A Historical Perspective 1958-1991

"Sometimes
we have to
look back
into the past
to look
intelligently
into
the future."

INTERNATIONAL DWARF FRUIT TREE ASSOCIATION

About the Author

Robert F. Carlson was the Executive Secretary (IDFTA) 1958-1986 and Professor Emeritus, Horticulture Department, MSU, East Lansing, Michigan.

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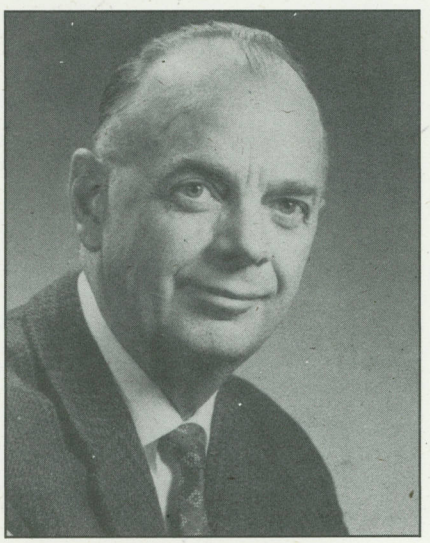


Introduction

Forty years ago, the words "dwarf fruit trees" meant smaller trees for the garden or the back yard. Today these words have specific meaning to commercial fruit growers in North America. "Dwarf" now denotes smaller compact trees planted in orchards of 500 or more trees per acre in contrast to 35 trees per acre of past years. This dramatic change in commercial fruit growing is largely due to the leadership of the Dwarf Fruit Tree Association over the past 36 years.

The original development and early growth of this Association was published in 1973.[2] Therefore, the purpose of this review is to give details of progress made, to mention involvement of people, and to include brief summaries of meetings and orchard tours. Furthermore, a background history will serve current and future members as a viewpoint to the future — where have we been and where next to maintain the Association's involvement in growth controlling rootstocks for efficient fruit culture? An active fruit grower Alan Todd of England, once wrote: "Sometimes we have to look back into the past to look intelligently into the future."

Early Doubts

In 1912 to 1918 when the English Malling rootstock series was classified, some of them were already in tests in the U.S.A. Fruit growers who heard of this series were skeptical of its success. In 1918 a progress report from Geneva N.Y. Research Station entitled, *Dwarf Apples Not Commercially Recommended,* the Doucin (M.2), Paridise (M.9) and seedling rootstocks were compared at three sites for a ten-year period. Their conclusion was that "The station cannot recommend dwarf apple trees for the professional grower."[4]

But the introduction in the 1920s of the interstem tree, the Clark Dwarf, by Stark Bros. Nursery in Missouri did much to stimulate further work with tree growth control. It was another step in developing dwarf trees for the apple industry. The Clark rootstock, actually M.8, was a four-piece tree made of Virginia crab root, Clark four-inch stem piece, hiburnal hardy stem and cultivar. Yet the trees often were bush-like and tended to lean. Many Clark dwarfs were planted in growers' orchards, but not knowing how these trees would perform, a high percentage was soon eliminated because of planting too far apart, lack of pruning and tree training, and from crown suckers and viruses.

Doubts about planting apple trees prevailed among growers for another two to three decades. Comments such as "show me an orchard that is producing more than my big trees and lasting for many years" and "M.9 will never carry a payload." Actually this disbelief was an advantage because more rootstock test plantings were made at the various horticulture research stations, and growers made limited plantings to find out how these small trees behaved on their farms. The wheels were set in motion so that by the 1940s and 1950s, confidence in smaller trees picked up to the point of lively discussions pro and con of the rootstocks that were available and more long-term research reports were published.[3]

Typical Clark dwarf tree of Golden Delicious, planted in 1954, and photographed at Charles Hough orchard, Michigan, in 1958. The cultivar rootstock combination that was the precursor of smaller compact apple trees in the U.S.A.

A Humble Beginning

1959 – Bob Carlson starts the tree training of a 2-year-old tree.

The Dwarf Fruit Tree Association came into existence on March 4, 1958, at a small meeting of fruit growers at Hartford, Michigan. The meeting was called by the late Mr. Jerry Mandigo, District Horticultural Agent, who felt growers and pomologists should get together and discuss the increasing interest in planting dwarf trees in commercial orchards. The meeting was held in an empty apple storage at the Hilltop Orchards operated by the Heuser family.

Nearly 300 persons attended the first meeting. The pros and cons of dwarf fruit trees and rootstock types for commercial orchards were discussed. Before the meeting broke up that day, Dr. H. B. Tukey, Sr. proposed that this become an annual affair with the purpose of keeping fruit growers informed. The attendees went into young orchards at Hilltop and pruned trees where everyone who wanted had a turn to prune and explain the reason for each cut. After the pruning session they returned to the packing shed brainstorming for the future.[5] Dr. Robert Carlson was named secretary to lead the formation and organization of this group. Jerry Mandigo, Paw Paw, and Wallace Heuser, Hartford, also played a major role in starting this Association (D.F.T.A.).

Organization

On December 3, 1958, Secretary Carlson called a meeting of leading fruit growers in Grand Rapids, Michigan, to formalize some ground rules and objectives, and most important, to appoint a president and a board of directors. At this meeting, several persons were named to act for a year as a governing body of the newly formed Dwarf Fruit Tree Association (DFTA). According to the secretary's notes, it was proposed that the objectives of this newly formed association shall be ". . . to promote an understanding of the nature and use of dwarf fruit trees through research, education and dissemination of information," and that membership shall be ". . . open to anyone interested in the furtherance and development of dwarfed fruit trees." Following this meeting the secretary proceeded to obtain papers for the incorporation of the association. The board of directors gave their final approval of these on September 22, 1959.

Growth

Although several states were represented at the early meetings, membership grew steadily to include persons from most fruit growing states and Canada. Overseas countries soon joined in membership and also received the bi-monthly newsletter. The increase in membership led to several name changes as well. Prefixes were changed from the first name (1958) Dwarf Fruit Tree Association to Midwest (1959), followed by The National (1968), and finally to what it is today, The International Dwarf Fruit Tree Association (1974). The Northwest Dwarf Fruit Tree Association, organized by Mr. Bill Luce in 1959, phased out in 1983 and donated all proceeds in the amount of $537.56 to the IDFTA, again enlarging membership.

1960 – The late Jerry Mandigo, County Agent who called the first meeting, is pruning a four-year 'Golden Delicious.' (Note the deep snow.)

Membership dues, levied to fund operation and research activities, grew modestly. The first annual dues in 1959 were $1.00 and in 1989 the board voted in a $50.00 annual member dues. The average annual increase for the 30-year period amounts to a modest $1.66.

Over the years, varied activities of the IDFTA, detailed on the following pages, have promoted growing interest in the association. Membership has steadily increased from about 300 in 1958, to 1,200 in 1991.

IDFTA's Leadership

The IDFTA has carried out well-organized formal and educational meetings dealing with all aspects of the development of efficient and productive orchards. It has been a period of slowly changing from the large trees to the more manageable, efficient smaller fruit trees. *Much of the credit for this goes to the IDFTA presidents and the board of directors for contributing time, work and enthusiasm for success.*

Association Board Members and Year Elected

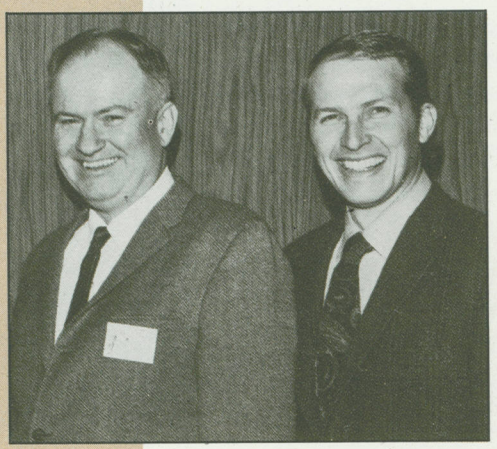
1958	Robert F. Carlson, Michigan Lorne Doud, Indiana Wallace Heuser, Michigan Jerry Mandigo, Michigan H. B. Tukey, Michigan Gordon Yates, Minnesota
1959	Harold Fox, Michigan Frank Green, Michigan Raymond Klackle, Michigan Don Spencer, Michigan George Whaley, Canada
1960	Cornell Eckert, Illinois
1963	Ken McDonald, West Virginia Rufus Prince, Maine
1965	John Bell, Illinois
1966	Richard Mattern, Pennsylvania
1968	Henry Bennett, New York
1969	Everett Lutz, North Carolina
1970	Jerry Sietsema, Michigan
1971	Albert Ten Eyck, Wisconsin
1972	Tom Chudleigh, Canada
1973	Richard Bachman, Ohio
1974	Virginia Ebers, Michigan Donald May, Massachusetts
1975	Joe Garrett, Kentucky Clyde Wilson, Jr., Georgia
1976	Bill Austin, Michigan Paul Rood, Michigan
1977	Robert Edwards, Illinois
1978	Gene Stembridge, Georgia
1979	Hugh Hargrave, Washington Evan Milburn, Maryland
1980	Robert Hodge, Pennsylvania
1981	Jack Pearson, New York
1985	Jack Pheasant, Washington Pierre Philion, Canada Harold Schooley, Canada
1986	Jim Eckert, Illinois Mitchel Lynd, Ohio Tim Mercier, Georgia
1987	Dennis Courtier, Minnesota Walter Krause, California
1988	Darrel Oakes, New York Harold Thome, Michigan
1989	Joe Wentzler, Pennsylvania Art Lister, Michigan
1990	Gary Mount, New Jersey
1991	Bob Petch, Canada Fritz Wafler, New York

The late Ray Klackle prunes another tree. Ray was the second president of the IDFTA.

Board Members, IDFTA, 1974, L to R, standing: Lorne Doud, Indiana; John Bell, Jr., Illinois; George Whaley, Canada; Henry Bennett, New York; Jerry Sietsema, Michigan; Albert Ten Eyck, Wisconsin, and Gordon Yates, Minnesota. Seated: Wallace Heuser, Michigan; Kenneth McDonald, West Virginia; Richard Mattern (President), Pennsylvania; and Robert Carlson (Executive Secretary, IDFTA), Michigan.

Presidents Officiating over the IDFTA Directors

1958 - 1961	Wallace Heuser, Michigan	1975 - 1977	Albert Ten Eyck, Wisconsin
1961 - 1963	Raymond Klackle, Michigan	1977 - 1979	Henry Bennett, New York
1963 - 1965	Lorne Doud, Indiana	1979 - 1981	Jerry Sietsema, Michigan
1965 - 1967	Gordon Yates, Minnesota	1981 - 1983	Tom Chudleigh, Canada
1967 - 1969	George Whaley, Canada	1983 - 1985	Richard Bachman, Ohio
1969 - 1971	John Bell, Jr., Illinois	1985 - 1987	Donald May, Massachusetts
1971 - 1973	Kenneth McDonald, West Virginia	1987 - 1989	Evan Milburn, Maryland
1973 - 1975	Richard Mattern, Pennsylvania	1989 - 1991	Jack Pearson, New York
		1991 -	Harold Schooley, Canada



Persons involved in IDFTA during the 1970s. L to R: Dr. Roy Simons, University of Illinois, who was secretary of the rootstock research committee for several years; and Jerry Sietsema, Michigan, president, 1979-1981.

"...every spoke in a wheel is important..."

Just as every spoke in a wheel is important to the steady motion of a vehicle, so is each person in the management of an organization for providing information to members, keeping the records in order, and assisting the board of directors in the overall growth and continuity of the Association. Listed below are the persons who have served, past to current.

Educational Director . . . . . 1988-present H. A. (Jack) Rollins, Jr., New Hampshire

Business Director . . . . . 1988-present Charles J. Ax, Jr., Pennsylvania

Secretaries . . . . . 1958-1986 Robert F. Carlson, Michigan
1986-1988 Ronald L. Perry, Michigan

Treasurers . . . . . 1958-1964 Robert F. Carlson, Michigan
1964-1979 Wallace Heuser, Michigan
1979-1982 Robert F. Carlson, Michigan
1982-1986 Shirley W. Carlson, Michigan
1986-1988 Ann Perry, Michigan

R.R.C. Chairman . . . . . Elwin C. Hardy, New Hampshire

R.R.C. Secretaries *(since 1976)* . . . . Frank Gilbert, Wisconsin
Roy Simons, Illinois
Roy Rom, Arkansas

R.R.C. Treasurer . . . . . 1976-1982 Virginia Ebers, Michigan
1982-1986 Shirley W. Carlson, Michigan
1986-1988 Ann Perry, Michigan

IDFTA Activities

The IDFTA's activities are many, and some of the major concerns are:

- Scion/rootstock usage in different areas, climates, and soils.
- Updates of development of pruning and culture systems as to rootstock vigor.
- Inform growers and nurseries of latest rootstock uses, propagation and the importance of quality nursery trees.
- Information exchange by way of travel to world fruit growing areas.
- Low key administrative cost and more funds for rootstock research projects.
- Progress due to cooperation from growers, nurserymen, research and extension personnel.

During the past forty years the fruit industry in the U.S.A. and in other parts of the world has gone through revolutionary changes caused by decreased labor, increased land values, and changed marketing systems. To stay in business the fruit grower had to: (1) update his equipment; (2) increase his acreage in some cases; (3) remove unproductive standard trees; (4) change his planting schemes to increase acreage yields; and (5) decide what new varieties and variety/rootstock combinations to plant.

IDFTA-sponsored activities have helped growers cope with these changes. Through its meetings and publications, the Association has informed growers how to train, prune, and manage these more uniform, smaller and precocious trees. With increased number of trees per acre, growers soon realized that orchard management was most important for early and high production. As a direct result of keeping informed of the latest research results with compact trees, the grower has gained not only in more efficient production, but also in yields of quality fruit.

Conferences

The objectives of the Association, which were established in 1958 - to keep growers informed through annual meetings and discussion - grew into a reality with great enthusiasm.

Program speakers for the first four years were mainly from state universities having a research interest in dwarfed fruit trees. Growers and nurserymen working with smaller trees also participated in the annual programs. Similarly, growers and pomologists from the U.S.A. and Canada were very helpful in developing programs which would stimulate and guide the fruit industry in the use of smaller trees. For example, in June 1961, a symposium, "Size controlling apple rootstocks" sponsored by the Connecticut Pomological Society, was held at Storrs, Connecticut in honor of retiring Professor Howard A. Rollins, Sr. Some twenty speakers from coast to coast gave papers and reports dealing with dwarf and semi-drawf trees.[1]

In 1962, the international aspect of the Association was advanced when Mr. Tony Preston of East Malling Research Station, was invited to be the guest speaker. His enthusiastic presentations on rootstocks and tree pruning summed up the practical approach to smaller trees. The information was especially helpful to growers then starting to use dwarf trees in their orchards. Also much valuable information about rootstocks and fruit tree culture was generously provided by persons from countries overseas who spoke at annual conferences.

Program speakers at Benton Harbor, MI, March 1970, from L to R were: Eldon Banta, Willoughby, OH; Dr. Howard (Jack) Rollins, Columbus, OH; Richard Norton, Rochester, NY; Dr. Richard Unrath, University of North Carolina; Dr. Donald Heinicke, Wenatchee, WA; and Dr. Tony Preston, East Malling, England (his third appearance on the program).

At Chickenook Restaurant, Benton Harbor, MI, in 1962, where Dr. Tony Preston, England, spoke to attentive listeners about managing trees on the different East Malling rootstocks. Front row (L to R): Lorne Doud, Indiana; Bob Carlson, Michigan; John Bell, Jr., Illinois; Bill Nyblad, Michigan; and Bob Anderson, Covert, Michigan.

IDFTA Conference Speakers from Overseas, 1962 - 1991

1962	Dr. Tony Preston, England
1969	Dr. Ben Roosje, Holland
1969	Dr. Cyril Bould, England
1970	Dr. Tony Preston, England
1971	Dr. Don McKenzie, New Zealand
1972	Dr. Gerhardt Bunemann, Germany
	Dan Neuteboom, England
1973	Dr. S. J. Wertheim, Holland
1974	Eric Gunn, England
1975	James Good, England
1976	Dr. S. A. Pieniazek, Poland
	Dr. A. I. Campbell, England
1977	Georg Lindsay, New Zealand
	Helmut Utermark, Germany
	R. Bernhard, France
1978	Dr. John Jackson, England
1979	Henk Van Oosten, Holland
1980	Ron Hutton, Australia
	Michael Hennerty, Ireland
1981	Dan Hofmeyer, South Africa
1982	P. Delver, Holland
	Dr. James Quinland, England
	Alan Todd, England
1983	Rudolf Novak, Austria
	Dr. David Atkinson, England
1984	Dr. Tony Webster, England
	Dr. Fritz Lenz, Germany
	Aojzy Czynczyk, Poland
1985	Dr. S. J. Wertheim, Holland
	Dr. Carlo Fideghelli, Italy
	Bas van den Ende, Australia
	Ricard Menendez, Uruguay
1986	Joseph De Coster, Belgium
	Dr. Gerry White, England
	Dr. Victor Trajkovski, Sweden
1987	Hiroo Koiko, Japan
	Dr. Herman Oberhofer, Italy
1988	Dr. S. Sansovini, Italy
	Arsene Maillard, France
	Pierre Herman, France
1989	Ian Warrington, New Zealand
	Keven Clayton-Green, Australia
	Dr. Amnon Erez, Israel
1990	Stuart Tustin, New Zealand
	H. Wiedenhoff, Netherlands
1991	Kurt Werth, Italy

Speakers and visitors attending the second IDFTA meeting at Hartford, MI, March 1959. Standing, L to R: Rufus Prince, fruit grower, Maine; Dr. Alex Hutchinson, researcher, Vineland, Ontario, Canada; Paul Stark, Sr., nurseryman, Louisiana, MO. Seated: Raymond Klackle, fruit grower, Belding, MI; Dr. Tony Preston, East Malling, England; and Dr. H. B. Tukey, Head, Department of Horticulture, MSU, MI.

Location of the Annual Conferences
Usually Held the First Week in March

1958	Hartford, Michigan
1959	Hartford, Michigan
1960	Hartford, Michigan
1961	Hartford, Michigan
1962	Hartford, Michigan
1963	Hartford, Michigan
1964	Lawrence, Michigan
1965	Lawrence, Michigan
1966	Benton Harbor, Michigan
1967	Benton Harbor, Michigan
1968	Benton Harbor, Michigan
1969	Benton Harbor, Michigan
1970	Benton Harbor, Michigan
1971	Benton Harbor, Michigan
1972	Grand Rapids, Michigan
1973	Grand Rapids, Michigan
1974	Grand Rapids, Michigan
1975	Grand Rapids, Michigan
1976	Kalamazoo, Michigan
1977	Grand Rapids, Michigan
1978	Grand Rapids, Michigan
1979	Grand Rapids, Michigan
1980	Kalamazoo, Michigan
1981	Traverse City, Michigan
1982	Grand Rapids, Michigan
1983	Rochester, New York
1984	Grand Rapids, Michigan
1985	Yakima, Washington
1986	Cleveland, Ohio
1987	Toronto, Canada
1988	Hershey, Pennsylvania
1989	Fresno, California
1990	Penticton, B.C., Canada
1991	Grand Rapids, Michigan

Over the years, these annual conferences have been a practical forum for the dissemination of information vital to fruit growers. Several awards, with plaques, have been presented to distinguished persons, including past presidents, for their outstanding work.

The IDFTA Distinguished Service Award presented to the first IDFTA presidents by Dr. John Carew (second from right) at the 1970 annual conference. They are: Lorne Doud, Indiana; George Whaley, Canada; Gordon Yates, Minnesota; Raymond Klackle, Michigan; Dr. John Carew; and Wallace Heuser, Michigan.

IDFTA Awards Presented at the Annual Conferences to Fruit Growers and Pomologists in Recognition for Outstanding Work for the Industry and the Association

1970 Lorne Doud, Indiana
George Whaley, Canada
Gordon Yates, Minnesota
Raymond Klackle, Michigan
Wallace Heuser, Michigan
Tony Preston, England

1974 Frank Green, Michigan
Eric Gunn, England
Alex Hutchinson, Canada
Eugene Heuser, Michigan
William Luce, Washington
Howard (Jack) Rollins, Ohio

1975 Pat Voght, Michigan
Frank Klackle, Michigan
Richard Norton, New York
Barry Brand, Michigan
Richard Mattern, Pennsylvania

1976 Fred Amberg, New York
John Bell, Sr., Illinois
Richard Meister, Ohio
Paul Stark, Jr., Missouri

1977 John Carew, Michigan
Eckert Orchards, Illinois
Morrison Orchards, Michigan
H. B. Tukey, Sr., Michigan

1978 Donald Fisher, Canada
Dowd Orchards, Michigan
Brookdale Farms, New Hampshire
Albert Ten Eyck, Wisconsin
L. C. Luckwell, England

1979 George Adrian, Indiana
Henry Bennett, New York
Cal Bosch, Washington
W. S.. "Stu" Carpenter, Michigan

1980 George Foote, Canada
Vernon Bull, Michigan
Donald Dewey, Michigan
David Crowe, Canada

1981 Grady Auvil, Washington
Art Thompson, Maryland
C & O Nursery, Washington

1982 Jerry Sietsema, Michigan
Norman Childers,
Florida and New Jersey
Frank Gilbert, Wisconsin

1983 Fritz Wafler, New York
Roy Rom, Arkansas
Oregon Rootstock, Inc., OR

1984 George Eger, New York
Tom Chudleigh, Canada

1985 Jim Ballard, Washington
Hugh Hargrave, Washington

1986 Paul Larsen, Utah
F. Fredrickson, Virginia

1987 Peter Van Oosten, Canada
Roy Simons, Illinois
Robert Edwards, Illinois
Richard Bachman, Ohio

1988 Loren Tukey, Pennsylvania
Robert Carlson, Michigan
Harry Black, Maryland
Raymond Granger, Canada
Pierre Hermon, France

1989 Bruce Barrett, Washington
Doyle & Thira Fleming, Washington
Charles Andre, France

1990 David Ferree, Ohio
Ted Swales, British Columbia
Robert & Brian Dawson, British Columbia
Ronald Perry, Michigan

1991 Joe & Bruce Rasch, Michigan
Bob Wertheim, Netherlands
Dan Neutebaum, England

"The objectives of the Association . . . grew into a reality with great enthusiasm."

Publications

From its inception, the Association has aided in financing publications dealing with culture and care of compact fruit trees.

The secretary edited and published the Association's first newsletter, *Compact News*, in October 1958. The sub-title of the newsletter was "Information about smaller than standard trees," which is indicative of its timely, informative hints, useful to the grower. Among several short articles in this newsletter, the late Dr. H.B. Tukey wrote:

". . .dwarf fruit trees are promising, but are they going to be subject to spring frost injury on low ground because of their low heading? Do they need to be located on special frost-free sites? Does the fruit of different varieties ripen a day or so earlier or later? Does this markedly affect marketability? How about finish? Do fruits from dwarf trees keep in storage as well or better than from standard trees? What about mulching, irrigation, hand pollination, mechanical harvesting, thinning, insect and disease control, pruning, and harvesting?

"Here is where and why the new Dwarf Fruit Tree Association is so badly needed. Let everyone make his observations and bring them to the Association for dissemination and discussion. In this way, we will shake the bugs out of the dwarf fruit tree, find where they belong, and how to handle them. The formation of the DFTA could prove to be one of the important steps in the development of the fruit industry."[11]

The IDFTA has continued to stay in touch with its members by publishing its newsletter several times each year.

Dwarfed Fruit Trees, published in 1964, contains a tremendous amount of the early rootstocks and tree training methods and has much historic information from Europe as applied to the west continent.[10]

Compact Fruit Tree, published annually since 1971, contains papers presented each year at the annual meetings. These volumes, currently twenty-four, have practical rootstock and culture information presented by fruit growers and researchers.[7]

Considerable amounts on rootstock usage has been published the past forty years as well. In 1987, *Rootstocks for Fruit Crops* was published. This book (494 pages) was written by knowledgeable researchers and edited by Roy C. Rom and Robert F. Carlson. It includes valuable and up-to-date data and usage of rootstocks for apples, peaches, pears, plums, apricots, grapes, as well as citrus and nut crops — a very useful reference textbook for anyone interested in rootstocks for fruit crops.[9]

Research

It became very evident thirty years ago that forty trees per acre was no longer practical because the trees were not precocious, difficult to prune, spray, and harvest. Thus enthusiasm for dwarf and semi-dwarf trees increased as more information became available.

A generous exchange of ideas and information has transpired since the inception of the DFTA. And this exchange between horticulture research workers and fruit growers has helped to establish sound and practical recommendations for rootstock performance as to vigor, precocity and yield, tolerance to soils and climates, resistance to diseases and insects, tree life expectancy, and other varied cultural managerial practices.

One step was made in 1976 when then current president, Albert Ten Eyck, proposed the formation of the IDFTA Rootstock Research Committee (R.R.C.). The chief purpose was to assist the Association in stimulating more rootstock research at various tree fruit research stations. The board of directors at the next meeting voted seventy percent of member annual dues toward rootstock research. Donations for research were also approved. This move assisted researchers in working closely with aims for new and better rootstocks.

The R.R.C. consists of a group of nine fruit growers and nurserymen, seven researchers, and two ex-officio board members, serving in several capacities: (1) to set up guidelines for researchers in preparing research project proposals; (2) to prepare application forms for research funding which are mailed by the committee secretary to many states, Canada and Mexico; and (3) to critically screen the project proposals submitted. Usually one-half of over fifty projects are approved each year, but this varies with funds available. Several of the researchers, who are members of the Association, are also working closely with the NC-140 regional rootstock research project in testing, screening and developing new fruit tree rootstock clones.

The practical aspects in usage of dwarfing rootstock and management of trees with many cultivars has been the aim of the association since its start. Generally, the annual programs have dealt with the dwarfing, precocity, tree culture and training. Following are some of the various pruning and tree training methods that have been discussed and demonstrated at the annual meetings in March and June. Persons from many countries have contributed and participated in the following:

1. The modification of the standard trees by way of *"mold and hold,"* "spur pruning," "scaffold removal" and "heading back branches" was partially effective in controlling tree height.

2. The *"central leader tree"* trained by maintaining minimal scaffolds spread on the central leader was practical with spur type cultivars on semi-dwarf or seedling rootstocks.

3. The *"free standing"* or "Christmas tree shape" with several levels of branch scaffolds made a tree form easy to manage for annual pruning and harvesting.

4. The McKensie *"wedge-clover leaf"* tree developed for high yield production. The wedges cut into the trees were used for ladder placing at picking time.

5. The *"hoopskirt shape"* for medium size trees was developed by tying branches downward and around the tree, thus forming a hoopskirt appearance.

6. The *"espalier"* training of fruit trees first used many years ago in western Europe as a garden wall, but also used in commercial orchards. Modifications of "espalier" methods have been tried and discussed.

7. The *"spindle bush"* and the *"slender spindle,"* having originated in the Netherlands forty or more years ago, are slowly becoming popular in major apple growing areas. These systems are used with trees budded on M.9, but also on M.26 and Mark rootstocks. The word slender denotes that the tree form is more slender and less bushy than the spindle bush, that is, it has fewer shorter branches on a zig-zag central leader.

8. From New Zealand came the *"Lincoln canopy"* method of tree training developed at the Lincoln College. Briefly, six to eight wires are strung over a series of T-bars onto which branches are systematically laid down and secured in horizontal position. The method is aimed toward mechanical fruit harvesting.

9. The *"Pillar system,"* developed by Gordon Maclean, Abington, England, although not universally accepted at this time, was another step to make each tree compact and easily accessible. But, as with most tree training systems for growth control, the Pillar tree is rigorously trained from start to finish. Once the central trunk and branches are in place, a branch removal system is set in motion so that fruit is always born on young branches. At the end of three years, a fruiting branch is removed, leaving a stub for a new branch to form, thus, setting up the branch removal system.[8]

"A generous exchange of ideas and information has transpired . . ."

The late Dr. Tony Preston, East Malling Research Station, Kent, England in one of his dwarf tree research plantings, demonstrating how he propagated these super small trees in 1971.

He grafted spur Delicious branches on M.9 rootstock to obtain maximum growth control.

10. The Geneva *"Palmette leader"* method is aimed at reducing form and size in older crowded tree situations. The tree is reduced to the lower branch whorl and a new palmette whorl in north/south direction is established above on the central leader.

11. From Australia came the *"tatura trellis"* method of shaping and controlling growth. The V-shaped trellis is made by using 12 to 16 foot posts at 30° from vertical with five wires placed about 20 inches apart. The height of trellis and spacing of the trees can vary with the rootstock used.

12. The *"ebro trellis"* from New Zealand is an exact and demanding training method, as well as requiring much support material. The layers of wires positioned cross bars on posts are spaced about 20 feet apart, totalling 24 wires per row. The trend is to reduce this from four to three tiers for better fruit quality and less support material.

13. The *"MIA slant"* system from Yanco, Australia, is one armed, as compared to two arms in the "Tatura" method. For peach and apple, the system provides more light, accessibility to top and lower 30° slant or lean. Amount of support (post and wires) material used can vary with grower preference and use of varieties and rootstocks.

14. The *"hedge row and trellis"* culture often comes naturally when trees planted closely together in the row grow together, especially when the trees are not on a sufficiently dwarfing rootstock or properly managed. Hedge rows are also formed when using wires on posts and detailed tree training is used, such as the espalier, palmette, marchant, and other training variations.

Snow had to be plowed aside so that the crowd could get near the trees to watch Bob Byers, Indiana, demonstrate how to prune a free-standing tree in the Hilltop orchard. Minimal pruning of young trees was advised to induce early fruiting.

15. The *"meadow orchard"* was researched at the Long Ashton Research Station, England. It is of interest because it is strictly a renewal of old fruiting branches and a replacement with younger fruitful branches. Golden Delicious/M.9 was preferred for super high density.[6]

16. The *"French vertical axis"* (by Lespinasse) tree training is more compact than the central leader system in that several spreading laterals are developed along the vertical trunk. A useful method for both pome and stone fruits.

17. The *"Solen"* method, also developed by the French researcher, consists of two-layer branches tied down to single wire, and thus forming a low dome-shaped tree adaptable to cultivars tending to bear fruit on terminal shoots.

Currently, simplified tree training is of interest to hold the initial cost low, such as the use of one wire on bamboo or conduit poles. The grower has to make the major decision of which planting system to use.

Summer Orchard Tours

The many orchards visited during the annual conferences and the summer orchard tours held in several growing areas in the states and Canada have been very useful to the members and their families. Some of the tree training systems previously listed have been observed during orchard visits. Members have had a chance to do some of the pruning and see the behavior of many cultivars on various new and old rootstocks. The travel to several fruit growing countries likewise has given participants a chance to observe and learn of new ideas and techniques.

Dr. L. C. Luckwell at Long Ashton Research Station, England, is presented the IDFTA award and a copy of the annual proceedings by Dr. Robert Carlson during the summer orchard study tour in England, 1978. Dr. Luckwell was involved in researching lilliputian (small) trees, called the "meadow orchard system."

Sites of the Annual Summer Orchard Study Tour
Usually Held the Third Week in June

1958 Michigan—Hartford, Benton Harbor
1959 Michigan—Hartford, Paw Paw
1960 New York—Geneva, Sodus
1961 Michigan—East Lansing, Hartford, Paw Paw
1963 Pennsylvania—Mars, University Park
1964 Illinois—Barrington, Poplar Grove
1966 Michigan—Traverse City, Old Mission
1967 Pennsylvania—Hollidaysburg, Fishertown
1968 Michigan—Hartford, Lawrence
1969 Canada—Leamington, Ruthven, Simcoe
1970 Washington, Oregon and Summerland, Canada
1971 Michigan—Romeo, Almont, Richmond
1972 New York—Geneva, Rochester, Albion
1973 Wisconsin, Minnesota—Gays Mills, La Crescent
1974 Pennsylvania—University Park, Gettysburg
1975 Ohio—Milan, Ashland, Wooster
1976 Washington, Oregon—Yakima, Wenatchee, Quincy, Woodburn
1977 Canada—Vineland, Burlington, Milton, Grimsby
1978 Massachusetts, Vermont, New Hampshire
1979 Canada, Nova Scotia—Kentville, Rockland, Wolfville
1980 West Virginia, Virginia—Kearneysville, Shenandoa Valley
1981 Illinois, Wisconsin—Barrington, Poplar Grove, Brodhead
1982 Canada, Quebec—Sainte-Ann de Bellevue, St. Lawrence Valley
1983 Georgia, South Carolina—Ellijay, Talking Rock, Young Harris, Clemson
1984 New Jersey, New Brunswick, North and South New Jersey
1985 New York—Hudson Valley, Bard College
1986 Michigan—Kalamazoo, southwest and west central areas
1987 New Hampshire—Hollis and other areas
1988 Canada, Nova Scotia fruit areas
1989 West Virginia, Virginia, Maryland
1990 New York—Brockport, Wayne County, Geneva Research Station
1991 North Carolina—Ashville, Henderson and Wilkes Counties

IDFTA Fruit Tree Study Tours
to Major World Fruit Growing Areas

Year	Dates	No. of Persons	Countries
1964	June 11 - 29	41	England, Italy, France and Holland
1968	June 18 - July 10	40	Belgium, Germany, Switzerland, France, Denmark and England
1971	June 21 - July 12	58	Italy, Yugoslavia, Austria, Germany, England and Scotland
1973	June 25 - July 9	36	France, Belgium and Holland
1975	January 15 - February 14	40	Australia and New Zealand (Tasmania-Australia)
1977	July 21 - August 18	21	Japan, People's Republic of China and Hong Kong
1978	June 27 - July 13	34	England, Poland, Holland and Belgium
1979	January 5 - 29	42	Brazil, Uruguay, Argentina, Chile, Peru and Panama
1980	January 7 - 30	44	England, Southern France and South Africa
1981	June 28 - July 19	48	Spain, Austria, Denmark, Sweden and Norway
1983	January 13 - February 14	38	Australia and New Zealand (Visit to Watsonville, CA enroute "Down Under")
1984	March 15 - April 7	37	Israel, Greece and Italy
1987	January 13 - February 12	39	Australia (Tasmania, Australia), New Zealand and Hawaii
1989	May 30 - June 16	12	Russia and Hungary
1990	June 7 - 21	12	Holland, Poland and Finland

Summary

"...much work lies ahead to keep abreast..."

The Dwarf Fruit Tree Association was born out of need for information. It grew because it provided practical growing and orchard management hints, and because it came up with interesting annual meetings and tours in which everyone played a part.

The author wishes that this brief review covering some of the Association's activities since 1958 will be of interest to old, current and future members. The success and credit for success is due to many people.

Obviously the fruit industry has gone through a revolutionary change, grown and become very efficient, but much work lies ahead to keep abreast with unforeseen problems, to test new rootstocks and cultivars, and improve cultural techniques to remain competitive in the future.

The following quote, written thirty years ago, pretty much sums up where we have been and where we might go in the future. After returning from Europe in 1960, Dr. H.B. Tukey, Head, Dept. of Horticulture, MSU, wrote: "I for one never believed that this system (dwarf trees) would develop as favorably in modern horticulture as it apparently is doing. Nor did I ever believe that American fruit growers would turn to EM-IX rootstocks and apple trees planted close together and supported on wires. But here in this country, we too, are seeing something of the same development. Perhaps it will be in the hands of subsistence and part-time growers near large cities. Who knows? The final answer will come from the experiences of growers, and in this the Dwarf Fruit Tree Association will be of tremendous help since it provides a vehicle for exchange of opinions and ideas."[12]

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12 *IDFTA Dwarf Fruit Tree Association Newsletter*, July 1960, No. 12, page 54.

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