Department of Horticulture

MICHIGAN STATE UNIVERSITY

COMPACT FRUIT TREE

DWARF FRUIT TREE ASSOCIATION

Rootstock Behavior
Spur Types
Induced Dwarfing
Cultural Practices

Vol. 4, No. 3, April, 1971. Edited By R. F. Carlson

QUALITY FRUIT DIRECT TO THE CONSUMER FROM COMPACT TREES

I am pleased to have the honor to share in your program today.

Description of Mowat Operation - Perhaps I can best begin by briefly describing Mowat Orchards operation. We are located in South Eastern Michigan in Lenawee County. We are just south of Adrian, a town of approximately 25,000 people. We have some 200,000 potential customers in a radius of 30-40 miles. Our operation is small consisting of 150 acres of apples, peaches, pears, plums, and cherries. Most of our fruit is picked by our labor and sold through our retail market on the farm though we have done a limited amount of "Pick Your Own." This is a permanent farm market in which we sell our fruit, and in addition, cider, donuts, jams, jellies, etc. The market remains open approximately nine months of each year.

Lenawee County, though rich agriculturally, has few orchards. Good sites are not plentiful and even the best have more frost then we like. We are primarily concerned with producing what we can sell retail and little more. With the depressed wholesale prices there has been considerable interest in farm marketing. But let me say that this method of marketing can be expensive and offer little financial reward unless there is good volume movement at prices considerably above the wholesale level. Many markets without family help to subsidize themselves would not be profitable. The point I want to make is that cost of fruit production to a retail operation is also extremely important. We believe that the advantages of compact trees in increasing yields and reducing harvesting costs has been well demonstrated. I hope that we can continue to improve in this area.

How Compact Trees Fit Our Program - With this background I will relate our experiences growing fruit on compact trees. I had considered illustrating my presentation, but after viewing my slides I realized that my photography overshadowed my tree growing abilities. Also, you have all seen many fine examples of compact orchards on your own farms.

We have trees on Malling VII, M-106, and a few intergrafts. Like many of you, we began planting some ten or twelve years ago with much enthusiasm. From our experiences, which has been more good than bad, my interest in compact trees has remained high. Most of our plantings are fairly dense like 13' x 18' or 12' x 20'. Soil conditions vary, but in general are of a fairly heavy loam, generally well-drained. These trees were planted and mulched in early years with no cultivation. We have made use of herbicides such as, simazine and amitrol T, sinbar. We have used two pounds of simazine in the first year about 3-4 weeks after planting. These trees receive no supplemental water.

Advantages of Compact Trees - Another advantage that compact trees have afforded our retail type marketing, is that customers have a very real preference for purchasing fruit from little trees. Normally, we in agriculture have had difficulty in public relations, but in the case of compact trees a good job has been done in arousing the public interest and curiosity. We, therefore, can and have capitalized on this advantage. Let's face it, it is far easier to market what the public wants than to face a job of re-education. In striving to produce what the consumer demands, we find little acceptance for apples less than 2 1/2" in diameter. In fact, we sell far more over 3 1/4" in diameter. However, for the volume sales the best size range is between 2 3/4"-3 1/4" in diameter. We have had no problem meeting these demands from compact trees. We have had more difficulty with oversize fruit especially on the Jonathan Variety, due to the fact that we thin or really over-thin to prevent structural breakdown of the tree. Our trees have for the most part not been supported in anyway. The exception being where we have had some tipping or leaning of Red Delicious. Our customers also want high colored and smooth finished and well-shaped fruit. We have had our problems with these qualities in the early years of bearing. I have never had really acceptable Goldens on trees less than six or seven years old, and Red Delicious were typically very large and very rounded. However, these problems have decreased with age of trees.

Quality More Important Than Quantity - Production records are not as high on our priority list as quality, therefore, if we can produce 600-1,000 bushels per acre we are financially pleased. On plantings of 13' x 18' we can obtain satisfactory production by our standards.

A very important concern of ours is in eliminating bruising not just reducing it. We know it requires lots of supervision, but we feel that we can also demand better performance from the pickers because picking from small trees is so much easier and more lucrative than from larger trees.

We made the mistake when planting not to leave enough openings in the row so as to facilitate less hauling when transporting fruit from the orchards.

Though harvesting from Malling VII trees is a great improvement over standard size trees, we would prefer smaller trees whereby we could completely eliminate the use of ladders. We are now heading back by hand and also trying machine hedging to reduce the need for ladders.

Aim at Serving and Providing Customer Need - In retail marketing we differ somewhat in the varieties that are profitable to sell. We have found that our public wants many varieties to choose from, so that we do offer limited quantities of the less popular varieties. We have also found that the potential for summer and early fall apples is excellent. We do not have enough Quinte, Williams's Red and the like to meet the demand. In fall apples our large volume is with Red and Golden, McIntosh and Jonathan with an increased interest in Northern Spy. A newcomer to our market that is being well received is Spartan.

Concluding Comments - I will conclude my remarks about apples by stating that we normally do not sell any grade less than U.S. No. 1 -- with the volume sales in U.S. Fancy or Extra-Fancy grades. We package in store pak-bags for the most part with some in various other containers such as, peck and half peck round wood baskets.

We have also been experimenting in growing peaches on dwarfing stock. We have tried Besseyi sand cherry, Tomatosa plum, and St. Julian plum. Unfortunately, our experience has been more bad than good with peaches. The St. Julian trees look pretty good with heavy fruiting, but we have suffered high mortality in the first couple of years. These trees were grown on fairly heavy loam. However, my enthusiasm has not waned. In fact, we are setting some of the Harrow varieties this Spring and will be planting some of the Siberian stock in the near future.

It would be my hope that in the future we will be able to produce all of our fruit on compact trees. I want to grow better quality fruit at less cost per bushel not just so that I may undersell everyone else but, rather that I may supply my customers with something a little better than what they can purchase in the chain store. If I can accomplish this hopefully I will not have to reduce prices and thus profits can increase. That is the name of the game.

I believe compact trees will play an important place in the future success of Mowat Orchards... John Mowat, Jr., Adrian

THE NAME OF THE GAME IS "PROFIT"

The traditional approach to making more money out of tree fruits is to increase income and lower costs. Developing more acres has been the most common way to increase production and income. It also offered the opportunity to make the high investment in equipment more efficient and therefore lower in cost.

There are many indications that this approach is one of the reasons fruit growers as well as packers are struggling to balance their books. Costs continue to rise while the market has not adjusted upwards to compensate. This same situation exists in Washington as in Michigan, New York, Virginia or elsewhere. In fact, continued planting in all parts of the country has resulted in a tremendous swell in fruit production and increasing competition in the market place. Census reports, market analyses and the general economic slump forecast worse times ahead unless a change is made.

Changes Needed - Yet there are two reasons for optimism. In spite of the general economic depression in the industry, some growers are continuing to turn a profit. Not all are in Washington or any one region or state. They are everywhere. Further, there are a large number of growers making money who do not have any special or unusual conditions such as a roadside market or local sales.

The second reason for optimism is that never before in history has the industry been equipped with so many ways of improving their situation. Dwarfing rootstocks, short pruning, super red sports, growth regulators, more effective pesticides, improved equipment and better storages are but a few general categories of new developments. All help but do not insure more profits.

How To Change - The new prescription to increased profits centers on raising the price per unit - bushel, ton, etc., while lowering unit costs. Unit costs can be more effectively reduced by adding more costs and raising production per acre than by attempting to cut costs. Better orchard management raises costs of production but actually lowers unit costs by increasing production per acre.

Improving the variety, grades, and packout may not raise total income as rapidly as developing more orchards, but it effectively improves average price. Raise unit price and lower unit costs and profits will soar with fewer bushels or tons to market.

Examples of how the unit concept works are being drawn from studies on orchard management in Washington. It explains why Washington orchards can remain profitable although relatively small and inefficient. It also explains why growers with expanded acreage are frequently moving lots of fruit but make little profit.

Many industries have had to learn this lesson. This is the principle the auto industry and other industries have adopted. Now is the time for the tree fruit industry to use the unit concept, concentrate on improving production per acre to lower unit costs and improve grade and quality for higher unit returns. This is the modern prescription for profits... Ronald B. Tukey, Extension Horticulturist, Washington State University.

PUBLICATIONS AVAILABLE ON REQUEST

1. Horticultural Report "Fruit Trees - Dwarfing and Propagation" No. 1, December 1966 (Revised February 1971) -- Write 303 Horticulture, E.Lansing, Mich. 48823.
2. Michigan Science in Action No. 17 "Developing Dwarf Apple Trees", March 1971. Write: 303 Horticulture, E.Lansing, Michigan 48823.
3. "North American Apples -- Varieties, Rootstocks, Outlook". An excellent book for the Pomologist, the Extension men and the fruit grower. $8.50 -- Write: MSU Press, P.O. Box 550, East Lansing, Michigan 48823.

Annual Treasurer's Report Available -- Copies were made available at the Annual Meeting. Those needing copies please write: 303 Horticulture, MSU East Lansing.

SUMMER ORCHARD TOUR

Friday and Saturday, August 30-31, several stops will be made at rural orchards west and north of the highly populated Detroit area. These stops will feature: 1. compact trees in high density plantings suited for pick-your-own fruit, 2. road side markets, 3. cider mills and 4. many interesting sidelines which attract customers and which give "city folk" a chance to enjoy the fruit of the land.

Friday evening will be spent in one of the modern Motels which specialize in good food and relaxation for your comfort.

An informal discussion session will be held in the conference room. Many qualified persons will be there to lead the discussion and to make this an informative and interesting evening. The tour will continue Saturady morning.

Mr. James Lincoln is in charge of the tour arrangements. His address is Cooperative Extension Service, 1075 N. Telegraph Road, Pontiac, Michigan 48053. Telephone 334-3507. More details of all the orchard stops, Motels and directions will be in the next Newsletter.

FOURTHTEENTH ANNUAL CONFERENCE - DFTA

The quality of subject matter at this Annual Meeting, March 7-9, 1971, was extraordinary. All speakers from out-of-country, out-of-state, and in-state did a superb job in passing up-to-date practical orchard information to all in attendance. Persons from 25 states and 5 countries came to listen and to take part in the program.

Details of all the information which came out of the conference will be made available in following Newsletters. A special THANKS goes to persons in attendance and those who made the program a success.

ANOTHER DWARFING ROOTSTOCK

The clone 3431 was one out of 18 Malus selection made and initially tested in 1946 at East Malling. According to Tony Preston,---"it will be introduced as EM 27 through the Nuclear Stock Association."

At East Malling, this new rootstock is non-suckering, is more dwarfing than EM IX, and is productive in relationship to its bearing surface.

Although 3431 (EM 27) is under test in this country, none can be released for general use at this time.

DR. MCKENZIE -- OUT-OF-COUNTRY SPEAKER

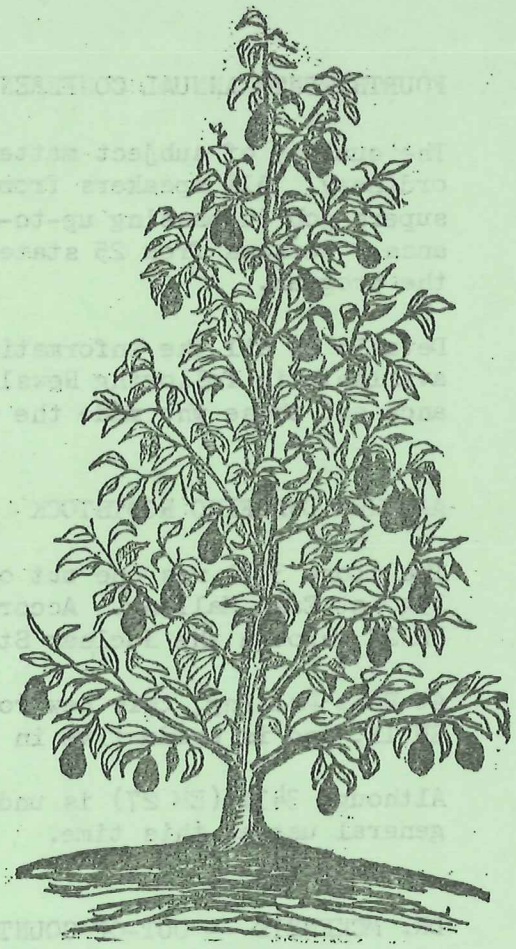
How to get large production of apples per acre was one phase of Dr. McKenzie's two talks. He strongly stressed that profits can be greater from small orchard holdings, if well managed, than from large ones.

For example, in New Zealand two to four men are employed fulltime to care for 20 acres of apples. The more detailed attention paid to growing, training and pruning trees terminates in larger yields per tree and greater net profit.

Four-tier Pruning - He also discussed the "4-tier" method of pruning trees for maximum bearing surface, for optimum light exposure and for greatest efficiency in handling and harvesting. The trees are trained with a central leader upon which four tiers of four branches per tier are trained from bottom to top. Each tier is about 16 inches apart on the leader graduating inward so that light can reach all branches. The branches trained at a 30 degree angle are defruited at the ends so as to support a heavy fruit load near the central leader. Four picking bays are developed in the trees. All branches are "stacked" directly above each other in each tier leaving a "4-leaf" clover arrangement when viewed from the top. This system although detailed, looks promising for fruit operations with intensive management.

Jointly Sponsored - Dr. McKenzie's visit to Michigan was sponsored jointly by the DFTA and Michigan State University's Department of Horticulture.

THE DWARF PEAR TREE - YEAR 1847



While reading selections from old horticultural publications, one is often made to feel rather humble to find how old some of our "new ideas" really are. Such was the case with an article on dwarf pear trees, which appeared in the May, 1847 issue of the Horticulturist magazine. The editor of this publication, A. J. Downing, also wrote one of the first good American pomological books: Fruits and Fruit Trees of America. The author of this article on dwarf pear was Samuel G. Perkins, Esq., of Boston. He discussed the fine points of grafting, planting, and pruning dwarf pear trees. Were the man alive today, he would probably be acknowledged as a true expert in the compact tree field. Perhaps the horticultural amateur should be heard from more frequently.

Using quince rootstock, Mr. Perkins takes us from the rooted layer to the finished mature tree in about three pages of writing. In this space he finds room to mention varieties, grafting, soil, site, fertility, planting, inarching, heading and pruning to the dwarf pyramid form. Some of the insights in the article are surely more significant than the author realized at the time. He recommended planting on ridges and fertilizing only sparingly to avoid too much vegetative growth. One year whips, headed back severely, were used to assure the best possible scaffold system. A method of grafting an already-formed branch into a tree with a missing scaffold was outlined. Mr. Perkins states squarely that the dwarf pyramid "... when properly pruned, will give the greatest quantity and best quality of fruit."

The sketch above which was taken directly from this article shows a tree which most orchardists would surely like to see in their orchard or backyard. To quote the author: "This form is produced by carefully pruning the branches so as to diminish gradually from the lowest branch that surround the base, up to those that form the uppermost tier... so that when the tree has attained its utmost height, say 8 or 10 feet, ... it will resemble a truncated cone." Mr. Perkins also points out the necessity of pinching the side shoots on each tier of branches, in order to produce quantities of fruit spurs and greater fruiting surface. These ideas closely resemble many of the latest research findings concerning the most efficient tree shape... Steve Doud, graduate assistant to Dr. R. F. Carlson.

* * * * * *

Young Red Delicious trees not branch-spread during the dormant season can be spread in growing season. Do not spread branches if fire blight is present

* * * * * *

Department of Horticulture

MICHIGAN STATE UNIVERSITY

COMPACT FRUIT TREE

DWARF FRUIT TREE ASSOCIATION

Rootstock Behavior
Spur Types
Induced Dwarfing
Cultural Practices

Vol. 4, No. 2, February, 1971. Edited By R. F. Carlson

DWARF FRUIT TREE ASSOCIATION
FOURTEENTH ANNUAL CONFERENCE
BENTON HARBOR MICHIGAN
MARCH 7-9, 1971
RAMADA INN _ I 94 - Exit 28

PROGRAM

SUNDAY, AFTERNOON AND EVENING, MARCH 7

2:00 to 9:00 - REGISTRATION - Lobby Ramada Inn

Many out-of-state guests arrive on Sunday in order to be on time for the formal program which begins Monday at 9:00 a.m. The program Sunday afternoon and evening is informal, serving as a time for getting acquainted and to get to know the speakers. Everyone is cordially invited to come and join in this informal social get-together.

Dining facilities will be open all day at the Ramada Inn, until 9:00 p.m.

7:00 to 9:30 - TASTING NEW FRUIT PRODUCTS - South Conference Room (lower level) Ramada Inn.

District marketing agent GLEN ANTLE, Benton Harbor, Michigan and other extension personnel will be on hand to visit and describe the various fruit juices and fruit pies. This is your dessert with juice or coffee. Feel free to move back and forth between the informal sessions during the evening while you taste the "fruit of the land". A few bushels of Michigan apples also will be available for your eating enjoyment.

TWO INFORMAL SESSIONS

I. 7:30 to 9:00 - PROBLEM SESSION - North Conference Room (lower level)

An informal discussion period when anyone can air problems related to growing and marketing of fruits. Bring 2 or 3 of your color slides to

illustrate problems success or failure. Discussion leader will be FRANK OWEN with extension and research men on hand to fill in on possible or impossible solutions.

II. 7:30 to 9:00 - ROOTSTOCK SESSION - Blue Room (upper level)

Fruit tree rootstock -- improvement through selection and breeding -- Discussion leader, DR. JAMES CUMMINS, Geneva, New York. This informal discussion will lay the ground work for familiarizing interested people on what rootstock materials are in the development stage; and, for an opportunity to exchange ideas on getting better rootstocks for the future.

9:30 - BOARD OF DIRECTORS MEETING

MONDAY, MORNING, MARCH 8 - Lower level Conference Rooms

7:30 a.m. to 7:30 p.m. - REGISTRATION - In Lobby

9:00 - OPENING SESSION - Chairman: KENNETH MCDONALD, Vice President, DFTA West Virginia.

Welcome and Announcements - JOHN BELL, JR., President DFTA

9:15 - "Fruit Growing and Trickle Irrigation in the HOLY LAND". DRS. R.F. CARLSON and A.L. KENWORTHY, Hort. Dept., MSU.

While attending the International Horticulture Congress in Tel Aviv, Israel, March 1970, these men had the opportunity to see some of the fruit growing (including trickle irrigation) in that interesting country.

9:45 - "Quality fruit direct to the consumer from compact trees". MR. JOHN MOWAT, Adrain, Michigan.

MR. MOWAT is a young State of Michigan Representative from his district. Raised on a fruit farm, he can speak from experience. The Mowat farm was one of the first to grow compact trees and to develop a market right on the farm. They have tried dwarf peach trees budded on sand cherry and on Nankin cherry.

10:15 - Coffee Break - Courtesy DFTA

10:30 - "How to predict economic advantages of rootstocks of new varieties, and of different planting systems." DR. DONALD MCKENZIE, Havelock North, New Zealand.

DR. MCKENZIE has researched different planting systems by the use of detailed surveys of profits and losses. These systems relates to actual orchard practices keeping in mind fruit distribution in the tree for correct light penetration, fruit bud formation and harvesting costs. In other words, efficiency in production of quality fruit will be stressed.

11:30 - QUESTION SESSION

11:45 - BRIEF BUSINESS MEETING

12:00 - BUFFET LUNCH - Two fast serving lines lower level rooms. Tickets at Registration Desk.

MONDAY, AFTERNOON, MARCH 8 - Chairman: RICHARD MATTERN, Holidaysburg, Pennsylvania.

1:00 - "Susceptibility to herbicides of apple, pear and stone fruit rootstock". DR. ROY C. ROM, University of Arkansas, Fayettville, Arkansas.

For several years, DR. ROM has screened herbicides as to their effects on rootstocks.

1:30 - "Observations of herbicide effects on growth of dwarf trees". MR. STEWART CARPENTER, District Hort. Agent, Paw Paw, Michigan.

MR. CARPENTER is well acquainted with orchard pest control programs including weeds. He may question whether or not there is a residual build-up in the soils from repeated chemical applications.

2:00 - "The production economic relationships of orchard types -- where, when and how is the best net profit reached?" DR. RONALD TUKEY, Washington State University, Pullman, Washington.

DR. TUKEY has studied the various relationships of orchard types, ages, tree spacings and fruit quality in connection with the economic levels of profit and loss. At a time when some fruit growing is at "the brink" of disaster, his presentation is timely.

3:00 - Coffee Break, Courtesy DFTA

3:15 - "What is happening in Michigan -- Planting trends of compact trees, tree densities, training and pruning - in relation to production of fruit quality". DR. JEROME HULL, discussion leader.

Panal -- District Horticulture Agents:

Southwestern - STEW CARPENTER	Northwestern - CHARLES KESSNER
West Central - WILLIAM MCLEAN	Central - FRANK KLACKLE
Eastern - JAMES LINCOLN	

These men are involved in the "revolutionary" changes in fruit growing -- changes from the standard systems to high density systems. Each one will briefly relate progress, trends and problems and make suggestions to avoid mistakes. They might raise the question -- are the high density orchards well managed from planting time to maturity, and from the standpoint of maximum production of quality fruit per acre?

5:15 - QUESTION SESSION

This time is allowed to answer questions and to clarify any remarks made by the speakers during the first day session.

4:45 - Adjourn for social hour and evening banquet.

MONDAY, EVENING, MARCH 8

6:00 - SOCIAL HOUR - North Conference Room (lower level)

7:00 - BANQUET - Conference Rooms (lower level). Tickets at Registration Desk.

Banquet Moderator: DR. JOHN CAREW, Chairman, Department of Horticulture, MSU.

8:00 - "A resumé of the June, 1970 orchard study tour to the Pacific Northwest".

These four men were chosen from 96 persons who participated in this concentrated study tour to Washington and British Columbia. Color slides will depict some of the orchard operations.

-- MR. JERRY LONG, London, Ontario - "Some thought - provoking conjectures from a grower's and businessman's viewpoint".

-- MR. OLIE PYNNONEN, Michigan Apple Council, Lansing, Michigan. "Views on fruit handling, storing and marketing".

-- MR. JERRY SIETSEMA, Grand Rapids, Michigan. "A grower's observation of fruit production under a different set of growing conditions".

-- DR. ROY SIMONS, Dept. of Hort., University of Illinois. "Some key problem areas related to culture and tree management".

9:00 - Adjourn for the day

TUESDAY, MORNING, MARCH 9 - Chairman: MR. GEORGE WHALEY, Ruthven, Ontario, Canada

9:00 - "Stem pitting of stone fruit rootstocks -- What is it and how can it be avoided?" DR. JOE BARRETT, Director of Hort. Res. Sta. Kearneysville, West Virginia.

Stem pitting, another virus caused disorder, first came to light about 4 years ago, is a serious problem in some areas. DR. BARRETT being a plant pathologist has closely followed the disorder as it has occurred in the Eastern peach growing regions.

9:30 - "Collar Rot in apple trees -- its prevelance and its prevention and control -- let's look at the whole picture". DR. ALAN JONES, Pathologyist, MSU

DR. JONES is spending part of his time isolating various pathogenic organism in fruit trees and determining how best to prevent or eliminate them. To him, Phytophthora cactorum may mean one thing, collar rot or crown rot another; but more important, how does it get a start -- under what conditions, etc?

10:00 - Coffee Break - Courtesy DFTA

10:15 - Cultural aspects of semi-intensive orchards, limitations of dwarf verses semi-dwarf orchards and trickle irrigation in New Zealand and Australia". DR. DONALD MCKENZIE, New Zealand.

DR. MCKENZIE has wide working experience with fruit tree culture including trickle irrigation. He also is familiar with fruit growing in Australia and is qualified to answer any questions related to fruit growing "down under".

11:15 - QUESTION SESSION

Another chance to get to some of the questions and to make additional comments.

11:30 - "Fruit from dwarf orchards for local retail and for pick-your-own". MR. TOM CHUDLEIGH, Milton, Ontario, Canada

MR. CHUDLEIGH is a fruit grower and nurseryman. He has been involved in growing and marketing fruit from compact trees for many years. And so, he knows how best to manage small trees for high production of quality fruit.

12:00 - BUFFET LUNCH - Two fast serving lines. Tickets available at Registration Desk.

EUROPEAN ORCHARD STUDY TOUR

The tour leaves Detroit June 21 and returns there July 12. The same flight will stop in Boston to Pick up tour members from the Eastern States. At Paris tour members from Halifax will join the group and leave for Italy where the first orchard visit will take place.

Other stops will be Yugoslavia, Austria, Germany, England and Scotland. The cost; from Detroit $1020, from Boston $951, including air and land transportation, lodging and most meals. Space still available, but filling fast. For further information contact : 303 Hort. Dept., MSU, East Lansing 48823, or College Travel Office, 130 W. Grand River, E. Lansing, Michigan.

TUESDAY, AFTERNOON, MARCH 9 - ORCHARD TOUR

1:00 - Depart for Hill Top Orchard at Hartford, Michigan.

For those returning to Ramada Inn, busses most likely will be available at a nominal cost. Others can use their cars to Hill Top where additional busses will provide transporation to the different orchard stops.

-- Tour to one or two select orchards for demonstration in pruning and general orchard management. DR. MCKENZIE will show step-by-step pruning methods practiced in New Zealand.
-- How to manage high density orchards from planting time to maturity will be explained by qualified persons during the conference and partly demonstrated during the orchard tour.

-- Training, pruning and spreading of Red Delicious trees performed last year by DON HEINICKE and others will be seen and duplicated at the same location.
-- Trees summer pruned in 1970 will be observed as to effects on growth and fruit bud formation.
-- "Tree walls" now of fruiting age will be another feature stop.
-- "Handouts" giving more details and descriptions of these stops will be available at the conference and prior to the orchard tour.

CONFERENCE REGISTRATION AND INFORMATION

LODGING: Send your reservations to Ramada Inn (formerly Hilton Inn) I-94 at M-139 Benton Harbor, Michigan. 49022, or telephone 616-927-2211. Ask for conference rates. Tel-type (from Ramada to Ramada) now available under the new management. Rooms can be held until 7:00 p.m. - if requested. Courtesy cars and Taxies at reduced rates from Ross Benton Harbor air port to Ramada Inn available.

Continential breakfast will be served each morning at 6:30 in Blue Room and regular breakfast in the first floor dining rooms.

Fast service Buffet lunches available Monday and Tuesday at lower conference rooms.

DUES, REGISTRATION AND MEALS

Registration will open 2:00 p.m. Sunday in the lobby and each morning at 7:30. Copies of Volumes 2 and 3 of the Compact Fruit Tree will be available at registration.

Please fill in your name and address, check the items needed, and bring to the registration desk. Similar forms and receipts will be available (in case you forget the program) at the time of registration.

NAME_____

ADDRESS_____

_____ ZIP_____

ANNUAL MEMBERSHIP DUES	☐	$3.00
CONFERENCE REGISTRATION	☐	1.00
BUFFET LUNCH MONDAY	☐	2.50
BUFFET LUNCH TUESDAY	☐	2.50
BANQUET - MONDAY NIGHT	☐	5.00
VOLUME NO. 2	☐	2.00
VOLUME NO. 3	☐	2.00

TOTAL ---- $

Department of Horticulture

MICHIGAN STATE UNIVERSITY

COMPACT FRUIT TREE

DWARF FRUIT TREE ASSOCIATION

Rootstock Behavior
Spur Types
Induced Dwarfing
Cultural Practices

Vol. 4, No. 1, January, 1971. Edited By R. F. Carlson

FOURTEENTH ANNUAL CONFERENCE DFTA - The annual conference will deal with handling of compact trees, training and pruning trees, problem of collar rot, tree anchorage, size control, herbicide injury and other pertinant grower related conditions. "How, What and Where do we go from here to keep efficiency in production of quality fruit?" will be the general slogan of the conference.

Feature speaker will be Dr. Donald McKenzie a fruit tree researcher from New Zealand.

Dr. Donald McKenzie, Havelock North Research Station, New Zealand will speak on fruit tree management and production in high density orchard. He has a great deal of research and grower information in the growing and management of compact trees. He has spent much time working with growers and studying production at the Fruit Research Station at Havelock North, New Zealand. Don McKenzie is also versed on the fruit industry development programs in Australia.

He has a practical view of the problems concerning intensive planting systems having personally worked out training methods currently recommended in New Zealand. Furthermore, he also has developed records of "cost and return" figures of new intensive systems in comparison with older standard plantings.

Several other prominant speakers from Canada and USA will be on the program which will be held at the Ramada Inn (formerly Hilton Inn) Benton Harbor, Michigan, March 8-9, 1971.

Tree training, pruning and orchard management will be demonstrated Tuesday afternoon, March 9, at 2 or 3 locations.

Reservations should be made soon at the Ramada Inn (same place as the 2 years past) Benton Harbor, Michigan 49022. Telephone 616-927-2211. Two other Motels are available at the same location at I-94, Exit 28: Holiday Inn and Howard Johnson, Benton Harbor.

With more emphasis and importance in the production of quality rather than quantity of fruit in the near future, the culture systems of most fruit, especially the apple, have to change. How compact trees fit into a "new" culture system to improve quality will be part of this annual conference.

POMOLOGIST, RESEARCHER AND PROFESSOR

Dr. Arthur Mitchell, or "Mitch" as he was called by his many friends and collegues, passed away December 11, 1970. He spent his life working with fruit growers, teaching students, researching fruit finish and quality; developing new safe fruit tree pesticides and methods and techniques for their safe and economic application. In other words, "Mitch" served the fruit industry well and faithfully and trained many young men to carry on where he left off. Dr. Mitchell will be missed by his collegues, his students and growers, not only in Michigan, but wherever fruit is grown. His developments and accomplishments will last.

VOLUME 4 - This marks the start of Volume 4. During the existance of the Dwarf Fruit Tree Association, since March 1958, 3 volumes with a total of 386 pages have been published. These volumes of Compact Fruit Tree contain detailed information on rootstocks for fruit trees, scion/rootstock behavior, cultural orchard practices, tree densities, yield data, tree growth problems and many other useful growing hints.

Volume 1:1-167 is out of print
Volume 2:1-117 is available
Volume 3:1-102 is available.

Copies of these volumes can be ordered from Room 303, Horticulture Building, Michigan State University, East Lansing, Michigan 48823 or from P.O. Box 143, Hartford, Michigan 49057. These will also be available at the Annual Conference, Ramada Inn, Benton Harbor, Michigan. Cost is $2.00 per copy.

TREE TRAINING AND PRUNING - Some of the feature points to keep in mind in dormant pruning and training are: 1. In young trees maintain a central leader and select 5 well spaced wide angle branches. 2. In upright growing varieties spread these branches outward using 8-gage wires cut at various lengths, notched lath, 1-square inch wood sections with a sharp nail in each end or plastic tape for tying down to a stake or trunk. (Varieties such as McIntosh, Jonathan and Golden Delicious do not need branch spreading). 3. Thin out branches which crowd, but leave fruiting wood in tree center. 4. Head back low vigorous main branches to an upward branch lateral and in upper vigorous main branches to a downward branch lateral. 5. Do not over-prune in one year and neglect another.

Mature trees may need "heading" and "siding" to keep them from getting out of reach. Main points here are to head to a younger fruiting branch and to remove an occasional entire branch to open up for more light. Again do not remove quality fruiting wood in center of tree.

These are general hints for most conditions. In pruning many factors are involved --- tree spacing, desired height and spread, and the variety and rootstock etc. Then also, when there is a need for extensive heavy pruning, it is important to with-hold nitrogen applications in order to keep the trees in balance with annual cropping.

Orchards with higher tree densities require more detailed efforts in shaping, training and in holding them down to intended height and spread. This is especially true in recent orchard spaced as close or closer than 10 x 20 feet or over 200 trees per acre. More time is required in detailed pruning, bending, spreading, scoring, etc., however this extra effort expanded pays off in double or triple yields per acre. The first year very little extra work is needed, but the second and third years, when the variety comes into fruiting, are very, very important in shaping the future of these closely planted trees. In following fruiting years, type of pruning will depend mostly on the variety and its fruiting response to "little" or "heavy" cutting. And lastly, the nutritional requirements in relation to pruning needs close watching... RFC

TRAINING AND PRUNING SYSTEMS THAT KEEP MY TREES PRODUCTIVE AND COMPACT

We are located in Central Indiana at Indianapolis. Marion County has nearly a million people now, and we are the last and surviving commercial orchard in the county. The soil is a sandy loam capable of producing 100 to 150 bushels of corn per acre. With expensive real estate, rich soil and a long growing season, our methods to obtain maximum productivity may differ from those used by our growers further North.

Planning Strategy - In 1955, we planted a 5-acre block using varieties on East Malling rootstocks spaced 18 x 22'. Reason for this spacing ... no real good information available at the time and suitable with the parcel of land recently bought. The plan was to allow the trees to touch each other in the row and yet allow ample free space in the drive rows for all operations.

Corrective Measures - McIntosh on EM VII had already produced 1,000 bu. per acre in their tenth year. The trees were interlaced in the rows, and they were crowding the drive rows. To correct or control this encroaching on the manueverability within the orchard, we began a program of stubbing back and eventual removal of all scaffold branches which were perpendicular to the travel row. The complete removal of these scaffold branches will be spread over four, five or more years, because we began our version of the "Mold and Hold" system of pruning and any sudden impulse to really correct mistakes in one year, would "shoot" our program. These McIntosh on EM VII receive one half pound of 15% Nitrogen and 3 pounds of muriate of potash every other year. At pruning time only one year wood or "slick" wood is cut by my 3 men. No one cuts into two year wood without advise. Four of us make 900 to 1100 "snip" cuts per tree, requiring 12 to 15 minutes per tree with air loppers.

Method Pays in Yield - This is a solid one acre block of McIntosh. Yields have been as high as 1850 standard field creates and have not been less than 1400 per acre since breaking a thousand. Incidentally, this McIntosh block gets three hives of bees at blossom time.

More Results - Red Delicious on EM VII have performed well for us. The trees are not quite as large as the McIntosh trees and have not been as much of a pruning problem. We have, however, been successful with our version of 'Mold and Hold". Yields have been over 1,000 bushels/acre many times. In 1969, we

converted to the bulk bin system. A supply of bins were set up for the pickers before starting time. Four men and the wife of one partime, or one might say 4 1/2 men picked 65 bins or approximately 1170 bushels in a nine hour day, or an average of 260 bushels each. We used Alar for pre-harvest control and are able to "strip" pick. Six and eight foot step ladders are provided only as picking aids. We pay 35 cents per bushel and housing for our men.

Variable Results - Golden Delicious on EM XIII have been profitable, but have put alot of pruning pressure on us. Consistant high production has eluded us. Chemical thinning errors may account for part of this problem. Closely planted trees certainly react differently to thinning chemicals.

Another Approach - In 1963, we bought a 45 acre general farm in the adjacent county and immediately commenced to develop it, as well as eliminate all the mistakes made earlier. We had plenty of room so we set the Grimes/EM VII 20 x 25'. The early training here allowed for no scaffold limbs perpendicular to the travel row to develop. All limbs parallel to the travel rows were allowed to grow. A central leader was encouraged and trained with well spaced laterals. Lateral branch growth was allowed to the extent that they would touch in the row, but the growth into the travel row to extend only 30" on each side of center. We figured that 30" was about all we wanted to reach to pick the apples. In addition, we would be able to leave the insides of these slim profile trees thicker due to the greater light exposure. This tree shape might better lend itself to mechanical pruning and harvesting as it is almost a certainty that the labor supply will shrink even further. These 'Grimes' trees have had two good crops already and it seems as if this plan will be successful.

What About Other Combinations? - But now let us look at Lodi, Beacon (or Fenton in Indiana) and Williams Red on MM 111 planted the following year and trained the same way. The scaffold branches grew out and up where they are now in growth competition with the central leader so carefully trained. Probably the early restriction of allowing only parallel scaffold branches to grow stimulated these trees to rapid growth and unfruitfulness, plus the difference in rootstock. This did not happen with the 'Grimes'. Had the scafold branches of these Summer varieties been pulled down, it would have been better. Perhaps with the judicious use of Alar to retard growth, we may be able to salvage a respectable orchard.

More on Training - The following year we ordered trees for another small orchard. The sixty Stayman and sixty Idared ordered on MM 111 were not, but through a misunderstanding, they arrived on seedling rootstock. The trees were set 25 x 30' and have been trained to the "fan system". To retard growth the trees have been sprayed with 2,000 ppm Alar. This "fan system" of training is exciting. Essentially, the method involves a 14 gage wire on the ground. We drove 2 x 2" stakes 12 to 14" long, flush with the ground. Then we stapled the stretched wire to the top end of the stake. For tying, we used Eastman Kodak plastic baling twine. Having the wire on the ground, orchard operations can be accomplished with too much interference. It took a year and a little experimenting to choose the proper knot to tie when attaching to the limb, in order to prevent girdling or abbrasion. It had to be a knot which would be simple for highly unskilled persons to work with. The scaffold branches were selected through summer pruning.

With some exceptions, it seems best to wait until the second or third leaf to commence tying down. Selection of scaffold branches can begin the first summer if sufficient growth has occurred.... George Adrian, R.R. 4, Box 54-M, Indianapolis, Indiana.

TREE REMOVAL -

We have removed about 200 of the old Jonathan trees and left the stumps. We have tilled a five foot strip between the old rows for the new tree rows. The old wood and brush was burned. Next spring we will plant 2 or 3 varieties on EM 26 rootstock.

This clean-up operation cost about $80.00 per acre. In addition, we may use a machine to "chew up" the stumps to lower them about four or five inches. This cost is less than what we paid 5 years ago to bulldose the trees and stumps, burn the trees and plow and level the land at a cost of about $250.00 per acre.

I believe that the stumps and sod can be left. However, small area where the ground around the trees was mounded up, may need some leveling to facilitate vehicle movement... Albert Ten Eyck, RFD 2, Brodhead, Wisconsin 53520.

PROGRAM EUROPEAN FRUIT TREE STUDY TOUR

This tour begins June 21 and terminates July 12, 1971 and is sponsored by The Dwarf Fruit Tree Association.

Mon. June 21 - Depart Detroit-5:15 pm PAA 54Y; Depart Boston-9:00 pn PAA 54Y
Tue. June 22 - Arrive Rome-1:05 pm - Afternoon free. Evening city lighted tour.
Wed. June 23 - Depart early for visit to interesting fruit area of Po Valley in vicinity of Bologna.
Pears, apple, peach and cherries are grown under interesting culture systems in Italy. Po Valley is a concentrated fruit growing area specializing in high density plantings of different pruning systems. Peaches are grown without the usual problems of tree decline.
Thu. June 24 - Continue visits in Po Valley and return late to Rome
Fri. June 25. - Visit Ansaloni Nursery and Gardens in Rome vicinity.
Sat. June 26 - Depart Rome 9:20 am - Alitalia 522Y - Arrive Belgrade, Yugoslavia 10:50 am.
Sun. June 27 - Full day of studying fruit in area south of Belgrade along River Danube to Čačak with large orchard holdings on beautiful rolling orchard sites under different management programs.
Mon. June 28 - Depart Belgrade 3:50 pm Austrian 822Y. Arrive Vienna 5:15 pm.
Tue. June 29 - Visit to fruit (apple, apricot and grape) industry west of Vienna along Danube River. Dr. Moser's book "Hochkultur" is all about grape growing and pruning in this area of Austria. Ladies may stay in Vienna to see the Lippizian at the Spanish Riding School.
Wed. June 30 - Depart Vienna 7:30 am Austrian 401Y. Arrive Frankfort 8:50 am. Leave Frankfort 9:50 am Lufthansa 820Y. Arrive Hannover 10:35 am. Leave Hannover 12:00 PAA 640Y. Arrive Berlin 12:35 pm.
Thu. July 1 - Visit to East Berlin and Institut Fur Obstbau (Fruit Res. Inst.).

Fri. July 2 - Leave Berlin 7:55 am PAA 635Y. Arrive Hannover 8:30 am.
Sat. July 3 - Visit Exp. Sta. at Sarstedt and cherry producing area near Braunschweig. Several European sweet cherry varieties will be seen in production. Interesting fruit tree research is in progress at Sarstedt.
Depart Hannover 5:40 pm Lufthansa 48Y. Arrive London 7:55 pm.
Sun. July 4 - London -- Free for sight seeing -- Famous Gardens.
Mon. July 5 - Visit to East Malling Research Station. This station is always worth a repeat visit for anyone interested in fruit growing and various root-stock studies. Ladies may stay in London.
Tue. July 6 - Depart London for visit to Suffolk Fruit Area.--Peter Wheldon's Farm - English Fruit grower.--Dan Neuteboon Farm - Dutch Fruit grower. These leading grower's have high density plantings under excellent management program in pruning, training and harvesting. Professor "Tony" Preston will accompany the group in the Suffolk and Cambridge area.
Wed. July 7 - Depart Cambridge for Glasgow, Scotland.
Thu. July 8 - To Scotish Res. Inst. Invergowrie, Dundee and points of Historic interest on east side of Scotland. Although not noted for tree fruit, this area is leading in production and development in all small fruits.
Fri. July 9 - Visit horticultural area in vicinity of Dundee.--Small fruits are a speciality in this area. Ladies may stay in Dundee.
Sat. July 10 - Return to Glasgow or proceed to Ayr and the College at Auchincruive. Strawberry breeding in a speciality at this college. Historic place of Poet Burns. Class House Industry, Riverside Gardens, Auchincruive Estate are other points of interest.
Sun. July 11 - Complete visit in Ayr.
Mon. July 12 - Depart Glasgow Air Port (Abbotsinch) - 7:40 am BEA 5013; Arrive London Airport 9:00 am; Leave London 10:30 am PAA 55Y; Arrive Boston 12:30 pm; Arrive Detroit 2:40 pm.

Tour Registration- Every effort will be made to accommodate those interested in the Study Tour to Europe. Over 30 persons have registered to date. Another 25 have indicated an interest. Wives, sons and daughters with an interest in Pomology are invited. For further information, contact Dr. R. F. Carlson, 303 Horticulture, Michigan State University, East Lansing, Michigan 48823.

ANNUAL MEETINGS

February 22-24, 1971 - National Peach Council Convention, Sheraton-Biltmore Hotel, Atlanta Georgia. For further information and reservations, contact: E. F. Savage, Dept of Hort., Georgia Experiment Station, Experiment, Georgia 30212.

March 7-9, 1971 - The Dwarf Fruit Tree Associations Fourteenth Annual Conference, Ramada Inn. I-94 at M-139, Benton Harbor, Michigan 49022. Detailed Program will be in the February issue of the DFTA.

June 21-July 12, 1971 - Summer Orchard Study Tour to 6 European countries. Reservations for this tour will be open to February 1, 1971. Interested persons should contact Room 303, Horticulture Building, Michigan State University, East Lansing, Michigan 48823.

CLONE EAST MALLING VII

EM VII is well liked by nurserymen because it is easy to reproduce in propagation beds, and grows well as lining-out budding stock. It has a fiberous spreading root system, however tree anchorage, especially with vigorous varieties, is not the best. Another disadvantage is its tendancy to "sucker" from below the graft union. This varies with scion variety, soil condition and culture.

Better tree anchorage and less "suckering" can be had by growing vigorous lining-out stock and budding 14 to 16" above ground. Such trees planted 12" deeper in the orchard will stand without support and be nearly free of "suckers".

EM VII is classified as producing a semi-dwarf tree with most varieties. However, with a precocious variety such as 'Johathan' it could be classified as a dwarf rootstock. Generally, speaking, EM VII will produce an apple tree 1/2 size of a standard tree.

Production- Yield from a 7-year test orchard at East Lansing were as follows: McIntosh/EM VII (144 trees/acre) 718 bushels and with 72 trees per acre 513 bushels per acre; Northern Spy 300 and 169 bushels per acre respectively. In a 9-year study at Graham Station, Grand Rapids, Red Delicious/EM VII gave a total yield of 1370 bushels per acre with 72 trees/acre compared to Red Delicious/seedling 393 bushels at the same age with 54 trees/acre. Or, an average of 19 bushels on EM VII verses 8 bushes on seedling per tree.

Tree Density on EM VII - The size of trees budded on EM VII will vary from one variety to the next. An extreme example is Jonathan vs Red Delicious, the former giving a much smaller tree under same conditions. Using an average tree spacing for all commercial apple varieties, the following suggestions should be helpful: Low density 14 x 20 ft. 155 trees per acre; Medium density 12 x 18 ft. 201 trees; and High density 8 x 16 ft. 339 trees per acre. The range could vary in high density from a vigorous combination of Red Delicious/EM VII with 300 trees per acre to a much less vigorous combination of Jonathan/EM VII with 600 trees per acre. This again, will depend on amount of total management and "know-how" in handling above average number of trees per acre.

Training and Pruning - Most trees on EM VII will be free standing. A few trees may lean and even blow over, especially under a condition of clay loam with rain and wind. If such is the case, a single stake placed about 4" from the central tree leader will serve as support and as a tool for tying and spreading branches using various plastic tie material.

Trees on EM VII need to be trained well from the planting date to full fruiting. Later during the fruiting years, head back both laterals and leaders to renew young fruiting wood. During the training period, select moderate number of well formed branches (5 to 8 on central leader), but keep small "spur wood" in the center of the tree and outward. Varieties which tend to fruit on the leader when young, should be watched and fruit removed from the leader until the tree has reached the desired height... RFC

NOW AVAILABLE - The new book "North American Apples: Varieties, Rootstocks, Outlook" will be out the first part of 1971. The cost is $8.50

Several prominent pomologist have contributed to this up-to-date-book:

Chapter I	- Introduction - Arthur P. French - Massachusetts
Chapter II	- Varieties of Yesteryear - Arthur P. French - Massachusetts
Chapter III	- Trends in Current Apple Varieties - Emery C. Wilcox - Wash.
Chapter IV	- 'Delicious' (Standard and Spur Type Sports) - Virginia Maas Washington.
Chapter V	- 'Golden Delicious' (Standard and Spur Type Sports) Virginia Maas - Washington.
Chapter VI	- 'Jonathan' - R. P. Larsen - Washington
Chapter VII	- 'McIntosh' - W. H. Upshall - Canada
Chapter VIII	- 'Northern Spy' - W. H. Upshall - Canada
Chapter IX	- 'Rome' - James B. Mowry - Illinois
Chapter X	- 'Winesap' - E. S. Degman - Washington
Chapter XI	- 'York Imperial' - H. A. Rollins, Jr. Ohio
Chapter XII	- Rootstocks in Relation to Apple Cultivars - R.F. Carlson. Michigan
Chapter XIII	- Apple Orchards of Tomorrow - H. A. Rollins, Jr. Ohio.

"This is a very well written, concise and informative book". It has 197 pages of information useful to fruit growers, nurserymen, extension workers, Pomologist, students in horticulture as well as the well informed marketing agents.

The book is available from the Michigan State University Press, P.O. Box 550 East Lansing, Michigan 48823.

STONE FRUITS - In the future clonal rootstock for peaches, cherries, plums, apricots and nectarines must be used to obtain and maintain tree uniformity and continuous annual cropping. Such clones are not yet available because vegetative propagation of stone fruit clones is more difficult than with apple clones. Many of these clones have a dwarfing influence on the various stone fruit varieties. With more stress put on selection and propagation of suitable and hardy clones, the stone fruit industry will benefit in the future.

THE FIRST 14 YEARS - Charter members of the Dwarf Fruit Tree Association will recall the first meetings at Hill Top apple storage with "plush" apple crates for chairs and the informal discussions. It was a good and humble beginning from about 150 persons to the present 1060 membership. You are invited to join us for the 14th Conference at Ramada Inn, Benton Harbor, Michigan.

Your Board of Directors and your editor extends wishes to you for A Happy, Healthy and Fruitful 1971.

Department of Horticulture

MICHIGAN STATE UNIVERSITY

COMPACT FRUIT TREE

DWARF FRUIT TREE ASSOCIATION

Rootstock Behavior
Spur Types
Induced Dwarfing
Cultural Practices

Vol. 4, No. 7, November, 1971. Edited by R. F. Carlson

PEACH ROOTSTOCK -- FACTOR IN TREE LIFE

Grafted fruit trees vary greatly in their response to soil and air climatic conditions. This variation is not due mainly to the hardiness or the tenderness of the variety. The rootstock on which the scion is budded, although closely related to the scion, can be tough or tender and thus play an equal role to the scion in performance of the whole tree. In most cases, the rootstock portion (root system) also is equal in volume to the scion tree portion. This is important.

Air and Soil Climates - The aireal portion of the tree certainly has to be capable of withstanding a tremendous amount of abuse. This abuse can be in the form of a coating of ice, a minus 25° or a plus 100°F (in Michigan), and winds varying from warm breezes to gail force at -15°F.

The root system (rootstock) also is exposed to the great forces of nature. For example, the freezing and thawing of the soil actually can break many of the roots. Wet soils during cold spring rains can "drown" part or the entire root systems. High soil temperature under dry conditions will weaken the roots or cause undue stress and desiccation.

Tough Rootstocks Needed - During the early part of this century and up until the forties, the Kentucky and Tennessee "Natural" peach pits were extensively collected and used as rootstock. Apparently these trees grew wild in the mountains of those states. The peach problems were not as numerous at that time, probably due to the "tough" root system provided by these "Natural" seedlings and to the fact that disease disorders did not prevail as much as at present.

"Naturals" Small Pits - These peach trees growing in the wild in the mountains produced small pits, only about 1/2 the size of Lovell or Halford pits. In fact, they resembled the pits of Siberian origin. Could it be that there is a relationship in origin of these two? This needs to be checked out.

The Siberian C - This peach rootstock coming out of Siberia and developed by the Harrow Station is tough. It has a small pit size and germinates well in the nursery. Probably most important is its capability to take low and fluctuating winter temperature -- typical of many peach growing areas. It looks very promising.

Harrow Blood - This also has a smaller pit. Early tests indicate that it does not measure up to Siberian C. It has a different after-ripening requirement and thus germination is not uniform. Rootstock test orchards in progress will reveil more of these trends.

Suncling Pits - This variety has shown up well as a rootstock. It has a pit size of Lovell and uniform germination.

Halford Seedlings - These are seedlings collected at processing plants in California and shipped to Eastern nurseries by the car-load lot. This brings up the question, grown in California, are they as acclimated or as "tough" as those locally grown?

Grow Your Own - To precisely improve peach tree longivity, "tough" locally grown peach seedlings should be used. This is not easy. It means that each nursery has to have his own seed orchard. Some are doing just that, but it requires extra effort and sizable orchards to obtain pit numbers of a particular sort. Orchard segregation of self fertile rootstock varieties also will give more uniform pits.

Progress Is Important - Quality peaches with built-in other characteristics are being developed. The rootstock also should be a clone for the sake of uniformity in root systems. However, until better methods of propagation are developed, uniform hardy or "tough" seedling rootstocks will help. These are some of the aims of the peach longivity project now in progress...R. F. Carlson

H. B. TUKEY

Dr. H. B. Tukey passed away November 8, 1971. Most of the DFTA members knew him personally. He was present at the first organization meeting of the Association in 1958, and at that time nominated your first and present Secretary. Dr. Tukey always found something interesting to write about. His squibbs in the American Fruit Grower is an example.

Those who knew him and those who followed his writings will agree with me that he was a friend of the grower and anyone interested in horticultural endevors.

According to Dr. Carew, a memorial fund will be initiated in his honor. Details on this will be forthcoming.

TREE TRAINING

To most fruit growers, the managing of compact trees is new. Much is to be learned in order to succeed.

1. Use the correct variety/rootstock combinations in accordance with number of trees per acre.
2. Allow plenty operating space between the rows. For example, 'Red Delicious'/ MM 106 will require 12 x 20 feet - 180 trees per acre.
3. Start training the trees the first year by selecting good scaffold branches and removing weak and poorly formed branches.
4. Bend or spread 3 branches the first year (especially in vigorous varieties).
5. Encourage growth of the central leader.
6. Trees with flexible branches (Jonathan for example) can be trained by bending the first branches downward and around the central leader. Clip them together with wooden spring loaded clothes pins.
7. Train the trees into a spindle form so that they are wide at bottom and narrow at top. This provides best light exposure to foliage and fruit.
8. Eliminate crowding, cross-over branches which interfer with bearing branches.

9. Keep all short spur-branches in the center of the tree. Do Not Remove.
10. Remove over-vigorous, branches which tend to dominate and compete with the central leader.
11. Head back branches which tend to extend into the row or tend to crowd adjacent tree. Cut back to an upward side lateral at lower part of the tree, and to a downward lateral at the top of the tree.
12. Remove any unwanted sucker growth and broken branches.
13. Do not over-prune any one year. That tends to reduce fruiting.
14. Continue annual tree pruning and training throughout life of the trees.

CROWN OR COLLAR ROT

Newly planted trees on clay containing soils can decline from crown disorders. Trees on poorly drained sites can be helped by putting course gravel or pea stones around the trunk. Do not remove any soil next to the trunk, but rather place the gravel on top of the soil. As the tree moves back and forth during spring winds and rains the gravel will trickle down and around the trunk stablizing the tree. This prevents the formation of an open area around the trunk where water will collect and contribute to decay.

The gravel will also serve to dry-off the area around the base of the tree trunk. It also discourages weed growth at the tree base. All grasses and weeds should be removed next to the trunk because they prevent quick drying after morning dew and rains.

COMMENTS FROM TEN EYCK

Albert Ten Eyck for years has been a staunch supporter of fruit quality in apple. He also strongly believes that more profits can be made in the small operation. through better and detailed management than from just being "big". You will recall his talk on the subject 2 years ago at the Annual Conference. The following are some edited quotes from a recent Albert's letter.

"From time to time I think about the problems of the apple industry. The market which was pretty 'hairy' a few weeks ago is worse than that now".

"Apples are coming into Wisconsin from 'other' states; apples which should not have been put on the fresh fruit market due to poor quality".

"The processing apple market was bad last year and I understand it is worse this year".

"So, how about a discussion at the annual meeting concerning a national marketing order -- especially for preventing processing apples below fancy grades being dumped on the fresh market".

"It is time that we take a realistic approach to an obvious serious problem facing the apple market".

"The farmer has to make a profit in order to avoid undersirable radical changes... such as which have happened in other countries".

"The Red Delicious is starting to show wear for us -- a condition which will hurt the apple market. Other varieties could sell at equal or better prices".

"The tremendous power of the wholesale and chain store buyer to dictate (price and variety preference) to the grower and the public has hurt the grower and cheated the public"... Albert Ten Eyck, Brodhead, Wisc., Grower and Board Member, DFTA.

RESPONSE OF 3 APPLE CULTIVARS ON EM VII ROOTSTOCKS TO VARIED CULTURAL PRACTICES:

Roy K. Simons, University of Illinois, Urbana

The mulching irrigation and sod cover treatments were initiated in 1964 to determine tree and fruiting responses. Mulching materials were added as needed. Soil moisture levels were maintained at or near field capacity.

To date the results indicate that 'Golden Delicious' gave higher yields when only mulched as compared to mulching plus irrigation. In comparing irrigation on non-mulched plots with no mulch or irrigation it was found that irrigation greatly increased yields of 'Golden Delicious'. This indicates the importance of proper soil moisture for maximum production of 'Golden Delicious'/EM VII. The mulched treatments may have retained too much soil moisture for proper fruit-bud intiation (see table below).

'Starking' Delicious showed no real response between mulching treatments and irrigation. However, the non-mulched non-irrigated treatments produced less yield than the other combinations.

'Jonared' did not produce any startling effects between mulching and irrigation. Irrigation no doubt influenced fruit-bud differentiation as well as tree growth.

With these cultivars, the best fruit finish and attractiveness was obtained with mulching. This may not be significant over the non-mulch non-irrigated fruit but would aid in marketing of a high quality product.

Fruit yields from Golden Delicious, Starking and Jonared on EM VII as results of different cultural practices. Trees were planted in 1963.

TREATMENTS	Average yield in pounds/tree with 30 trees/treatment and 3 varieties														
	1967			1968			1969			1970			4 yr. aver.		
	GD	SD	JR	GD	SD	JR	GD	SD	JR	GD	SD	JR	GD	SD	JR
Whole cobs;[1]	18	8	5	111	45	56	116	69	111	195	206	156	440	328	328
Whole cobs;[2]	16	5	9	150	37	53	114	43	138	338	197	165	618	282	365
Ground cobs;[1]	16	7	0	124	51	19	136	53	90	168	204	128	444	315	237
Ground cobs;[2]	15	4	12	142	42	46	133	75	165	363	221	173	653	342	396
Straw mulch;[1]	11	7	12	114	50	46	142	87	115	234	231	161	501	375	334
Straw mulch;[2]	21	6	13	145	51	74	128	78	163	326	207	162	620	342	412
No mulch;[1]	29	9	10	107	42	47	106	59	99	431	197	94	673	307	250
No mulch;[2]	30	6	13	111	33	74	89	63	138	258	160	153	488	262	378

[1]irrigated GD Golden Delicious JR Jonared
[2]non-irrigated SD Starking Delicious

THE FIRST AND OLDEST

The Department of Horticulture at Michigan State University was founded by James Satterlee in 1883 as recorded in a Michigan State Horticultural Society report... J. Hull.

THE 'EMPIRE' APPLE

This is a Geneva selection from a 1945 cross of McIntosh x Delicious. The fruit has excellent quality, is firm and of good red color. It has a McIntosh shape, but may be lacking in size, and ripens about 2 weeks later than McIntosh. Your editor has seen 'Empire' both in New York and Michigan. It looks good and appears to have great commercial appeal as a fresh market fruit.

The trees are vigorous with central leader and spreading branches. It looks good on MM 106, but for a more compact tree EM VII or EM 26 would be more appropriate... Information in part from Search Vol. 1, No. 3, March 1971, Agril. Exp. Sta., Geneva, N.Y.

1972 CONFERENCE LOCATION CHANGE

Since the inception of the Dwarf Fruit Tree Association in 1958, the annual conferences have been held in Southwestern Michigan. These first 13 meetings were excellent and attracted international attention because of the timely subject matter presented.

Due to the growth of the Association, larger and better meeting facilities became a necessity. So, the conference, March 9-11, 1972, will be held at the Pantlind Hotel, Grand Rapids, Michigan. The move is not far (about 100 miles from Benton Harbor area) and it is a move to a familiar place. The city of Grand Rapids is served by several air lines and by excellent highways.

The fruit growers, the innkeepers, the extension service agents and many others in the southwestern part of Michigan worked hard to make the DFTA members welcome and aided in the growth of the Association. We owe them our thanks and sincere appreciation for their efforts.

CHANGE OF DAYS

The annual conference of the DFTA in the past has been held on Monday and Tuesday with a 'round-up' type of get-to-gether Sunday evening prior to the formal conference.

The next conference, March 9-11, 1972, at the Pantlind Hotel, Grand Rapids, will be started with the 'round-up' Thursday afternoon and evening March 9. The formal program will begin Friday, March 10 at 9:00 am. The banquet will be Friday evening.

Saturday, March 11, will be devoted to orchard visits traveling by bus, seeing compact fruit plantings, fruit storages and marketing facilities, etc., north of Grand Rapids, another major fruit area of Michigan.

THE PANTLIND

For those who have not stayed at this hotel, you will learn that it is equipped to handle large crowds. Parking is adequate in the hotel and municipal parking lots next to the hotel. It has auditorium space to comfortably seat all members for the conference and the banquet. Restaurants in the hotel and in the city are good and numerous.

CONFERENCE COMPOSITE

Plans are being formulated for the 14th Annual Conference to be held in the Pantlind Hotel, Grand Rapids, Michigan, March 9-11, 1972.

At least one person from out of the country will be a guest speaker at the Annual Conference. In addition several out-of-state speakers will be part of the program. A well balanced program of presentations of timely topics of direct benefit to the grower will be prepared covering research findings, field trials and grower's experiences will compact trees.

Special panal discussions will cover fruit quality situations and variety acceptibility, as related to marketing improvement of the fruit. The experiences gained in this area by members who traveled to Europe in 1971 will serve to impliment more respect in the area of fruit marketing as well as in fruit growing.

ANNUAL CONFERENCES

December 7-9, 1971 - Michigan State Horticultural Society. Pantlind Hotel, Grand Rapids, Michigan.

March 9-10, 1972 - National Dwarf Fruit Tree Association. Pantlind Hotel, Grand Rapids, Michigan.

Board Meeting - The Board of Directors, Dwarf Fruit Tree Association, will meet Tuesday, December 7 at 4:00 pm to formulate detailed plans for the 14th Annual Conference.

APPLE BOOK FOR CHRISTMAS

A pleasing christmas gift for dad, friend, employee, or relative is a book which makes interesting reading as well as a reference from time to time. NORTH AMERICAN APPLES: VARIETIES, ROOTSTOCKS, OUTLOOK is the title of this book written by several leading pomologists. It has an excellent description of present day varieties, their origin and usefulness. Rootstocks for high density orchards and tree management for growing quality apples are other topics covered in this book. Now is the time to order this Christmas Gift. The cost is $8.50 including postage.

* * * * * *

Fill in the name of the person to whom you wish the book sent. You may want to order several copies for your "crew".

NAME: _____

ADDRESS: _____

_____

_____

Mail to: MSU Press, P.O. Box 550, East Lansing, Michigan 48823.

Department of Horticulture

MICHIGAN STATE UNIVERSITY

COMPACT FRUIT TREE

DWARF FRUIT TREE ASSOCIATION

Rootstock Behavior
Spur Types
Induced Dwarfing
Cultural Practices

Vol. 4, No. 6, September, 1971. Edited by R. F. Carlson

ORCHARD SIZE IS RELATIVE

Since Don McKenzie appeared on the program of the DFTA's 13th Annual Conference, March 1971, the question of orchard size often enters fruit growing conversations. Don clearly demonstrated that net profit can be higher from smaller acreage than from the larger holdings. Obviously, many factors play a deciding role in orchard size. The owner, operator or the manager of the orchard is the key and he must be in a position to decide where to stop in orchard size. Other conditions - land cost and availability - investment in equipment - available labor - etc., limit or extend orchard size.

* * * * * *

Now with more emphasis on quality rather than quantity of fruit, the smaller orchard may be at an advantage. In other words, more stress on detailed practices adds up to better and more uniform fruit, and, in turn, may add up to higher net profit.

* * * * * *

One part in orchard management deals with better care of trees in higher densities. The small or large orchard of high density will need that extra care in the form of precise timing of sprays, correct pruning for light and leaf efficiency and application of nutrients and water for best utilization in tree growth and fruit color and quality. The dwarfed trees in a high density scheme is the base and given the year round supplements (CARE) will result in excellent fruit each and every year.

* * * * * *

1971 - EUROPEAN STUDY TOUR - DFTA - COMMENTS BY R.F.C.

At the "Institut Für Obstbau" in West Berlin, plastic cords were used for trellising of apples and grapes. This plastic cord is 4 mm in diameter, is very pliable, and is easily tied to supporting parts. A unique screw-type gadget was used for tightening the cord. The cord is sold for 12.35 DM/kg.; or, 0.19 DM per meter; or, 18¢ per pound (100 feet). In large orders this cost would be less. In comparing this to galvanized wire which will rust, Dr. G. Bünemann, Director of the Pomology Station, said -- "metal wire is cheaper, but plastic cord is much better". In Germany the plastic cord is sold as "Atlas Wire" by the Farben Bayer AG(Co.) Leverkusen.

* * * * * *

According to Dr. Karl Raffer, Austria is the size of Maine and has a 7 million population. Only 20% of the land is used for tillable agriculture. Rainfall varies from 20 inches at the eastern border to 50 inches in western Austria. Most farms are less than 100 acres in size. Their farms are "self-sufficient" and well managed, but since WW II the number engaged in farming has declined from 30 to 16 percent. About half the land is devoted to small grain and the rest to diversified fruit and vegetable crops. Tourism is a big part of Austria's economy.

* * * * * *

In Italy we were told by Professors A. Zocca and S. Sansavini that over-production of fruit in the Po Valley has caused them to control plantings to the extent of removal of less desirable orchards. A government controlled marketing program makes it necessary to withhold some fruit from the market in years of high yields. Italy exports fruit to other European countries as shown in the table.

Fruit Exported (in 10 metric tons)

Crop	From Po Valley	Total from Italy	Percent of Crop
Apples	8,918	41,069	21
Pears	15,682	28,082	55
Peaches	9,532	13,393	71
Strawberries	2,781	3,876	71
Sweet Cherries	951	2,167	43
Plums	1,279	1,800	71

* * * * * *

The fruit research institute at Sarstedt near Hannover Germany has several projects in variety and cultural improvements. Sweet cherry variety tests were quite extensive; however, birds seemed to be more of a problem than variety adaptation. A device for scaring birds was demonstrated. Essentially this was a 30-foot antenna-like, flexible metal pole. On this was rigged a colorful disk which was propelled upwards to the top of the pole by CO_2 gas cylinders. Once it reached the top, it returned by gravity to the ground fluttering like an injured bird. How effective? Good until the birds got well acquainted with the machine and the sound effect.

* * * * * *

At the same station, EM VII was compared to A-2, and EM IV in one of the station's plantings. In this 8-year orchard EM VII had the best record from the standpoint of dwarfing, yield and fruit quality. Dr. De Haas, Mr. Gruber and Mr. Seipp, from the University of Hannover were of great help in showing the group several points of interest enroute and at the research station.

* * * * * *

At East Malling, England, Tony Preston, John Walker and B. Self had much to tell about both old and new plantings. EM 26 is finding a place as a commercial dwarfing rootstock in England. EM 27, more dwarfing than EM IX, is new and in need of more testing with varieties and in different spacing systems.

* * * * * *

In correspondence with Mr. A.H. Dunn of Berrington Court, Worcestershire, he says that -- "We are using EM IX and MM 106 mostly now for apples with EM 26 a good runner up. This latter rootstock went out of favor 3 or 4 years ago, as with Cox in particular it seemed to produce rather a lot of bare wood in the early years, but growers are getting over this by careful pruning and management and a certain amount of tying down to get it into early cropping. Under our conditions EM 26 is giving an uneven crop of nursery trees. We have overcome this by using the inverted budding technique. The cross cut is made below and bud incerted from below --".

* * * * * *

Tony Preston accompanied the group to the Peter Wheldon and D. Neutebbom orchards in Suffolk county. Both these growers aim for high production of good fruit. Mr. Wheldon also is keen in keeping up on mechanization, having the latest in sprayers, pruning equipment and bulk-bin carriers. Mr. Neutebbom placed much stress on detailed training and pruning trees for compactness and maximum light penetration. His "hoop-skirt" method of branch training using clothes pins and ties seemed to be paying in production and net profit.

* * * * * *

Small fruits were leading subjects in Scotland. In the vicinity of Dundee, 8,000 acres of red raspberries are grown. The climate there seems to be good for this crop although the soils are rather thin and stony. Rainfall ranges from 27 inches at the coast to 35 inches inland. High winds are a problem in fact, raspberry yields have been doubled experimentally by providing either natural windbreaks (trees) or artificial made plastic netting. The fruit is marketed for jam (80%), for canning (15%), and for quick freezing and dessert (5%).

* * * * * *

The removal of old fruiting canes has been mechanized. A 4-blade rotor attached to the tractor moves manually back and forth into the row and eliminates 90% of the old canes without seriously injuring the young fruit canes. A skilled operator is a must.

* * * * * *

It was the contention of the research men and growers in Scotland that joining the "Common Market" may help the small fruit market program there because crops mature when the rest of Europe is through marketing similar crops. Red Gauntlet and Cambridge Favorite were two leading strawberry varieties grown in Scotland.

* * * * * *

Several members of our European Tour have responded and commented on what they saw and learned. John Barton, Stewartstown, PA. writes "---Thank you for your recent letter and the highlights of our trip. I'm inclined to agree with you that the dwarf planting at Ipswitch, England, was one of the most interesting stops. One of the very first things I did after we arrived home was to purchase 1500 clothes pins and spent the next few days putting them on my Starkrimson one year old whips that I planted this spring. It is certainly amazing to see the perfect crotch angle these spur type trees have already developed in the past 5 weeks. It seems so simple that I wonder why some one didn't think about it in our own country. I could go on and on mentioning the many things from the trip that I could put to good use or to improve upon. There is always something one can learn by observing the way other people do things. Pleased to be a member of this progressive group, the DFTA."

* * * * * *

Fred Bergman, New Carlisle, Ohio, writes, "---Thank you for all you did for us on the European Tour. We enjoyed the whole trip and learned much. It was an experience we shall never forget..."

* * * * * *

SOUTHEASTERN ORCHARD TOUR - July 1971 - Roadside Market and Pick-Your-Own

The 1971 Dwarf Fruit Tree Association's Annual Summer Tour was well attended. Two busses were loaded in addition to many who used their own transportation. The tour, led by Jim Lincoln and other willing volunteers, provided some interesting stops at dwarf orchards, roadside fruit markets and cider mills.

* * * * * *

One of the interesting stops was at the Herman Rapp Orchard, Romeo, now owned and operated by his son Karl. Herman immigrated from Germany some 40 years ago and worked on a farm until he was able to buy a parcel of land to get started in the fruit growing business. Since then he has developed the 83 acre farm into a profitable fruit growing and roadside market operation on Highway 53, north of Detroit.

* * * * * *

The Blake's orchard and sales, Armada, provided the group with freshly made doughnuts and coffee. This is a family run farm where the wife, sons and daughters "pitch in" and work, growing fine apples on dwarfed trees, asparagus, sweet corn, tomatoes and cucumbers. They also make cider and doughnuts in their newly built sales house.

* * * * * *

The management at the Big-Red-Orchard, Romeo, provided wagons for the people to ride on through the well managed compact orchards. In addition to selling the fruit in the Big Red Barn, a unique system of pick-your-own fruit is provided. The people are taken to the orchard on platform wagons and there assigned specific trees for picking.

* * * * * *

The Charlie Hough Orchard is another family managed farm which includes over 300 acres of apples and a herd of 150 Gurnsey milking cows. A 24,000 bushel CA storage provides holding of the fruit for later wholesale markets. Charlie was one of the first in Michigan to plant "Clark Dwarf" trees. These are still producing good fruit and fairly high yields even though spaced too far apart. He admitted it took persistent training to get needed height on these trees.

* * * * * *

The Friday evening session was moderated by Dr. Jerome Hull. Some of the items discussed were: how to manage the pick-your-own sales, type of orchard best suited for this sort of market, and side-products available (cider, doughnuts, syrup, preserves, etc.) at the roadside market. Again, the key to success seemed to dwell around management of the particular orchard and sales outlets. Generally, the group felt that the smaller trees are best from the standpoint of picking and from giving better and more attractive fruit.

* * * * * *

VISIT TO SWEDEN

While visiting the Horticultural Research Station at Alnarp, Sweden, I observed interesting test plantings. One of these was aimed at spacing apple trees so that they could be machanically sprayed, pruned and harvested. The varieties were Mio and Spartan grafted on A-2 and MM 106, and these trees were planted in double rows 1 x 1 (approx. 3' x 3') meters with double rows 6 meters apart. Every other tree will be trained to a central leader of 0.5 meters and the other to 1.5 meters. The branch spread diameter will be about 1.5 meters. Maximum tree height will be 2 meters. It occurred to me that Mr. Neutebbom's "hoop-skirt" training technique would be a natural here. The development of this planting will be interesting to see in the future.

* * * * * *

Opal is a plum variety named at Alnarp. It is an early ripening sort, roundish in shape, developing a blue-red color at maturity. Apal is prolific in fruiting and requires good thinning to obtain marketable fruit. Gilbert is a new plum variety named at Balsgard. These 2 were compared in one planting with the Victoria plum. Several numbered selections of plum rootstocks were also used in the same planting.

* * * * * *

A pear rootstock trial with 10 varieties and 4 rootstocks at Alnarp indicated that total yield will vary with the particular scion/rootstock combination. Over a 7-year period, yield per tree ranged from 1 to 14 kg. For example, William's (Bartlett), Bristol Cross, and Pierre Corneille fruited consistantly well with all rootstocks. Anjou, Clapps Favorite, Filipsparon and Wm. Max Red were low in fruiting, and varied with the rootstock used.

* * * * * *

ANNUAL CONFERENCES

December 7-9, 1971 - Michigan State Horticultural Society. Pantlind Hotel, Grand Rapids, Michigan.

March 9-10, 1972 - National Dwarf Fruit Tree Association. Pantlind Hotel, Grand Rapids, Michigan

* * * * * *

"... tis all mere chance-work, and they put their whole trust in good ground, and much Dung, to cover their errors..."Jethro Tull, 1730

"Nothing so needs reforming as other people's habits..."Mark Twain

"Have a faith that at bottom there is but one science of all things, and that until all is known, no one thing can be completely known..." William James

"The reason all the big apples are on top of the basket is because there are always a lot of little ones holding them up there..."

* * * * * *

Comparative Yields of Different Spur Delicious with Golden Delicious and Jonared/MM 106

Roy K. Simons, University of Illinois, Urbana

Straw mulch was applied to trees in 1964, one year after planting and maintained since initiation.

* * * * * *

Based on total yields for the 4-year period, all spur type Delicious, except Miller Spur/MM 106, responded to mulching. This indicates that the roots of MM 106 have developed and extended beyond the mulching zone of the upper soil profile. Golden Delicious/MM 106 did not respond to mulch indicating that the vigorous root system reacted in similar manner as Miller Spur/MM 106. In addition, frost may have been the limiting factor for Redspur Delicious and Starkspur Golden Delicious on seedling rootstocks. (See Table 1, and for comparison, 'Compact Fruit Tree', Vol. 4, No. 4, pages 24-25, May 1971.)

* * * * * *

TABLE 1: Yield of different spur Delicious in comparison with Golden Delicious and Jonared on MM 106, planted in 1963. Yields in pounds per tree are averages of 15 trees per treatment.

Variety/rootstock	Treatment	1967	1968	1969	1970	Total Yield 4 years (lbs)
Red Spur/seedling	non mulch	4	25	9	100	138
	mulch	3	41	15	177	236
Red Spur/EM VII	non mulch	10	48	72	185	315
	mulch	6	74	109	237	426
Miller Spur/EM VII	non mulch	17	77	68	180	342
	mulch	16	92	72	241	421
Miller Spur/MM 106	non mulch	23	89	125	208	445
	mulch	13	55	81	301	450
Gol Del/MM 106	non mulch	18	140	68	184	410
	mulch	14	83	72	239	408
Jonared/MM 106	non mulch	--	65	165	276	506
	mulch	--	112	124	195	431
Red Spur/ EM II	non mulch	6	54	90	181	331
	mulch	9	87	130	243	469
Miller Spur/MM 104	non mulch	7	32	40	321	400
	mulch	10	60	38	305	413
Starkspur G.D./seedling	non mulch	11	93	32	126	262
	mulch	9	125	15	149	298