book, "Dwarf Fruit Trees", lists March 4, 1958, as the organization date for the Dwarf Fruit Tree Association. My original travel diary, which was a required record for all of us extension types, had March 5 as that date. In fact, there was another meeting in another county on March 4.

A Vital Organization

But the date of organization is not important; what happened after, is. The International Dwarf Fruit Tree Association is a productive, vital, and growing organization, even after 23 years, because of the unique combination of events, people, and programs. The time was ripe for commercial adoption of clonal dwarfing rootstocks. As the American apple industry became more sophisticated, complicated, and specialized, it was only natural for compact, specialized trees to come into prominence. As Dr. Tukey used to say, this was a further example of nature giving way to science.

The time was ripe for dwarf fruit trees, and the people were there to show growers how to use them: Jerry Mandigo, who changed a simple pruning demonstration into an educational experience on dwarf fruit tree management; the Heuser family, who furnished orchard facilities and substantial leadership; H. B. Tukey, with the wisdom to see the future and the initiative to push a sound idea, the enthusiasm, desires, and support of fruit growers for a new organization; and finally, the diligence, dedication, perhaps even audacity, of that first and only secretary, Robert Carlson. He has sustained and led this organization from the day he arrived back in East Lansing nearly 23 years ago. This association was not only fortunate in having the superb services of Dr. Carlson, but he was fortunate in working for a university that permitted such service. In fact, one of his great supporters in this service, the late John Carew, once said that "this Association's activities exemplify the finest in extension programs."

But in contrast to many organizations, Bob Carlson was not left by himself to run the new dwarf fruit tree association and to make all decisions concerning

programs, tours, and publications. This was primarily a growers' organization with strong grower support and splendid service by the directors and officers. Time and space do not permit adequate recognition of any, or even mention of most, but the first two presidents set a high standard which has prevailed over the years. Wally Heuser, the first president of this association, and Ray Klackle, the second, provided leadership and good judgement, and propelled the association to uncommon achievement and tremendous educational experience.

An International Dimension

The original Dwarf Fruit Tree Association might have declined into the oblivion of many other spontaneously formed committees and organizations if it had restricted itself too much from a geographic standpoint or narrowed its subject matter to focus on apple rootstocks alone. Instead, it wisely recognized that interest in compact fruit tree management is not restricted by state or international boundaries. The Association's first overseas tour came in 1964. This was followed by others in 1968, 1971, and so on. These tours attracted foreign members whose participation in the annual meetings provided a substantial international flavor to the Association. So it became the International Dwarf Fruit Tree Association. And, even though the name sounds restrictive, its programs were neither totally dwarf nor totally rootstock oriented.

All Management Phases Important

All management phases affecting tree growth, development, and fruiting were a part of the programs and tours. This factor was particularly important because many people were not differentiating as to the types of management changes required with the planting of dwarfing-type trees. Some simply could not realize that dwarf or semi-dwarf apple trees planted at densities of four to five times greater than those to which growers were accustomed needed a different kind of care than did the old "forever spreading" types. Many dwarf-type orchards failed as a result of management failure. But the rootstocks, rather than the management, got the blame. For example, shortly after going to Wenatchee, a good fieldman took me to an orchard to show what a failure dwarf trees were. He showed me some Delicious on Malling 7, planted between some old producing trees and growing in quack grass a foot high. Considering the shade of the old trees and the quack grass cover, it was a wonder the trees were growing at all. And, as you might expect, the rootstock, Malling 7, got the blame for poor growth.

The Magnificent Tours

As indicated previously, another important aspect of the International Dwarf Fruit Tree Association has been the tours. Most of these were magnificent excursions. I was fortunate to attend two or three in the Midwest and have participated in your pilgrimages to the state of Washington since moving there in 1968. Unfortunately, it has never been my good fortune to travel on any of your international tours. These experiences have made you, the participating members of the International Dwarf Fruit Tree Association, among the most enlightened fruit growers on this globe. This is a fact that will have increasing importance as time goes on.

Supporting Research

All of the programs of this association have been of untold benefit to good orchard management in this land and others. If you stop to think for a moment, orchard culture and productivity have made enormous strides during the past twenty-plus years of this association's existence. In recent years, you have embarked on a program of research support. For this, you should be proud and highly commended.

In speaking of research support, I would pay high tribute to another of your past presidents, Albert Ten Eyck of Brodhead, Wisconsin. It was Mr. Ten Eyck who initiated and spearheaded the research support program. He has played a very significant role in the IDFTA for all these many years.

Two Decades of Progress

The successful use of dwarf or compact trees has come a long way in these past 23 years. A high percentage of all apples planted in the decades of the 1960's and the 1970's were size-controlled in one way or another. Malling 7, Malling-Merton 106, and 111 were used predominantly for standard strains, while seedling has still remained popular for spur-type Delicious, particularly in Washington. Malling 26 had limited use until the recent surge of popularity of Granny Smith, which has stimulated substantial use of M. 26 for this particular variety. Row and tree spacings quickly moved from 20 x 20 feet to 10 x 20 feet, and even to 8 x 16 feet, sometimes even for fairly vigorous varieties on such stocks as M. 7 or MM 106. Many of these orchards did not have adequate or consistent tree training. Vigorous growth and multiple upright leaders, combined with the close tree spacing, resulted in crowding, shading, and poor cropping.

Out of these experiences has come a new generation of orchard managers. They are learning that the scion variety, the rootstock, the soil, the fertilizer program, tree spacing, and tree training must all be considered together if compact trees and high density orchards are to be successful. A new generation of horticulture teachers has added to our growers' abilities to develop and manage these new types of orchards. For example, Don Heinicke has had more impact on proper tree spreading than any other person.

Problems Unsolved

Even though our knowledge and utilization of the compact fruit tree has reached a substantial degree of maturity, there are still many problems to overcome. For example, collar rot with such stocks as MM 106 and 104 is still a serious problem in many areas where soils are less than perfectly drained. Vigorous scion varieties, combined with such stocks as MM 106 result in larger trees than anticipated. It is to be hoped that new rootstocks, perhaps some in the MAC series, may be the solution to some of these problems. In the meantime, it is important that we all recognize that compact trees planted close together require a special type of care and management. Placing a large number of trees in a limited space imposes a complex set of requirements and care if each is to have a fair share of space and be able to produce to its maximum. It is sort of like urban living versus living in the wide open spaces; people problems are more intense in Detroit than in Traverse City, and even more intense in Traverse City than in Acme or Elk Rapids.

An Uncertain Future

What about the future? Most of you have already determined your orchard future and the trees are in the ground that will deliver much of your bread and butter for the next twenty years or so. Each of you will improve what you have and, as time goes by, you will adopt new varieties, improved rootstocks, and better management systems. In my judgement, semi-dwarf trees, planted at densities of 200 to 300 trees per acre, will continue to dominate; central leader training is here to stay and will become more important in these types of plantings. Even in Europe, I would imagine that labor-intensive systems with trellising and pruning will decline as labor costs increase.

As everyone knows, we badly need improved cold hardiness and disease resistance in all our rootstocks--apple, pear, and stone fruits. Perhaps some useful germ plasm might come out of China, which has such a wide range of climate and such an enormous diversity of horticultural plant species. From foreign sources or breeding programs closer to home, we look forward enthusiastically to that time when there will be a selection of stone fruit rootstocks with varying dwarfing characteristics. These developments will come, but only by careful, consistent, and superbly organized effort on the part of many people and organizations.

The Legacy of the IDFTA

This brings me to a final point, in a sense to a partial answer to the title of this discussion: the legacy to the future of the International Dwarf Fruit Tree Association. Legacy means a bequest or an endowment. What will this association's be, or what should it be? H. B. Tukey left us a legacy of wisdom and organization; Bob Carlson has given a legacy of leadership and service, as have many of you, also; Elsie Klackle has provided a marvelous endowment to assist in the educational endeavors of this association. Many of you have provided funds to assist in needed research, and I could go on with other services individual members have provided for the benefit of this organization and for the fruit industry at large.

In closing, I would commend all of these endeavors and hope that they will continue. But I would also make one additional suggestion, that is, if you are truly interested in furthering the science and management abilities of our collective orchard industry. This association has a broad membership from many states and from outside of the United States. You have much influence in your communities and you have considerable political clout. The agriculture and fruit industries of this nation became what they are today because of the combination of our land, the natural resources, scientific and technological advances, and the availability of risk capital, all combined with the daring, sweat, blood, and skills of the American farmer. Most of the science portion of that equation came from our land grant college experiment stations and the USDA counterparts. These organizations, along with extension, have received less and less public support as social programs have become more prominent. You are doing a very noble thing in raising funds for research, but your efforts will come to naught if our traditional research organizations continue to decline. I would urge that you continue doing what you do now because you do it so very well, but in the future, also remember that Jerry Mandigo, H. B. Tukey, Bob Carlson, and Ray Klackle were all public research or extension people. What will your legacy

be if the Tukeys, Carlsons, Klackles, and hundreds more like them, are not available in the next generation because you did not go to bat politically to save the traditional research and extension programs in our state and federal systems?

ROOTSTOCK TRENDS IN BRITISH COLUMBIAN APPLE ORCHARDS

A. W. Watt
British Columbia Ministry of Agriculture and Food
P.O. Box 198
Summerland, B. C. V0H 1Z0

The British Columbia tree fruit area is located mainly in the southern interior valleys of the Okanagan, Similkameen, and Kootenay rivers. The climate of the area is arid semi-desert, and irrigation is required. Winters are relatively mild, but damaging winter freezes occur on an average cycle of seven to ten years.

Approximately 30,000 acres are planted to tree fruits, with about 20,000 acres in apples. Many orchards are small, averaging less than ten acres, but commercial operators have orchards ranging from twenty to thirty acres in size. Total apple production ranges from seven to ten million boxes a year, or about forty percent of the total Canadian crop.

About ninety percent of the apple crop is sold through a single sales agency, B. C. Tree Fruits Ltd., to markets in Canada and the United States, as well as numerous offshore countries.

In British Columbia, orchards are priced extremely high--the going rate being somewhere between \$20,000 to \$23,000 per acre for a fully operational unit with all the necessary equipment.

Faced with high land prices, high interest rates (15% average in 1980), and high labor costs, the B. C. orchardist must do everything possible to maximize returns.

The use of growth controlling rootstocks and medium to high density plantings is an important aid in addressing this problem.

History of Growth Controlling Rootstocks in B. C.

The first planting of dwarfing rootstock in B. C. was made by Dr. R. C. Palmer at the Experimental Farm at Summerland, B. C., in 1925. Before that time, all apple plantings were on seedling roots, with tree spacings of 30 x 30 feet being common. A small block of apples on M. 9, planted in an exposed location at the Experimental Farm in 1938, is still intact and shows little evidence of winter injury, despite severe winters which occurred in 1949-50, 1955, 1964-65, and 1968-69.

Following the lead of several pioneer orchardists, including A. Miller, G. Robinson, L. Van Roehoudt, and Dr. D. V. Fisher (of the Summerland Station),