

Department of
Horticulture

MICHIGAN
STATE
UNIVERSITY

COMPACT FRUIT TREE

DWARF FRUIT TREE ASSOCIATION

Rootstock Behavior

Spur Types

Induced Dwarfing

Cultural Practices

Vol. 5, No. 1, January, 1972. Edited by R. F. Carlson

PROGRAM PREVIEW

FOURTEENTH ANNUAL CONFERENCE

Thursday, Friday and Saturday, March 9, 10 and 11, 1972, are the dates of the Annual Conference of the National Dwarf Fruit Tree Association. The headquarters are at the Pantlind Hotel, Grand Rapids, Michigan

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THEME: LEARNING HOW TO HANDLE AND MANAGE HIGH DENSITY PLANTINGS ECONOMICALLY FOR THE PRODUCTION OF QUALITY FRUIT.

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A large crowd is expected to attend this 14th Annual Conference. Hence, advanced room reservations should be made early by writing to the Pantlind Hotel, 187 Monroe N.W., Grand Rapids, Michigan 49502, or Phone 616-459-7201.

ORCHARD TOUR SCHEDULED SATURDAY, MARCH 11

An interesting orchard tour will start from the Pantlind Hotel, Saturday at 12:00 noon. Several modern busses will load in front of the Hotel and then depart for a tour of the "fruit ridge" with several planned stops to view pruning demonstrations, orchard rotation, and plantings of compact trees. An informed guide will be on each bus to explain the area and answer questions. The busses will be back at the Hotel at 4:00 pm. Late check-out by Hotel guests can be arranged at the desk.

For convenience in handling a large crowd on the orchard tour we ask that you plan to be on one of the busses, rather than drive your own car. The cost will be \$1.50 per person. In order to plan for adequate bus transportation, please return the note provided at the end of this newsletter. Bus tickets will be available at the registration desk, Thursday and Friday, March 9 and 10.

BANQUET PLANNED FOR FRIDAY EVENING

The Pantlind Hotel is noted for it's good food and fine banquet facilities. The banquet is scheduled in the Hotel, Friday at 7:00 pm following the formal program.

Dr. Aurthur Thompson, Professor of Horticulture, University of Maryland, will speak on "The Dilemma of the Fruit Industry in Western Europe". Dr. Thompson spent one month, during Spring of 1971, in Holland consulting for the Dutch government on the fruit situation and problems phasing that industry. He also traveled in some of the other common market countries to obtain a clearer concept of the current problems confronting the growers.

REGISTRATION AND INFORMAL MEETINGS THURSDAY

Registration will start at noon, Thursday, March 9, in the Pantlind Hotel lobby. Banquet and bus tickets will be available at the desk.

The 1972 annual DFTA dues, \$3.00, can be paid at the registration desk or mailed to: Treasurer, Dwarf Fruit Tree Association, P.O. Box 143, Hartford, Michigan 49057.

Informal discussion and slide sessions on varied rootstock topics and orchard management problems are tentatively planned for Thursday afternoon and evening. This is your chance to use your color slides depicting any problem, or planting or pruning schemes, etc. So, bring your slides, ideas, problems and air them in the informal discussion.

FRUIT PRODUCT SAMPLING

Glen Antle, District Marketing Agent, in cooperation with Frank Klackle, District Hort. Agent, will have new and promising fruit products available for sampling during Thursday evening.

SEVERAL GUEST SPEAKERS SCHEDULED FRIDAY AND SATURDAY

NUTRITION FOR COMPACT TREES

Dr. Gerhard Bünemann, Director of the Fruit Tree Research Station (Institut Für Obstbau) West Berlin, Germany, will speak on fruit quality obtained from proper use of major and minor nutrients, as related to use of different rootstocks and tree densities. Dr. Bünemann having studied at the University of Hannover; worked at the Sarstead Research Station under Dr. De Hass; and received advanced degrees in the Department of Horticulture, Michigan State University, comes to this meeting well qualified to speak and to answer questions on varied fruit tree topics.

HANDLING HIGH DENSITIES

Mr. Dan Neutebbom, Ipswich, England, is a progressive fruit grower. His acreage holdings are not large, but his knowledge of handling compact trees results in high production of quality apples and pears. He will discuss his over-all fruit growing operations including growing and training trees and handling and marketing the fruit.

MANAGEMENT AND ECONOMICS

Mr. Richard Norton, Horticulture Agent, Rochester, New York, will discuss his economic studies dealing with cost factors in production using different rootstocks at different tree spacings. He is also well qualified to speak on the general fruit production situation in New York and on current marketing conditions effecting growers in Eastern USA.

CULTURE AND TREE HANDLING

Dr. David Ferree, Department of Horticulture, Ohio State University, was a member of the 1971 study tour to Europe. He will give a detailed description, with colored slides, of the various research and grower conditions observed while traveling in Italy, Yugoslavia, Austria, Germany, England and Scotland. Many of these observations and ideas fit well into developing productive high density orchards at present.

GROWER'S
EXPERIENCES

Panal discussions involving fruit grower's experiences with compact trees are planned within the program. Tentative panal members are Bruce Beard, Manager of fruit farm in Ohio, Fritz Wafler, fruit grower, Wolcott, New York and John Schaefer, Sparta, Michigan. Mr. Wafler will discuss his experiences with apple varieties on EM 26 and his growing/management techniques. Mr. Beard will speak on his experiences with production of quality fruit in Ohio and, John Schaefer on tree removal and replanting.

TRENDS
IN
APPLE
VARIETIES

Dr. Roger Way, Professor of Pomology, Geneva, New York, will speak on trends in apple varieties. The Geneva Station has been breeding apples for over half a century and introduced many well known varieties. Dr. Way has a knowledge of current commercial varieties and is in a position to assess how the newer varieties and selections may fit into the grower variety picture in the future.

TRICKLE
IRRIGATION

Dr. A. L. Kenworthy, Professor of Horticulture, Michigan State University, has recently been involved in simplifying trickle irrigation for fruit trees. He will discuss the latest guidelines for use in orchards, and especially so, for improving tree growth and for obtaining better fruit size and quality.

TREE
VIRUSES

Dr. William Young, Pathologist with the Michigan Department of Agriculture, will discuss how much we should be concerned with latent viruses when buying fruit trees. The virus complexes are becoming increasingly important when purchasing pome and stone fruit trees of various varieties on different clonal and seedling rootstocks.

ROOTSTOCK
REVIEW

Dr. Robert Carlson, Professor of Horticulture, Michigan State University, will up-date the currently recommended rootstocks for commercial orchards, their adaptability and place in high densities.

LADIES
PROGRAM
FRIDAY
AFTERNOON

Since Grand Rapids has much to offer the ladies attending the conference, one half day program is planned for Friday afternoon. The convention people are making the necessary arrangements for this program. Mrs. Kenneth (Mary) McDonald, wife of the DFTA President, has offered to be on hand in leading the program. Some of the items which may be included in this program are: Famous home furniture store, Home designing, museum, Planatarium, etc. Details of this ladies program will be in the final program in February.

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THE DETAILED PROGRAM SCHEDULE WILL BE PUBLISHED IN THE NEXT NEWSLETTER

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QUALITIES IN PEACH SEEDLING ROOTSTOCKS

Some of the qualities in a good peach seedling rootstock are: 1. Seed trees should be self fertile in order to produce more genetically uniform seed; 2. The seed trees should be as tolerent as possible to low and fluctuating winter

temperatures; 3. The seed trees should "harden off" and defoliate in early November; 4. The seed trees should have a long dormant rest period to delay bud break in the spring; 5. The seed from such trees should have good germination to produce uniform seedlings in the nursery; 6. These seedlings should have the qualities listed for the seed trees in order to improve the varieties budded on them; 7. The seedlings should have a well developed root system which would tolerate an average peach soil; 8. The seedlings should be relatively resistant to soil nematodes, crown gall and other diseases and insects; 9. The seedlings should be compatible with all peach varieties, and 10. They should have a long life expectancy...R.F.C.

DFTA - ANNUAL SUMMER ORCHARD TOUR - JUNE 29 - JULY 1, 1972

Western New York has been chosen for the annual fruit orchard summer tour. Most of one day, Thursday, June 29, will be spent visiting research and test fruit plantings at the Agricultural Experiment Station at Geneva. Friday and part of Saturday, June 30 and July 1, certain orchards in the Rochester and Sodus vicinities will be visited including test orchards under Richard Norton's supervision.

This tour follows the IAI Convention at Lake Placid, New York, so this is a chance to take in 2 meetings in one trip.

Details of the tour and evening discussion sessions will be announced later. Set aside June 29-July 1, 1972, for the DFTA's annual orchard study tour.

ABSTRACT JAARVERSLAY 1970

The Dutch researchers have found that pregrading fruit at harvesttime and before storage will result in financial advantages. They also report that 0.15% Ethrel gave more fruit breakdown than .10%; and that when color was high, keeping quality was decreased. Ethrel treatments did not necessarily influence scald, bitter pit, or moldy core.

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--"Therefore the concept of 'deficiency disorders' should be tackled with great caution. Symptoms of calcium deficiency, for instance, may occur even with ample supply of calcium in the soil"...Bunemann and Ludders

NOTE FROM ROBERT LONGLEY, KENTVILLE, N.S.

"It would seem as if over the years the apple industry has had one crisis after another. That does not say that growers have not made a living. It would appear as if the present situation is more acute than usual. Sales to England have decreased both for fresh fruit and processed apples. We are in competition in our Canadian markets with France, and other European countries, China, Japan, Australia, New Zealand and South Africa. In some instances this is in fresh fruit and in others apple juice concentrate. At 1 1/2 cents per pound drop apples were well worth harvesting. The price this year is 1.15 cents per pound, so, many apples are left on the ground".

PRUNING DELICIOUS TREES

The first year select 2 to 4 well formed branches with strong and wide crotch angles. Spread these branches using wire spreaders. Head back the central leader to keep in balance or in proportion with branches.

The second year select 2 or 3 more well developed branches. Spread these by the use of stiff wire spreaders or by pre-made spreaders of other sorts. Remove weak branch growth, but leave all spur growth on trunk and laterals.

The third year another one or two lateral branches could be developed on the modified central leader. Again head back the leader to keep the tree in balance and well formed.

The fourth year some holding action should be initiated. This is done by heading back the lowest 2 or 3 branches to the three year old wood. If the branch is well spread head back to an upward growing side lateral of the branch. Judge heading back by the amount of space allotted for each tree. Check the leader and remove any multiple leaders that tend to develop. Thin out any thick branch development of the tree, but keep spur branches intact within the tree. Spread any upward growing branch at the top, or if too vigorous, remove it clean to the central leader.

The fifth year touch up, and shape up the tree by removing any vigorous shoots which are not fruitful. At this time the tree should be 8 feet tall and depending on tree density and height, it should be high enough for convenient harvesting. Again, apply holding action by heading back to another fruitful branch lateral. The top branches should be cut back to a good downward growing side lateral to prevent the upright growing habit of Red Delicious.

The sixth year a branch renewal program should be started on 2 or 3 of the lower scaffold branches. The purpose is to keep young fruiting wood close to the central leader. Renew fruiting wood by cutting back lower branches to a younger 2-year side lateral. Do not under-cut lower branches so that they become over-shadowed by the ones higher up on the central leader. Some branch removal may be required to allow sunlight to penetrate fruiting wood.

The seventh and following years continue tree training by bending any up-right growing branches to fill in vacant areas, by removing up-right growing branches which compete with the leader and with the established branches, by renewing fruiting branches, and by heading back to hold the trees from getting too large. Keep pruning to a minimum each year or the cropping of Delicious may be reduced in favor of vigorous shoot growth. Sucker growth should be pulled off in June and July...R.F. Carlson

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Professor Cy Russell, former faculty member, Department of Horticulture, MSU, died December, 1971. Cy was well known for his excellence in teaching horticultural classes for many years. He became known to students and persons in the horticultural industry over the country for his detailed knowledge of fruiting habits of many plants. His understanding of pruning woody plants from apple to Forsythia was well recognized. Another outstanding trait of Professor Russell was that he had a capacity for remembering former student names. His name also will be remembered for many years.

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FUTURE MEETING DATES

January 25-28 - American Pomological Society and Western Colorado Horticultural Society. Ramada Inn, Grand Junction, Colorado.

February 20-23 - National Peach Council Convention. Shelburne Hotel, Atlantic City, New Jersey.

March 9-11, 1972 - Annual Conference Dwarf Fruit Tree Association. Pantlind Hotel, Grand Rapids, Michigan.

June 25-28 - International Apple Institute. Whiteface Inn, Lake Placid, New York.

June 29-July 1- Annual Orchard Summer Tour, Dwarf Fruit Tree Association. Geneva and Western Fruit Area, New York

ROOT GROWTH

"The root growth of EM 26 has been observed during two years in special observation-cases for examining the effect of the growth retardant "Alar" after foliar application. The periodicity of the seasonal root development was not influenced by the Alar treatment. This was determined through the temperature and the shoot growth. Small temperature fluctuations had only little influence on the root development. The greatest root growth was during August and October. Single treatments had different effects in the two years. The trees treated in both years showed a smaller root development. This growth depression was still observed to the same degree in the spring of the third year. For the evaluation of the influence of growth retardant and the seasonal development on root growth, it would have been enough to count the number of new root points. The average length of the weekly increase was determined by the temperature and the intensity of the root development"...Schumacher, Fankhauser and Schlapfer

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MAY THE NEW YEAR BRING EVERYONE HAPPINESS AND SUCCESS IN WHATEVER THEY UNDERTAKE

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Those planning to attend the 14th Annual Conference of the National Dwarf Fruit Tree Association please check these items and return to 303 Horticulture Building, Michigan State University, East Lansing, Michigan 48823.

I or we will attend the Banquet. Yes ___ No ___ Number in party ___

I or we will take the bus orchard tour. Yes ___ No ___ Number in party ___

I or we will attend the ladies program Friday afternoon. Yes ___ No ___ Number in party ___

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CONFERENCE PROGRAM
Dwarf Fruit Tree Association
March 9-11, 1972
Pantlind Hotel, Grand Rapids

FIFTEENTH ANNUAL CONFERENCE

THEME: LEARNING HOW TO HANDLE AND MANAGE HIGH DENSITY PLANTINGS ECONOMICALLY FOR
THE PRODUCTION OF QUALITY FRUIT

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DATUM

The Dwarf Fruit Tree Association was conceived March, 1958, at Hill Top Orchards, Hartford, Michigan. Since then, the membership has grown from 100 to over 1000 persons. Eighty-two Newsletters (culminating in 4 volumes, 515 pages) have been published. This, the FIFTEENTH CONFERENCE, will mark another notch of progress in growing and marketing quality fruit.

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Thursday Afternoon, March 9

- Noon Start of Registration in the lobby of the Pantlind Hotel
- 2:00 to 4:00 pm - New Fruit Products Tasting and Social Mixer in the CONTINENTAL ROOM. Co-Chairman: MR. GLEN ANTEL - St. Joseph, Michigan
MR. FRANK KLACKLE - Grand Rapids, Michigan
- 4:00 to 6:30 pm - Free time for dinner and for registration and for getting to know each other.

Thursday Evening

- 6:30 to 7:45 pm - KENT STATE ROOM - "Show and Tell" Slide Session - 1971 - European Tour - Moderator: MR. JOSEPH GARRETT, Kentucky. Everyone Welcome.

8:00 to 10:00 pm - Two concurrent discussion sessions: KENT STATE ROOM
Group I Discussion Theme: "Growing and Marketing Fancy Fruit".

How can we utilize dwarf trees extensively and efficiently to produce fancy fruit, and how will this improve (or solve) some of the marketing problems? And, what methods can best be devised and implemented for getting fancy, and extra fancy fruit from compact trees marketed at a fair price to the consumer and at a profit to the grower.

Co-Moderators - DR. HOWARD ROLLINS, Columbus, Ohio
MR. HOWARD CLUPPER, Dowagiac, Michigan

Discussion Respondents - DR. DONALD DEWEY
MR. CLARE MUSKYGROVE
MRS. WALLACE HEUSER
MR. RANKIN LYMAN
DR. DONALD RICKS
MR. JOHN BELL, JR., AND OTHERS

Group II Discussion Theme: CONTINENTAL ROOM - "Coordination and Implementation in Developing Better Fruit Tree Rootstocks".

New and better rootstocks will be most important in fruit production in the future. How can we best develop a unified program in breeding and testing fruit tree rootstock with quality as to dwarfing, precocity, hardiness and resistance to diseases and insects?

Co-Moderators - DR. JAMES CUMMINS, Geneva, New York
DR. ROY SIMONS, Urbana, Illinois
MR. WALLACE HEUSER, Hartford, Michigan

Discussion Respondents - All persons interested in developing better rootstock for all tree fruits.

NOTE: Projection equipment will be set up for showing slides of new rootstock and/or varieties.

Friday Morning, March 10

9:00 am - The Pantlind Hotel Ballroom
Chairman - MR. RICHARD MATTERN, Vice President, DFTA, Pennsylvania

"Welcome and announcements" - MR. KENNETH MCDONALD, President, DFTA, West Virginia.

9:15 am - "Brief Rootstock Review" - DR. ROBERT CARLSON, Michigan State University.

9:30 am - "What We Should Know About Latent Viruses in Fruit Trees" - DR. WILLIAM YOUNG, Michigan Department of Agriculture.

10:00 am - "How We Developed Our Fruit Farm and How We Grow and Manage Small Apple and Pear Trees" - MR. DAN NEUTEBOOM, Modern Fruit Grower, Ipswich, United Kingdom.

11:00 am - A Panel Discussion by prominent Fruit Growers.

Moderator - MR. GEORGE WHALEY, Ontario, Canada

"How We Grow Fruit for the Wholesale Market" - MR. BRUCE BEARD, Carroll, Ohio. Bruce is managing about 450 acres of apples, pears, and plums which are sold wholesale. Many of the apples are produced on about 10,000 semi-dwarf trees.

"Renewing Orchards and Re-planting with Compact Trees - Methods and Costs". - MR. JOHN SCHAEFER, Sparta, Michigan. The Schaefer's have developed a program of tree removal and re-planting to keep their orchards young and productive.

"My Experiences with Apple Rootstocks in California". - MR. WALTER KRAUSE, Reedley, California. Mr. Krause has wide experience with growing fruit trees and more recently with the use of dwarfing and semi-dwarfing trees under warmer soil and climatic conditions.

12:00 noon-Lunch on your own - Eight restaurants, lunch rooms and cafeteria available in the Pantlind Hotel.

Friday Afternoon

1:30 pm - Chairman - DR. FRANK DENNIS, Michigan State University

"Model Orchard for Modern Fruit Growing -- And the Role of Nitrogen in Dwarfing Rootstocks".

DR GERHARD BUNEMANN, Institut Fur Obstbau, University of Berlin, Germany. Dr. Bunemann is an authority on nutrition and culture of dwarfed trees.

2:30 pm - "Trends in New and Commercially Important Varieties".

DR. ROGER WAY, Geneva New York

3:00 pm - Break

3:15 pm - Chairman - DR. JEROME HULL, Michigan State University

"High Density Plantings -- What is Optimal From A Technological and Economical Viewpoint".

MR. RICHARD NORTON, Hort Agent, Rochester, New York.

4:00 pm - "How We are Preparing to Change To Continue Farming For a Profit in a Common Market (E.E.C.).

MR. DAN NEUTEBOOM, Ipswich, England

5:00 pm - DFTA Business Meeting - MR. KENNETH MCDONALD presiding.

5:10 pm - Adjourn for preparation for the evening Banquet.

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Friday Evening

7:00 pm - Banquet, The Ballroom Pantlind Hotel
Moderator - DR. JOHN CAREW, Chairman, Department of Horticulture, MSU.

Invocation - MR. KENNETH MCDONALD, West Virginia

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Menu: Fruit Cocktail, assorted relishes, roast sirloin of beef, Michigan baked potato, fresh green beans, tossed green salad, assorted dinner rolls, Dutch apple pie and beverages.

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Speaker: DR. ARTHUR THOMPSON, Professor, University of Maryland.
"The Dilemma of the Fruit Industry in Western Europe".

In April, 1971, Dr. Thompson was consultant to the Arthur D. Little, Inc., Mass., to whom the Dutch Ministry of Agriculture had gone for a contract to do an independent study of the Dutch fruit industry and major competition in France and Italy.

Saturday Morning, March 11

8:30 am - Chairman - DR. GEORGE STEMBRIDGE, South Carolina.

"What We Saw and Learned During the 1971 Orchard Tour to Europe -- Culture, Management and Marketing".

DR. DAVID FERREE, Ohio State University.

9:30 am - "Fruit Growing in Germany -- What is the Trend in a Competitive Common Market?"

DR. GERHARD BUNEMANN, West Berlin, Germany

10:15 am - "Guidelines for Trickle Irrigation in Orchards -- With Emphasis on High Density Plantings."

DR. A. L. KENWORTHY, Michigan State University

10:45 am - Questions

11:00 am - Adjourn for an early lunch and orchard tour

Saturday Afternoon

12:00 noon - Load busses (Lyon Street Exit of Hotel) for Orchard Tour -
Chairman - FRANK KLACKLE

12:05 pm - Depart for Orchard Tour - Moderators - FRANK KLACKLE, MARLIN KRAFT,
RICHARD REATH AND JERRY SIETSEMA

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Three Orchard Stops:

- Stop 1. ERWIN KLENK (10 Mile Road and Fruit Ridge) - Brief resume of fruit ridge, 10-year Clark Dwarf and pruning demonstration.
- Stop 2. JOHN SCHAEFER (10-Mile Road and Kenowa) - Orchard re-juvenation (old trees out in the fall and new ones planted in the spring), stump removal with chipping machine, refreshment apple juice courtesy Indian Summer.
- Stop 3. ROGER SAUR (12 Mile Road and M-37) - Observe large young planting, pruning and training of young bearing trees.

NOTE: You will see and learn most by being on one of 4 busses. Each bus moderator is well informed on fruit growing in the area and will have details of the route and each stop. The tour will split up following Stop 1 (at Klenks), however, each group will make the same stops but at a different time. Bus tickets (\$1.50) will be sold at the registration desk.

4:00 pm - Tour terminates at the Pantlind Hotel

Friday Afternoon: LADIES PROGRAM

2:00 to 5:00 pm - Lady-in-charge: MRS. KENNETH (MARY) MCDONALD

Assemble in lobby of The Pantlind Hotel. EDWARD BRUNETTE or other representative of the Grand Rapids Convention Bureau will be on hand for detailed information.

1. The group will proceed to the building just back of the Hotel which houses fine furniture displays on several floors. Grand Rapids has a long history of fine furniture manufacturing.
2. Tentative: "The Power of Woman in Future Agriculture -- Don't Under estimate It". Room to be announced.

EUROPEAN SLIDE SESSION

This session is scheduled Thursday evening, March 9, from 6:30 to 7:45 pm in the KENT STATE ROOM. Bring your 10 best and most interesting slides depicting some humorous incident or some new practice that was of value to you. We want to share with other members our experiences of these over-seas trips. Saturday morning, DR. DAVID FERREE will give a more detailed description of Europe's fruit industry.

ERRATA - This is the FIFTEENTH annual conference of the Dwarf Fruit Tree Association and not the fourteenth as reported in previous newsletters.

REGISTRATION INFORMATION

Registration	\$1.00
1972 Annual Dues	\$3.00
Banquet ticket	\$4.75
Bus ticket	\$1.50

Four Volumes of COMPACT FRUIT TREE available at the Registration Desk: Volume 1, available at \$2.50 per volume; Volumes 2, 3 and 4 available at \$2.00 per volume. The above volumes also available on request to: 303 Horticulture, Michigan State University, East Lansing, Michigan 48823. Make checks payable to: Dwarf Fruit Tree Association.

OTHER CONFERENCE INFORMATION

Parking: Pantlind Hotel Guests can park free one block west of the Hotel. Municipal parking is north of the Hotel, near the Auditorium.

Car Commuters: I-96, US-131, M-37, M-21 and other routes channel into Grand Rapids.

Air Commuters: United, North Central and Allegany Airlines

Hotel Reservations: Write the Pantlind Hotel, 187 Monroe, N.W., Grand Rapids, Michigan 49502, or Telephone: 616-459-7201.

GUEST SPEAKERS FROM EUROPE

Dr. Gerhard Bunemann, Germany, is co-sponsored by the Horticulture Department at Michigan State University and Dwarf Fruit Tree Association. Part of the money for his travel comes from the Department's DuPont Lecture-Seminar Fund. He will give a seminar in the department entitled -- "Sink Effect on Behavior of Fruiting Plants and Their Products".

Mr. Dan Neuteboom, England, is sponsored by the Dwarf Fruit Tree Association.

THE ROOTSTOCK AND THE VARIETY

Each year fruit tree rootstocks are becoming increasingly important. Each fruit crop is dependent on the special performance of the root system. In turn, each fruit variety of apple, peach, pear, cherry, apricot, nectarine and plum will perform best on a certain rootstock, with certain characteristics such as dwarfing, hardiness, precocity, compatibility and yield.

In order to truly assess the value of a tree fruit variety, that variety should be on a uniform rootstock. A seedling rootstock is not a uniform rootstock so that when a variety is on such, no two trees are the same. A clone rootstock is not propagated by seed but by cuttings. So that trees of a variety on a certain clone are uniform, but may vary due to different cultural methods and/or soil variations.

Apple varieties of the tree fruits have gained an enviable leading position in that they can be grafted on the uniform available rootstocks of the EM and MM series. At present several of these rootstocks offer a range in dwarfing of the varieties; and, they are uniform productive and compatible.

Progress is being made to get clone rootstocks for the other varieties of the pome and stone fruits; rootstocks which will give more uniform tree growth, precocity, hardiness, and other important characteristics...RFC

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CONFERENCE - DFTA

The 16th Annual Conference Dwarf Fruit Tree Association is March 21, 22 and 23, 1973. For the second time, the conference will be held at Pantlind Hotel, Grand Rapids, Michigan, where fine meeting facilities are available.

The conference will start noon, Wednesday, with registration and informal discussions. The more formal program will begin 9:00 A.M. Thursday and continue to 11:00 A.M. Friday with an orchard tour that afternoon.

Several guest speakers from the states and other countries will make this an interesting program.

TREE SPACING AND YIELDS

Efficient use of valuable orchard land must take into consideration the spacing of trees and the number of trees per acre. However, at present the grower planting a new orchard must first consider: 1) his land value, 2) his present equipment and 3) his available labor. In other words, if he has plenty of land he may feel justified in planting fewer trees per acre; he must not crowd rows so that he cannot use his equipment effectively; and, he must have help that he can train in managing higher tree densities.

By manipulating tree spacing and densities, he can also increase his annual yields. For example, by going from 72 trees per acre to 242 trees per acre he can nearly quadruple his yields the first 10 years in the orchard (see table).

Yields Adjusted to Scion/Rootstock Combinations (Bu./A)

First 10 years Combination	Actual		Adjusted	
	T/A	Yield	T/A	Yield
Mc/EM VII	72	1582	242	4746
Jon/EM VII	72	860	339	5160
R. Del/EM VII	72	1370	242	4110
R. Del/Sdlg	72	339	242	1060

72=20'x30', 242=10'x18', 339=8'x16'

Actual apple yield (Michigan State University Graham Station) the first 10 years with 72 trees per acre. These yield data were adjusted to more trees per acre to illustrate yield potential.

NORTHERN SPY

Processors of apples are still using Northern Spy. Many "ladies-of-the-home" who know apples, are also out looking for this variety for applesauce and pie.

Arthur Lee, Paw Paw, Michigan has a 9-year-old orchard of Northern Spy on M7. This year he harvested 16 bushels per tree. With about 100 trees per acre he is getting satisfactory returns.

A planting set in 1945 at Michigan State University included Northern Spy on M7, with 72 trees per acre. These produced 842 bushels/acre in the 11th year. The trees were not budded high and tended to sucker and lean. It is important that when M7 is used as the rootstock, the variety is budded high so that the trees can be set about 10 - 12" deeper in the orchard. This will give better anchorage and will prevent most suckering.

'PRIMEGOLD'

This new yellow apple variety was found in Washington. A 5-year-old planting of about 2,500 trees at the Ed Wasem Orchard, Milan, Michigan, cropped well this year. Finish was good with a light blush on exposed side. Market acceptance in Michigan is yet to be established. However, Jim Ballard states in recent Goodfruit Grower that, "Market tests in Washington show favorable acceptance." He says further that, "...it will take years to determine the correct harvest date, effect of growth regulators and other cultural practices".

HANDLING APPLES FOR STORAGE

"Evaluation of a Hydrohandling System for Sorting and Sizing Apples for Storage in Pallet Boxes" is the title of a 22 page bulletin published September 1972. This publication by D. H. Dewey, et al. Michigan State University is comprehensive and conclusive on various aspects of hydrohandling apples as related to bruising, sizing, cost etc. The bulletin covers several years of work.

TRICKLE IRRIGATION

Orchard irrigation has become more practical and less costly by the trickle system. Dr. A. L. Kenworthy and Dr. Jerry Hull, during the past 2 years, have worked with this system of tree watering and have obtained increased and improved tree growth and increased fruit size especially of pear and peach. This work was done at the Michigan State University Graham Station at Grand Rapids, Michigan, with the assistance of John Gilmore and at several cooperating growers orchards with the assistance of Frank Klackle, District Horticulture Agent.

Research Report #165, Farm Science, Michigan State University, 1972, entitled Trickle Irrigation is available.

PROBLEM "SHOOTER"

The fruit growing industry is usually concerned each year about various macro and micro climatic effects on buds of fruit trees. Dr. Frank Dennis, Michigan State University, keeps an annual check on bud development, especially fruit buds, and on factors which influence the final fruit crop. Dr. Robert Andersen cooperates in this project by checking temperature variability in certain orchards.

In a report published in the Fruit Variety Journal they state "In one orchard -7° to -12°F November 12, 1971 killed most tart cherry fruit buds, but -20° in mid-January caused only slight injury". In January -25° was necessary to obtain injury on tart cherry buds and only -14°F to injure sweet cherry buds. Critical temperatures for freestone peach buds was approximately -5° and at -11°F most flower buds were killed".

OTHER FRUITS--SMALL AND LARGE--in brief.

Dr. James Moulton is involved in variety breeding of blueberries and strawberries. For example, one year in time is saved by growing plants in the greenhouse in the winter, making the crosses and growing new seedlings for transplanting to the field in the spring. He also cooperates with Dr. Robert Andersen in peach, apricot and nectarine improvement at South Haven.

Dr. Stanley Howell works with all the small fruits and is also involved in cold hardiness studies of fruit crops.

Dr. George Kessler is involved in student counseling and teaching.

Fruit storage problems are worked on by Dr. David Dilley; and fruit thinning and abscission by Dr. John Bukovac.

LILLIPUTIAN PLANTING SYSTEM

Newer systems of planting fruit trees for efficient mechanical pruning and harvesting are in the development stage. One of these, is the Lilliputian system as being worked on by Dr. Stanley Ries and Dr. Robert Carlson, Michigan State University. The system is very much in the development phase with the aim of growing bush type trees that can be mowed and renewed. However, many problems exist such as lack of rapid fruit bud initiation on new wood; most apple scion and rootstock are difficult to propagate; non-budded own-rooted scion varieties are not precocious; and weed and pest control can be a problem.

Preliminary yield results with large number of trees per acre indicate that a plateau is reached from which further increase in yields are not likely (see table).

Lilliputian: Yield (Bu./A) G. Del/IX-1967

Trees/A	1968	1969	1970	1971	Total
2151*	215	204	540	1123	1,867
2765	276	204	511	1252	1,967
3872	387	119	622	1399	2,140
4840	484	142	645	1252	2,039
4978	498	323	789	1246	2,358
6223	622	262	866	1508	2,636
6969	697	134	957	1274	2,365
8712	871	279	1019	1269	2,567
10,890*	1089	272	1064	1337	2,673

*Densities: 4.5' x 4.5' to 2.0' x 2.0'

Yields in the sixth year with 484 trees per acre (6x15') have reached 1,300 bu/acre, data from a 1957 planting at M.S.U.

MEADOW SYSTEM

This system is being developed at Long Ashton Research Station, England, by Drs. J. P. Hudson and L. C. Luckwell. Among several aspects in their project, they are using chemicals to initiate flower buds. To quote in part from Luckwell et al. "Trees "...at densities of the order of 20 to 40,000 trees/acre would be cropped in their second year and harvested by mowing off. The 2-year cycle would be repeated using new shoots regenerated from the stumps". Treatment with aminozone "...restricted shoot growth, allowed better light penetration and increased fruit set". With solid plant population (no alleys) of some varieties, up to 1,000 bu/acre (equivalent) were obtained in the 2nd year.

BED SYSTEM

In Holland one can see the "bed planting system" used at experimental stations. Six-row beds are spaced so close that only walking space is available between the rows and the trees are only 3 feet apart. Although various tree densities are in these spacing studies Dr. S. J. Wertheim, Wilhelminadorp, states that "...at the moment we consider the one-row system as most promising".

ORCHARD ESTABLISHMENT COSTS

About a decade ago Michigan State University made a cost study on establishing a standard versus a semi-dwarf orchard. Most factors considered the cost for bringing a standard orchard into bearing at age 7 was \$1,117.30 and for semi-dwarf at age 5 was \$1,065.30

A recent study by Washington State University (EM 2832-33-34 Revised June 1972) shows that these costs have doubled in a ten-year period (see table).

Abstracted Cost of Establishing Orchard

Systems	7th	5th	3rd	Trees/Acre
Standard	\$2273			108
Semi-dwarf		\$2200		268
Dwarf			\$2599	544

APPLE PROMOTION

In a telephone conversation with Sol. Polk of Polk Bros. Appliances and Furniture Sales, he informed us that for every customer who buys \$25.00 worth of merchandise, a half bushel of McIntosh apples is given away. For this they have bought 100,000 half bushels. Most of us will agree that this is an excellent and worth while project which will promote apples in a potential market area. The address of Polk Bros. is 8311 W. North Ave., Melrose Park, IL, near Chicago.

LOOKING FOR CHRISTMAS GIFTS?

An attractive well documented book entitled North American Apples: Varieties, Rootstocks, Outlook is available from Michigan State University Press, East Lansing, Michigan 48823. It has interesting reading matter and is an excellent Christmas gift at \$8.50 per copy.

ROOTSTOCK EFFECTS ON SCION

In a recent publication by O. P. Jones, East Malling it is suggested that "...scions above the invigorating rootstocks receive nutrients at a faster rate than scions above dwarfing rootstock," and that "...scions above invigorating interstocks receive a more concentrated nutrient solution than those above dwarfing interstocks, again suggest that dwarfed trees receive nutrients at a reduced rate compared with vigorous trees".

THE SPINDLE BUSH

Mr. Dan Neuteboom, fruit grower in England, has published a revised 34-page bulletin on the "Spindle Bush and Fruit Growing in England". In it he describes several simple techniques in planting, growing, training, pruning and general management of compact apple and pear trees. His favorite varieties and rootstocks are also evaluated.

To quote from Dan's opening chapters he says: "A good nurseryman is the growers best friend" and "Second quality trees can mean loss of several years production".

This bulletin (cost one pound) is available from: Grower Books, 49 Doughty, St. London WC1N 2LP, England.

MORE ABOUT ROOTSTOCKS

MM106 is an excellent rootstock, especially for Red Delicious, spur-type strains. However, this rootstock does not tolerate clay loam soils which can be "tight" and lack aeration. The collar rot disorder at the ground line has shown to be a problem on such soils.

Therefore, it is important that when MM106 is used as a rootstock, these trees be planted on a well drained sandy loam soil.

A comparable rootstock, although not quite as dwarfing or precocious, is MM111. Varieties such as spur Delicious, Golden Delicious and Jonathan on MM111 can be managed in a 12x20' spacing. But remember, heavy wet clay soils are not to be used for fruit plantings.

WATCH PLANTING DEPTHS

The planting of fruit trees grafted on clonal rootstocks must be precise in order to avoid problems in later years. Often one can find trees in an orchard planted at various depths; some trees with the graft union below ground, at ground level or several inches above the ground line. This is not a good practice.

Varying the planting depths will 1) influence tree vigor, 2) cause scion rooting if graft union is planted below ground level and 3) subject to winter injury if planted several inches above ground line.

Correct planting depth of the graft union is especially important with M9 and M26 rootstocks. These rootstocks are similar in having a thick cortex (bark) which can be subject to winter injury if exposed several inches above ground. Check young plantings for unduly exposed rootstock portions. If exposed, mound soil and/or sand around the trunk base.

CHECK YOUR CALENDAR

December 4-6, 1972 - Michigan Horticultural Society, Pantlind Hotel, Grand Rapids, Michigan.

January 23-25, 1973 - Wisconsin/Minnesota Fruit Growers Convention, Sheraton Inn.

February 25-28, 1973 - National Peach Council, Twin Bridges Marriott, Washington D.C.

March 21-23, 1973 - 16th Annual Conference DFFTA, Pantlind Hotel, Grand Rapids, Michigan.