

Department of
Horticulture

MICHIGAN
STATE
UNIVERSITY

COMPACT FRUIT TREE

ROOTSTOCK BEHAVIOR

SPUR TYPES

INDUCED DWARFING

CULTURAL PRACTICES

THE INTERNATIONAL DWARF FRUIT TREE ASSOCIATION

No. 1, January, 1980 - Prepared by Robert F. Carlson

INFORMATION - 23rd ANNUAL PROGRAM, IDFTA
February 26-29, 1980

This year, the Conference will be nearer Michigan's Southwestern fruit area, at the Kalamazoo Center Hilton Inn. This is about equal distance from Grand Rapids and Benton Harbor. With modern expressways, getting to and from Kalamazoo is easy.

Registration will be set up (lower level) to accommodate everyone. The dates and times are as follows:

Tuesday, February 26	6:00 P.M. - 10:00 P.M.
Wednesday, February 27	7:00 A.M. - 9:00 P.M.
Thursday, February 28.	7:00 A.M. - 5:00 P.M.

Room reservations should be made early, either at the Kalamazoo Center Hilton Inn or at other leading motels in the Kalamazoo area. Reservation cards were mailed to members in October.

Meeting rooms. The Wednesday, February 27, and Thursday, February 28, Programs will be held in the South Ballroom (listed in Program as Auditorium), first floor. Wednesday evening's concurrent sessions will be as follows: Session A in South Ballroom and Session B in joint rooms A and B, lower level. The Banquet Thursday will be in the North Ballroom.

Program. Your Program Committee has come up with another interesting and educational Program. Over 50 speakers, from U.S.A., Canada, Australia and Ireland, will bring members up to date on the latest research and practical fruit growing practices, especially as related to compact trees.

An exciting tour for the ladies has been planned by the local arrangement personnel. Detailed program follows. The Orchard Study Tour will cover old and new high density plantings, well-trained older 'Delicious' and variable size and managed orchards.

Research and Developments. Besides being involved in sponsoring annual educational programs, the International Dwarf Fruit Tree Association promotes the development of dependable rootstocks through research at various research stations. The Board of Directors asked your Secretary to remind both old and new donors to our research projects to mail their checks now. These are deductible.

The 1980 annual dues can be paid at the Conference or mailed to your Secretary, Department of Horticulture, Michigan State University, East Lansing, MI 48824. Seventy percent of the annual dues goes toward rootstock research and the rest goes toward helping to bring in leading speakers from throughout the world for our Program, to print the Newsletters and Volumes and to manage the Association.

SCHEDULE FOR LADIES' BRUNCH AND TOUR
Thursday, February 28, 1980

9:30 A.M. Bus loads at entrance to Kalamazoo Center, Hilton Inn

9:30 A.M. - 10:00 A.M. Arrive J. C. Grundy's Restaurant

10:00 A.M. - 11:00 A.M. Champagne Brunch

11:00 A.M. - 11:30 A.M. Business Meeting and short discussion on "Share and Tell" about recent trips to Europe and South Africa.

11:30 A.M. Load bus at Grundy's for travel to Paw Paw
 (see note below)

12:00 Noon Arrive Warner Wine Haus, Paw Paw

12:00 Noon - 1:45 P.M. Tour wineries, watch slide/movie presentation and taste wines. (Group will be divided into two sections; one will tour winery first while second section will see slide/movie presentation and taste wines. Then the sections will switch.)

1:45 P.M. - 2:00 P.M. Group will assemble and listen to a presentation by Rick, Wine Haus Manager, and by Mike, vinologist, and have the opportunity to ask questions, etc.

2:00 P.M. - 2:15 P.M. Load bus for trip back to Kalamazoo Center, Hilton Inn

2:45 P.M. - 3:00 P.M. Arrive Kalamazoo Center, Hilton Inn

Note: If some of the women want to go back to the Kalamazoo Center after the brunch to participate in the regular afternoon Program, we can have some local cars available at Grundy's for transport back to the Center.

PROGRAM SUMMARY

The Program this year is aimed at answering grower's questions on rootstocks, past problems and what to plant in the 1980's and cultural and pruning practices, etc. The Orchard Tour is for show and tell on tree spacing, pruning and rootstock cultivar combinations, etc. The Banquet is for you to enjoy good food, be recognized and see the beauty of the U.S.A. Lastly, men, bring your wives and daughters to enjoy a "bang-up" Ladies Program.

Best wishes for a fruitful 1980!

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No. 2, March, 1980 - Prepared by Robert F. Carlson

A SUCCESSFUL 23rd CONFERENCE

On behalf of the Board of Directors and members in attendance at the 23rd Conference at Kalamazoo, Michigan, we wish to extend a hearty thanks to the 50 persons from Australia to Ireland and from Canada to Washington for their fine reports on many aspects of fruit growing. It was another educational meeting.

We also want to thank the local Extension personnel who so capably planned and executed a fine Orchard Tour and Women's Program. Also, we appreciate the women who braved zero weather to serve hot coffee and doughnuts to over 200 cold persons at Mandigo's Machine Shop. We will also remember for a long time the good tasting hot cider made from "hard" cider - solid, that is. Thank you, Jerry Sietsema, for this and the homemade doughnuts.

Also, a sincere thanks to the Steins, Mandigos and Carpenters for letting us come into their orchards and hack away on trees of all ages. All of us learned from this experience, even though it was cold!

Those of us (331 persons) who attended the Banquet were very impressed with the fine performance of Steve and Connie Doud. Their visual/musical of "Images of Nature" was excellent. If you wish to drop them a note, their address is: Denver, IN 46926.

LARGEST ATTENDANCE TO DATE

Over 600 persons attended the three-day Conference. The Ballroom was filled to capacity with very attentive persons busily listening and taking notes. Eight countries were represented, with the major portion from 28 states and Canada (76 persons). Prior to the Conference, the Association's total membership was 1593, from 44 states and 26 countries.

Since presented papers will be published in Volume 13, COMPACT FRUIT TREE, the subjects will not be covered here. Some papers were not turned in to me, but hope these will soon be in the mail to my office. We will accept long-hand papers, if necessary.

The 1980 IDFTA Awards went to Vernon Bull, Casnovia, Michigan, Dr. David Crowe and George Foote, both from Nova Scotia, Canada, and Dr. Donald Dewey, East Lansing, Michigan. Congratulations to these deserving persons.

24th ANNUAL CONFERENCE

The 24th Annual Conference will be March 3-6, 1981, at the Grand Travers Hilton, which is located at ACME just east of Traverse City. This Hilton was completed February, 1980, and has modern accommodations and meeting rooms. For early reservations, write Grand Traverse Hilton, Traverse City, MI 49610 or phone (616) 938-2100. Mention the IDFTA Conference when reserving rooms.

The Grand Travers area of Michigan has a well-established fruit growing area. The major crop production is cherry; however, many well-managed apple plantings can also be seen. A one-half day Orchard Tour will cover some of these plantings, including cherry and plum orchards. A stop will also be made at the new Northwest Horticultural Experiment Station to view facilities and new plantings and plans for the future.

END OF DORMANT SEASON

Spring is here, and with it comes the anticipation of crop prospects. Spring also brings the possibility of injury to flower buds from spring frosts and pollination conditions. What can be done about it? Orchards equipped with frost protection equipment (sprinklers, wind propellers, heaters, etc.) will have a few sleepless nights, but hopefully not. Often this equipment is effective, depending on the severity of temperature.

The sub-zero days and nights at the end of February may have eliminated some 'Delicious' flower buds in Michigan, but it is too early to tell. Now is a good time to plan for the best pollination by contracting for as many bee hives as possible. The live buds will have a better chance to set fruit.

It is still time to finish up the pruning of apple trees and spread branches of young, spur-type 'Delicious'. When the sap starts to flow, it is a good time to train fruit trees by removing poor branches and spreading the rest. Remember, the diameter of the scaffold branches should reduce in proportion from the bottom to the top of the trees. If a large diameter branch is located in the top half of the tree, cut it out, even if it means removing a peck of fruit. You will be glad you did.

By pruning peach trees in the spring, the amount of heading back and removal of branches is judged by expectant fruit set. If bud injury is anticipated or has occurred, pruning should be kept to a minimum. The same is true for cherry trees.

Philosophically speaking, relax by working up a sweat training and pruning all the young trees before it is too late. It is a fun job and satisfying.

ACKNOWLEDGEMENT FOR PROGRAM SUPPORT

A fine contribution for future programs was made in December, 1979, by Elsie Klackle to the IDFTA in honor of her late husband, Ray Klackle. The Board of Directors, with thanks, accepted this grant and named it "The Ray Klackle Memorial Speaker Fund" to be used for bringing outstanding out-of-country

speakers to the Annual Meetings. Ray Klackle was nationally known for his activities in the fruit industry as a grower and processor as well as for his early extension work in horticulture. He was an active IDFTA member and served on the Board for several years and as the second President for two years. The Board and members of the Association express their gratitude to Elsie Klackle for this generous contribution. The fruit industry will benefit from this.

RESEARCH CONTRIBUTIONS

During the Conference, several small and large contributions were made for rootstock research. These monies will add greatly toward funding of research projects. Both small and large grants are greatly appreciated. The following is a partial list of contributors at the Conference:

\$500.00:

Minnesota Apple Growers Association
Maryland State Horticultural Society
David Smith, Oregon
Fred Smith, Oregon

\$200.00:

Evan Milburn, Maryland

\$100.00:

Rick Ginther	Dennis Courtier, Minnesota
Jim Totzke, Canada	Don May, Massachusetts
Art Dowd, Michigan	Ken McDonald, West Virginia
Fritz Wafler, New York	Starlite Orchards, Ohio

\$50.00 or more:

Harry Black, Maryland

\$25.00 (more or less):

several

RESEARCH PROJECTS FUNDED, FEBRUARY, 1980

A total of \$15,600.00 was granted to state horticultural research stations during the Meetings of the Rootstock Research Committee and the Board of Directors, IDFTA. The following states will receive IDFTA research funds: Colorado, Georgia, Idaho, Illinois, Indiana, Massachusetts, New York, Ohio, Oregon, Pennsylvania, Vermont, and Wisconsin.

Since 1976, the Association has obtained over \$60,000.00 from 70% of the annual dues and personal contributions. About \$40,000.00 of this sum has been granted for research to improve fruit tree rootstocks. This is fruit grower research support to serve as "seed money" with the hope that state and federal agencies will increase funding for much needed research for better stone and pome rootstocks.

LAST NOTICE FOR 1980 ANNUAL DUES

To those who have mailed in dues or paid them at the Conference, we say thank you. We would appreciate having all dues paid by April 15 so that COMPACT FRUIT TREE, Volume 13, can be mailed to all members who have paid 1980 dues.

Commercial dues. \$25.00

Educational (libraries, educators & extension) . . \$10.00

Checks for Rootstock Research are welcome.

Please pay in U.S.A. dollar equivalents - thank you.

Checks should be made payable to IDFTA.

Back Volumes of COMPACT FRUIT TREE available:

Volumes 7 and 9 \$ 2.00 each

Volumes 11 and 12 \$10.00 each

TREE PLANTING HINTS

When trees arrive, if in bundles or boxes, open and heal in trees in a storage or outside. They need extra air after shipping. Do not allow them to freeze, especially the roots, because they do not tolerate frost.

Trim roots before planting and do not allow tops and roots to dry out before or during planting. Make trench or hole large enough so that graft union of apple trees can be kept two inches above ground at planting time. Trees tend to settle an inch or two the first year in orchards.

Make sure that the tree spacings are planned in accordance with vigor of rootstock and scion combination and soil condition. An average tree spacing might be as follows:

M. 9 6 x 10 ft.

M. 26. 8 x 14 ft.

M. 7 10 x 16 ft.

MM 106 12 x 18 ft.

MM 111 14 x 20 ft.

Seedlings. 18 x 24 ft.

For vigorous cultivars and rich, deep soil, add another foot or two in each direction. Go with a tree spacing that you are capable of managing. Do not depend on the rootstock to do all the work.

After the trees are in the ground, make a map of the planting by rows, noting important items such as planting date-year; tree spacing; cultivar/rootstock; soil type; fertilizer applied; name, address and telephone number of your nurseryman, etc. Incidentally, whether or not the trees perform well or poorly, let your nurseryman know. He works hard to produce quality trees for you.

THE BOARD IDFTA

Henry Bennett, who has served on the Board for several years and is a past President, requested not to serve any more. We greatly appreciate his service and wish him well in his retirement years.

Robert Hodge, Pennsylvania, was nominated and elected to the Board for three years. Welcome Bob! Other current Board members are: William Austin, Michigan; Richard Bachman, Ohio; Virginia Ebers, Michigan; Robert Edwards, Illinois; Joseph Garrett, Kentucky; Hugh Hargrave, Washington; Richard Mattern, Pennsylvania; Donald May, Massachusetts; Ken McDonald, West Virginia; Evan Milburn, Maryland; Paul Rood, Michigan; and Gene Stembridge, Georgia.

Officers are: President-Jerry Sietsema; Vice President-Tom Chudleigh, Canada; and Executive Secretary/Treasurer-R. F. Carlson.

HOW TO IMPROVE GROWTH OF MICROPROPAGATED PLANTS¹

Dr. Brian Howard, East Malling, England, achieved over 90% establishment of 'Pixy' plum rootstock in the field from plants produced by micropropagation. Previously micropropagation, by which plants can be multiplied very rapidly, could not be exploited for supplying source material to nurseries because of problems with establishment. For successful establishment, 'Pixy' required either prior cold treatment or more conveniently, sprays of a commercially available hormone gibberellic acid, GA₃. The treatments were needed both when plants taken from test tubes were grown on in pots in the glasshouse and again after planting in the nursery.

HARDWOOD CUTTING PROPAGATION OF PLUM IN ENGLAND¹

For all plum rootstocks, far better results are obtained by propagating from hardwood cuttings taken in autumn rather than in late winter or spring. The optimum for 'Pixy' and 'St. Julien A' is to take cuttings in November and treat the bases with IBA and heat; the thickest cuttings establish best. When hardwood cuttings of 'St. Julien A' and 'Myrobalan B' are taken in mid-October to early November, they can be planted directly in the field without heated bin treatment.

SWEDISH PROVERB

Fear less, hope more, eat less, chew more, whine less, breathe more, talk less, say more, hate less, love more and all good things will be yours.

MARTIN LUTHER

"If the world ends tomorrow, I will still plant an apple tree today."

¹Press Report - Nurserymen's Members' Day 25th September, 1979. Plum Stocks for Fruit and Ornamentals. East Malling Research Station, East Malling, Maidstone, Kent, England ME19 6BJ

SUMMER TOUR

"The Virginias"

June, 1980, offers the rest of the world a chance to come to the beautiful Shenandoah Valley and mountains of the Virginias to see apple growing at its finest. The growers and research folks of West Virginia and Virginia have organized an outstanding Summer Tour for the International Dwarf Fruit Tree Association. The Tour will include one day in West Virginia and one day in Virginia, touring orchards and research facilities.

The Tour will be headquartered at Shepherd College, Shepherdstown, located at the gateway to the Shenandoah Valley on the banks of the historic Potomac River. A beautiful and informative Tour is planned in the area known as "Almost Heaven", and you're invited. "Y'all Come"!

Dates:

Tuesday, June 17 - Evening discussion, entertainment and registration pick-up
Wednesday, June 18 - Tour all day to orchards and research stations in West Virginia
Thursday, June 19 - Tour all day at orchards, test plantings, etc. in Virginia
Friday, June 20 - On your own for a safe journey home

Advanced Registration

In order to ascertain the size of the Tour, advance registration is necessary. An advance registration fee of \$70.00 per person, based on double accommodations, will include three nights lodging; all meals Wednesday, June 18, Thursday, June 19, and breakfast June 20; bus transportation for entire Tour and nightly entertainment. Further information will be forwarded with receipt of advance registration payment. Sign up early! Deadline is May 15, 1980.

Name _____

Address _____

Number in party _____

Enclosed payment @ \$70.00/person _____

(Make checks payable to: IDFTA Summer Tour)

Send payment to: Ms. Tee Marcum
c/o WVU Experiment Farm
State Route #9
Kearneysville, WV 25430

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No. 5, November, 1980 - Prepared by Robert F. Carlson

COMPACT FRUIT TREE

This is a term we adopted twenty years ago, after the International Dwarf Fruit Tree Association had established good roots. What does it mean? Actually, at the time we chose this term, "compact", the auto industry was starting to use the term in the slow process of converting from the "gas guzzlers" to the smaller, more efficient cars. This has taken 25 years. To the fruit industry, "compact" means smaller, more efficient, manageable, and productive trees.

How is compactness attained? Several conditions and factors are involved in structuring compactness. Number one, the rootstock plays the largest part in reducing tree vigor. With apple, tree vigor will then vary with rootstock choice from the small M. 27 to the vigorous M.M. 111. The second factor playing a major role in compactness is soil type and orchard site (location). A sandy, droughty soil can reduce tree size by 50%, compared to the fertile, well-drained clay loam soil. Similarly, trees in a warmer climate with deep soil will produce larger trees than in the more northerly, cooler climates.

The third tree compact controlling factor, and perhaps most important, is orchard management. What is involved in tree management? Here are a few involvements, such as: good soil preparation; accurate and well-timed tree planting; tree training during the establishment years; use of recommended material for weed, pest, and disease control; accurate tree spacing according to vigor of rootstock and variety to avoid crowding in later years or waste of land by underspacing; continuing a tree holding pattern in the mature, fruiting years by select branch removal for branch renewal and heading back of fruiting branches prior to crowding; maintaining of a tree shape, which is wide at the lower half and narrow toward the top, for light penetration; not allowing trees to become more than ten feet tall, for tree efficiency; and maintaining a fertilizer program based on foliar analysis, tree vigor, and production of quality fruit.

A fourth factor is summer pruning, which will aid in tree size control as well as improve fruit color, etc. When to summer prune will vary with location. In general, this pruning should be in pre-harvest season, or about two to three weeks prior to harvest.

Five, do not expect the rootstock/variety combination to be developed into a fine orchard with small compact trees without extra efforts and annual care. If so, it's best to use seedling rootstocks and go "old fashioned." The modern grower is attending meetings to keep updated on the latest developments and thus is becoming more efficient and increasing his production per unit of land. . . . R. F. Carlson

NOTICE OF CHANGE IN PAYMENT OF ANNUAL DUES

The fact is that annual dues have been "trickling in" from January to December, making bookkeeping cumbersome, so we have decided to send out statements in November of each year with dues payable (in U.S. currency) by January 15. This will also simplify registration at the annual conference.

To our member friends in Canada, and other countries, we make this suggestion: Write on your check "U.S. \$25." This way the bank does not have to go through the process of discounting each check separately. We will appreciate this very much.

New members are welcome any time of the year. Henry Bennett once said, "if each member brings in a new member, our rootstock research efforts will be doubled." Seventy percent of annual dues (commercial and educational) are allocated each year for research.

Voluntary rootstock research donations can be paid when annual dues are paid, or at any time of the year.

NEW JERSEY CONTRIBUTES TO ROOTSTOCK RESEARCH

A check for \$500 was received on October, 24, 1980, from the New Jersey Apple Institute, Inc. The cover letter read as follows:

"Dear Bob,

Enclosed is a check for \$500 for the Rootstock Research Fund. At a recent meeting of the New Jersey Apple Institute, the membership approved these monies to the International Dwarf Fruit Tree Association.

Sincerely,
Ernest Christ, Ext. Spec., Pomology"

This is a fine contribution and effort. We commend the New Jersey Apple Institute and other State Horticulture Societies which have previously donated to this worthwhile research fund.

PREVIEW OF THE 24TH ANNUAL CONFERENCE

GRAND TRAVERSE HILTON AT ACME, NEAR TRAVERSE CITY

MARCH 3 TO 6, 1981

Tuesday afternoon, March 3, will be devoted to board and committee meetings and for registration. Pre-registered members can pick up a prepared package of tickets, programs, etc. at the registration desk in the auditorium lobby which is to the left of the main hotel entrance.

The formal program will begin Wednesday at 10:00 a.m. in the main auditorium. During the day, various topics will be discussed dealing with compact orchards, from tree culture and management to fruit marketing. Wednesday morning's program will feature a panel on marketing involving women and men.

Wednesday evening, from 8:00 to 10:00, two informal, concurrent sessions will be devoted to special topics of tree propagation in the nursery and general behavior and development of fruit tree rootstocks.

A full day program is scheduled with speakers from South Africa, Canada and from all over the United States. Dr. Dan Hofmeyer, of Stellenbosch, South Africa, will speak both on Wednesday and Thursday. He has experience with production possibilities depending on site, soil, variety, rootstocks, and orchard management practices. Pomologists from New Brunswick and Ontario will present interesting views of compact trees from their particular area and travel experience. Fruit and nursery men and advisors from California, Washington, and several other states will provide an update of growing trends and rootstock behavior, stressing the influence of climate on tree growth, longevity, and production.

A panel of researchers will report the progress of the development of rootstock projects funded by the International Dwarf Fruit Tree Association. Also, the ladies will have a chance to break away Thursday for a few hours to see points of interest in the Traverse City area.

The annual banquet, Thursday evening, will feature a well-known speaker. Outstanding growers will receive awards.

The conference will end Friday at 1:00 p.m. with a half-day, guided bus tour to view orchards, see pruning schemes, and research in the beautiful Grand Traverse area of Michigan.

STRENGTHENED INTERNATIONAL DIMENSION TO HORTICULTURE

Many of you in this audience have traveled through some of the poor countries in this world. You have seen children suffering from malnutrition; children, perhaps the same age as your own, who lack the proteins, minerals, and vitamins

necessary for full development. Until you left home these people were probably mere statistics--a minute segment of the one billion on this earth who are underfed. But now for you they have become living children, for whom you feel compassion and perhaps a sense of guilt. And because of this experience, many of you are now actively involved in international programs.

I have no fear for the future of horticulture when a scientist returns from abroad and confesses that his attitudes toward research and teaching have changed; that he now realizes it isn't enough to study plant processes, or to publish in scientific journals, or to obtain a federal grant--that, in reality, it is the human value of the plant that counts and that with his research and teaching must go a strong conviction about the value of human life.

We need literally thousands of these people, especially local residents of less developed nations, who will obtain the necessary education and return to work for and with their less fortunate countrymen.

Progress in this area will be speeded if we can develop even more cooperative programs in research and teaching that closely link scientific personnel in geographically separated regions. In our own laboratories at Michigan State University, I find it exciting as well as gratifying to see apple scion wood from England coming to Dr. Carlson for propagation; bulbs arriving from the Experiment Station in Lisse, Holland for Dr. De Hertogh's forcing experiments; and Dr. Peterson shipping out cucumber breeding material for increase in Mexico.

We must join together not only for meetings of this nature, but in our research, our graduate training, and our extension and advisory activities . . . in part from Address to the International Horticultural Congress, August 16, 1966, by the late Dr. John Carew of the Horticulture Department at Michigan State University.

DR. TONY PRESTON HONORED BY LONDON UNIVERSITY

As members of the International Dwarf Fruit Tree Association, we send our sincere congratulations to Tony, his wife, Eunice, and family, for the well-deserved honor.

The letter, dated September 3, 1980, from Dr. J. E. Jackson, of East Malling Research Station, read as follows:

"Dear Bob,

Has Tony Preston told you that he has been awarded the degree of D.Sc. by London University for his work on 'Studies on the control of fruit tree growth and cropping by rootstock, pruning, fruit thinning, and tree spacing'?

He retired in April, after almost 36 years at EMRS. The news of his D.Sc. - our highest degree - came through this month. I am sure that all his friends in the International Dwarf Fruit Tree Association will be pleased to hear of it."

PRE-REGISTRATION FOR THE 24TH ANNUAL CONFERENCE

It is necessary to pre-register for the 24th Annual Conference in order to make arrangements for adequate lodging, meals, meeting rooms, bus transportation, and to expedite registration during the conference.

Pre-registration forms with check should be returned to:

Dr. Robert F. Carlson
Department of Horticulture-Michigan State University
East Lansing, MI 48824

no later than February 1, 1981. Checks should be in United States currency and made payable to the International Dwarf Fruit Tree Association.

Lodging reservations are to be made directly to:

Grand Traverse Hilton
Acme, MI 49610
(616) 938-2100

These reservations should be made by January 20, 1981, or sooner. A lodging reservation card is enclosed.

REGISTRATION FOR THE 24TH ANNUAL CONFERENCE

(all persons attending must register)

_____	Registration cost	\$10.00
_____	Banquet (all inclusive tax and gratuity).	13.25
_____	Bus ticket (orchard tour)	5.00
_____	Ladies' luncheon.	5.00
_____	Voluntary Rootstock Research contribution	
	TOTAL.	\$ _____

Back issues of IDFTA Proceedings will be available at the Registration Desk.

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

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ROOTSTOCK BEHAVIOR

SPUR TYPES

INDUCED DWARFING

CULTURAL PRACTICES

THE INTERNATIONAL DWARF FRUIT TREE ASSOCIATION

No. 4, September, 1980 - Prepared by Robert F. Carlson

TREE DENSITIES AND DEVELOPMENTS

Fruit tree culture has changed drastically during the past quarter of a century. This fact was very much in evidence during the first week of August, 1980, when pomologists from all over the world met at Lana, Italy, to discuss tree densities. This was a working group organized by the International Horticulture Society. Many factors relating or influencing fruit tree densities were brought out in papers presented during the week-long Symposium. About one day and a half was spent in visiting part of the fruit industry in Northern Italy.

Factors influencing tree density: Of the several topics related to tree density, one dealing with nitrogen requirements by P. Delver, Holland, was very appropriate, especially now when there is a "down-play" on the importance of fruit tree nutrition. In his 12-page paper, Delver presented data which not only effects tree spacing, but most importantly nitrogen effects on flower initiation, fruit weight (quality) biennial bearing, tree growth, and regular cropping during the life span of an orchard. For example, low application of fertilizers may cause biennial bearing in high density, but not in low density. Flower initiation may be reduced from nitrogen deficiency when high yields coincide with drought.

Light in relation to tree canopy and spacing: Several papers dealt with light which in reality ties in with tree nutrition. That is, the fertilizer program used by the grower effects the tree canopy irrespective of tree spacing. Of course, since there is "limited" light for a certain location, its distribution must be carefully considered in various tree spacings to obtain maximum efficiency relating to fruit yield and quality.

Factors effecting tree density are very much interrelated. One cannot separate one from the other. Water, for example, plays a major role in efficiencies of light, nutrition (soils), root distribution, etc.

Rootstock influence on tree density: The vigorous rootstocks, such as seedlings and MM 111, cannot be expected to perform in high density systems. Rather, M. 9 and M. 26, due to their dwarfing and precocity effects, are popular for use in high densities in some fruit growing areas of the world. However, these are not currently or extensively used in the southern hemisphere.

M. 9 seems most popular in Europe, up to 90% of all trees in some countries. Due to high cost of establishing and maintaining orchards on rootstocks such as M. 9, it became evident at the Symposium that better dwarfing, precocious and strongly-anchored rootstocks are needed. The cost of post, trellises and labor is becoming prohibitive. Thus, European growers have for a century or more grown trees with support materials (such as espelier, posts, wires, etc.). No doubt in the future we will look for rootstocks which will provide free-standing trees.

Reports on performance of new rootstocks for apple were presented by persons from Poland, England and Michigan, and for pear from France. Due to the untimely death of J. Brossier of Angers, the paper on pear rootstocks was read by a colleague. A group of five Pyrus communis clones are now being evaluated for dwarfing and productivity at the Angers Station, France. Fruit production on some of these clones has been better than on Quince A. Some may be useful in high density pear plantings.

The prospect of new and improved apple rootstocks for the future is becoming increasingly interesting. For example, the hardy, dwarfing rootstocks from Poland were described by S. W. Zagaja as having commercial use in the future. These are known as the P-series. P. 2 and P. 22 propagate as well as M. 9, and are more winter hardy; whereas, P. 1 and P. 16 propagate with ease and are similar to M. 9 in hardiness. These also have shown considerable resistance to collar rot.

The MAC-series was described in detail by R. F. Carlson, giving history of development and current status of propagation. Two nurseries now have propagation rights of MAC-9, which means that this one should be available in limited quantities by mid-1981. Others in the same series are included in the NC-140 testing program and in part sponsored by IDFTA.

Tony Webster, of East Malling, described the progress made in stone fruit clonal rootstocks such as 'Colt' for cherry and 'Pixy' for plum cultivars. Both of these stocks have shown promise in precocity, production and compatibility. 'Colt' is in research tests in the U.S.A. and in limited numbers in commercial plantings. Dependable rootstock clones for the stone fruits are very much needed for the fruit industry and towards this end, expenditures of research money is greatly warranted.

Mechanization and tree densities: Various harvesting machines, simple and complex, were discussed by persons from Holland, New York, England, New Zealand and Italy. Although the perfect machine is not yet here, it is noteworthy and good that various approaches and prototypes toward such machines are in progress.

General comments: A symposium of this sort is useful for the research persons in attendance because progress data presented leads to less duplication in future research. There also evolved during the Meetings many practical, useful "grower hints" which should be made available through extension channels. Through the efforts of the Symposium organizers (Drs. Wertheim, Holland; Jackson, England; Bunemann, Germany and Sansavini and Oberhofer, Italy) summaries of the papers were published in "Obstbau Weinbau". Papers will be published in their entirety in the Proceedings of the High Density Symposium.

Obviously, the smaller, compact and more efficient tree of all fruit crops is here to stay. It is up to all of us to learn how to more effectively manage them and to cope with problems which may occur in the future.....R.F. Carlson

RANDOM MEETINGS AND TOURS

December 2-4, 1980 Michigan Horticultural Society, Grand Rapids, Michigan
December 1-4, 1980 Washington State Horticultural Society, Yakima, Washington
January 25-28, 1981 Virginia Horticultural Society, Roanoke, Virginia
March 4-7, 1981. IDFTA Conference, Grand Traverse Hilton, Acme, Michigan
June 16-18, 1981 IDFTA Annual Orchard Study Tour, Illinois/Wisconsin
June 25-July 15, 1981. . . Tentative dates for IDFTA out-of-country Orchard Study Tour to Spain, Austria, Sweden, Norway

IDFTA-SPONSORED ROOTSTOCK RESEARCH

At the Board Meeting, February, 1980, the Directors of the IDFTA approved funding of \$15,500.00 to the following state university research stations for research of fruit tree rootstocks and related projects.

Colorado Rapid clonal propagation methods
Georgia. Propagation methods for high densities
Idaho. Leaf cuttings as a method of propagation
Illinois Prunus and Malus graft compatibility
Indiana. Evaluation of rootstocks for peaches and nectarines
Massachusetts. . . . Water and soil relationships to rootstocks
New York Breeding for disease resistance
Ohio Biological and cultural control of collar rot
Oregon Nutrition and compatibility of fruit tree rootstocks
Pennsylvania Cherry rootstock testing
Vermont. Planting depth of rootstocks and interstocks
Wisconsin. Nutrition of trees on interstems and rootstocks

NOTE TO PERSONS RESEARCHING ROOTSTOCKS

The Association will allocate more money toward rootstock research in 1981. Projects are evaluated by the Rootstock Research Committee as to their practical aspects and usefulness. This Committee is composed of growers and research

personnel. For more information, contact Dr. Frank Gilbert, Experiment Station, Sturgeon Bay, Wisconsin 54235.

IN RETROSPECT - SUMMER TOUR, 1980

West Virginia and Virginia were the host states for the 1980 Orchard Study Tour. Over 500 IDFTA members learned much from what they saw. Favorable weather and good pre-planning were factors in a successful three-day Meeting. We wish to convey sincere thanks to the growers whose orchards we visited and to the research and extension personnel who so capably planned and managed the Tour.

The Directors of the IDFTA also wish to thank the West Virginia Horticultural Society for the \$1,000.00 check presented during the Tour. This is another example of research supported by state societies.

INTERSTEMS FOR APPLE TREE DWARFING

The use of stem sections to reduce tree size is currently part of the dwarfing tree planting program. These trees are known as "interstem trees". A stem section of a dwarf stock, usually M. 9 is either grafted or budded into the lower part of the trunk between the root system and the cultivar. The root system can vary from seedling to clonal.

Effects of interstem on the cultivar: The stem section will effect the finished tree in many ways, some of which are different from those of the one-graft union tree. The unfavorable effects which can occur when interstem trees are not propagated correctly are: increased suckering; more chance of virus complexes; variation in tree size; lack of adequate tree anchorage; confusion as to depth of planting the two graft unions; variation in precocity and tree vigor due to differences in the length of the interstem; influence of length of tree "shank" in tree stability; variation in stem rooting (shank and/or stem piece) depending on depth of planting; and variation in tree shape or form as influenced by the tree components.

Uniformity in interstem trees can be obtained by using a clone root system, such as MM 111 and MM 106, having consistent lengths of interstems and shanks, and maintaining uniform depth of planting all trees.....R. F. Carlson

MSU's ROOTSTOCK POSITION FILLED

The position vacated by the retirement of Robert F. Carlson in 1979 has been filled. Ron Perry and his family arrived in August from Texas. We wish Ron success and hope he and his family will do well in Michigan.