Horticultural News

Volume 91, Number 1
Winter, 2011

Horticultural News

Editors: Winfred P. Cowgill, Jr. & Wesley R. Autio

The New Jersey State Horticultural Society was organized on August 17, 1875 at Geological Hall, Rutgers College, New Brunswick, NJ. It remains the oldest Horticultural organization in New Jersey.

Horticultural News began as the *The New Jersey State Horticultural Society News*, in October of 1920. The Society began "collecting paid membership in order to obtain funds to promote new features of the society and extend the usefulness of the society. The Horticultural Society News was started to be the official society publication." Published M. A. Blake, Professor at Rutgers College was the first president and chair of the publication committee.

Editors served as follows:

MA Blake	1920 - 1947
Norman F Childers	1948 - 1980
Win Cowgill	1981 - 1988
Emily Brown Rosen	1988 - 1990
Linda Butenis Vorsa	1991 - 1995
Jerry Frecon	1995 - 2010

June 2010: *Horticultural News* has moved to an online web-based format. The New Jersey State Horticultural Society has partnered with the University of Massachusetts *Fruit Notes*, Dr. Wesley Autio, Editor. Cowgill and Autio will be the new editors of *Horticultural News* and *Fruit Notes*.

Horticultural News is distributed to growers, extension personnel and researchers and libraries across North America. Horticultural News focuses primarily on tree-fruit culture, but addresses small-fruit cultural issues as well. Most reports are from current research at Rutgers University, University of Massachusetts, and other universities.

Horticultural News is published four times per year by the New Jersey State Horticultural Society. It is provided as a benefit to membership in the society. Membership costs $50 per year. Each one-year subscription begins January 1 and ends December 31. Payments via check must be in United States currency and should be payable to the New Jersey State Horticultural Society . Horticultural News Electronic subscriptions are available as benefit of membership in the NJ State Horticultural Society. A hidden link will be mailed immediately after publication to members. Issues will be made freely available on this website six months after publication.

Correspondence should be sent to: New Jersey State Horticultural Society
P.O. Box 116
Clayton, NJ 08312
TEL (856) 307-6450 Ext.1 FAX (856) 307-6476

For advertising opportunities, contact: Meredith Compton njhortsociety@gmail.com

Table of Contents

Using GIS Technology to Measure the Effects of Mating Disruption for Oriental Fruit Moth
Dean Polk 1

New Website -- TallSpindleApple.com -- Focuses on the Tall-spindle Apple Production System
Jon Clements 4

Apple Growth and Crop-load Management
Steve McArtney 6

'Mini' Apple Orchard System Trial: A Comparison of Central-leader, Vertical-axis, and Tall-spindle Apple Orchard Systems on Three Different Rootstocks
Jon M. Clements 10

Establishment of a Research Apple Orchard in Southern New Jersey
Norman Lalancette and Kathleen McFarland 16

2008 Tall Spindle Apple System Trial
Win Cowgill, Rebecca Magron, Suzanne Solnar-Figler, Geff Slifer, and Jon Clements 18

New Jersey News 20

Cover photo by Winfred P. Cowgill, Jr.

Using GIS Technology to Measure the Effects of Mating Disruption for Oriental Fruit Moth

Dean Polk
Rutgers Cooperative Extension

In previous years it was noticed that when mating disruption was placed over part of a large farm, trap captures in areas not under mating disruption, but near the disrupted area had low counts of OFM captures. During the following year on other parts of the farm, previously not under mating disruption, low trap captures were also seen. Mating disruption will reduce an overall population if used for 1-2 years, but what might its affect be on nearby areas not being disrupted, e.g. no dispensers being placed or sprayable pheromone being used? This project was carried out to investigate if GIS technology could be used as a tool to define the "zone" of mating disruption, if one exists for Oriental Fruit Moth (OFM). Since hand applied dispensers used for OFM mating disruption can range from $38 to $72/A, depending on the types of dispensers used, their expense often discourages its use. If mating disruption does indeed have an effect in areas of the orchard where dispensers are not placed, this may be able to be utilized for more economic use of pheromone technology.

Methods

Three commercial peach orchards were used as sites for 3 individual plots or replicates over a 2 year period. Each site consisted of at least 30 contiguous acres of various varieties. In each farm site, a 5 acre square plot was measured and marked out, so that it was positioned in the relative center of the remaining surrounding orchard. Large plastic delta traps (Scenturian) were baited with OFM pheromone. Two traps were placed diagonally in the center of each plot. Starting on each of the north, east, south , and west plot borders, additional traps were placed in a straight line transect approx. every 36-40 feet, depending on the tree spacing, such that each transect consisted of 11 traps extending out approx. 360 to 420 feet from the plot borders. A total of 143 traps were used each year for 43-50 traps per plot. Hand applied OFM mating disruption dispensers (Isomate M100, Pacific BioControl) were placed at the rate of 100 to 140 dispensers per acre during the 3rd week of May (2009), and the 3rd week of June (2010) within each of the 5 acre plots only. Traps were monitored once per week for the remainder of the season, or until the crop was removed. Both oriental fruit moth (OFM) and lesser appleworm (LAW) moth captures were recorded. Pheromone dispensers were changed every 5 weeks. Farm sites were mapped, and all traps were geo-referenced with a GeoExplorer XT prior to monitoring. Data was entered into Excel and exported to ArcView 3.3 for GIS analysis. Standard insecticide treatments were used both inside and outside the mating disrupted area, so that the entire monitored area was treated the same way. The objective was to have any differences in trap captures due to position relative to the disrupted area and not pesticide treatment.

Results

The accompanying data is from the 2010 field season. Lesser appleworm (*Grapholita prunivora*) (LAW) and oriental fruit moth (*Grapholita molesta*) (OFM) have similar pheromones. Both OFM and LAW pheromones are combinations of Z-8 and E-8 dodecenyl acetate in various ratios of *cis*

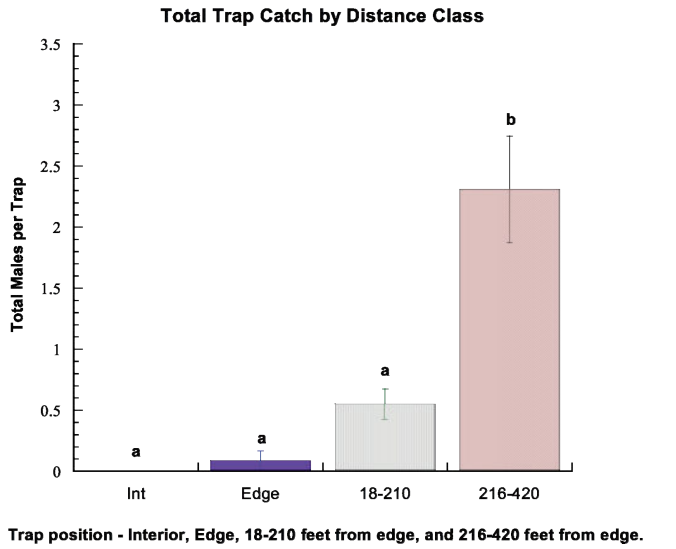


Figure 1. Total trap captures of OFM and LAW across all farms by distance class – 2010.

and *trans* isomers (Roelofs and Cardé, 1974). As a result, LAW are attracted to OFM pheromone traps, but OFM are rarely attracted to LAW traps. In the orchards we worked in, OFM populations were suppressed due to repeated use of insecticides. The resulting captures were approximately 50:50 ratios of OFM to LAW. Total trap captures were divided into two distance classes outside the mating disrupted area: 18-210 feet distance from the disrupted area and 216-420 feet from the disrupted area. Total trap captures were analyzed with ANOVA and separated with LSD. While the interior and edge captures were all "0", the first distance class of 18-210 feet trended slightly higher, but was not statistically different from interior or edge traps. Traps in the far distance class, 216-420 feet captured more males (Figure 1). Most trap captures were late in the season (Figure 2). Total trap captures can be represented by an Arcview surface interpolation (Figure 3), which shows that the further the distance from the mating disruption dispensers, there is a trend to higher trap captures.

Conclusion

Since lower trap captures were present near the mating disrupted area, further work could be done where insecticide applications are reduced to make use of the actual pheromone placement. Consistent trap shut-down close to the

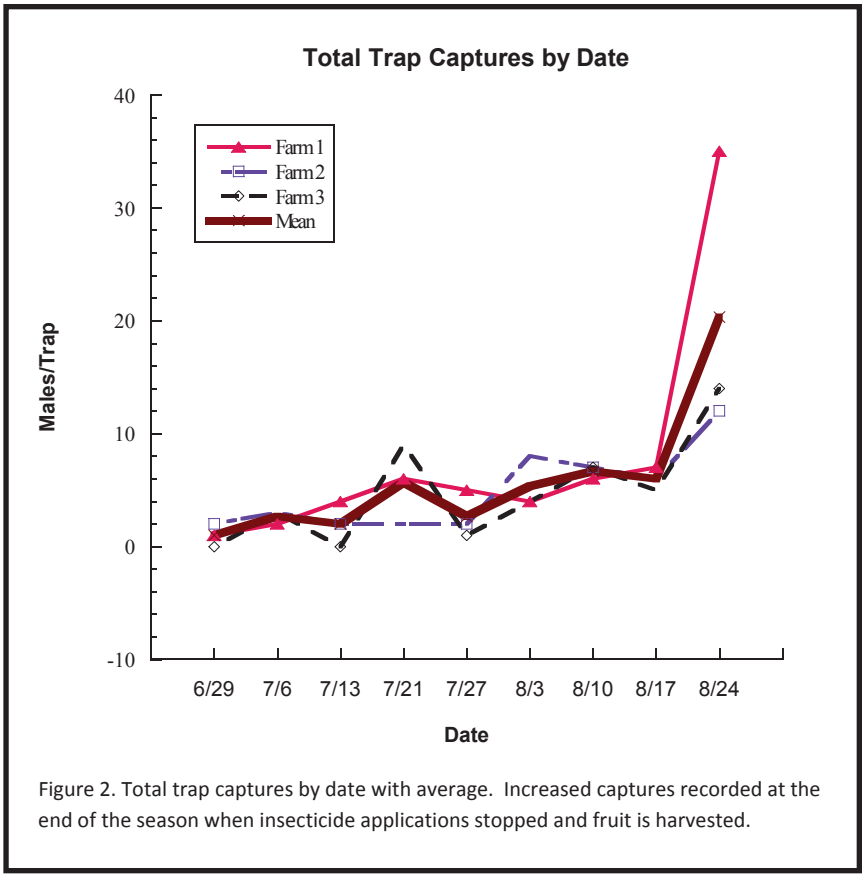


Figure 2. Total trap captures by date with average. Increased captures recorded at the end of the season when insecticide applications stopped and fruit is harvested.

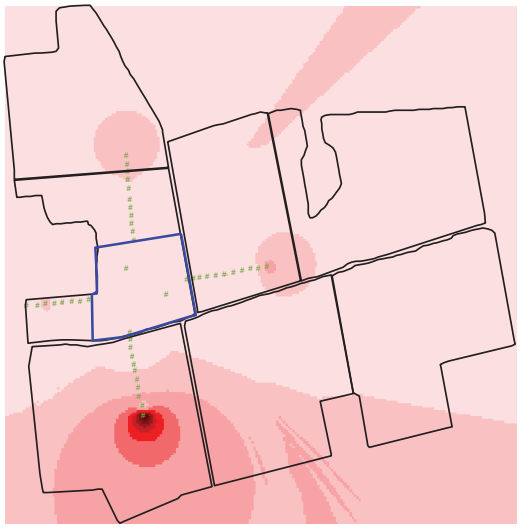


Figure 3. Interpolation of total trap captures in Elk Twp. Blue outline denotes mating disrupted area where dispensers were placed. Darker red denotes higher total seasonal trap captures classified by color in key.

disrupted area may reflect a low population influenced by specific mating disruption blocks. Making use of a mating disruption "zone" could reduce costs in a whole farm approach, both in terms of total insecticide as well as pheromone use.

Reference Cited

Roelofs, W. L. and R.T. Cardé. 1974. Oriental fruit moth and lesser appleworm attractant mixtures refined. Environ. Entomol. 3: 586-588.

Still have availability for 2011.
Place your order now as many varieties are selling fast.
Call for an updated inventory

Start Making Plans for 2012 and 2013.

Shawn Bixby

Debi Clover

Paul Woolley

Quality • Selection • Service

1-800-435-8733

Stark Bro's Nurseries & Orchards Co.

P.O. Box 398
Louisiana, Missouri 63353
573-754-5111
Fax 573-754-3701
1-800-435-8733

New Website – TallSpindleApple.com – Focuses on the Tall-spindle Apple Production System

Jon Clements
Center for Agriculture, University of Massachusetts Amherst

The Tall-Spindle (TS) apple seems to have become the standard high-density orchard production system in the Northeast. Promoted by Cornell's Terence Robinson for several years, the TS uses fully dwarfing rootstocks planted at 3 to 4 feet between trees and approximately 12 feet between rows (~1,200 trees per acre) to achieve high early yields, high sustained yields, reduced labor costs, and highest return on investment compared to apple orchards planted at lower or higher densities.

Although Robinson has been on the TS speaking circuit for several years now, and co-authored several publications on the TS apple production system, there is a new website (tallspindleapple.com, Figure 1) with links to other websites, publications, and videos on how to develop and manage the tall-spindle apple orchard.

Tallspindleapple.com is broken into Publications, Presentations, and Video with links to the best TS resources on the web. For example, under Publications, there is a link to 'The Tall-Spindle Apple Production System' by T. Robinson in the New York Fruit Quarterly. Presentations include 'Different Approaches to Tall-Spindle Establishment in Apple' by R. Perry, and 'The Tall-Spindle: critical steps to Success' by J. Clements. Videos show '4 Rules for Pruning Tall Spindle Apple' and 'Pruning the Tall-Spindle from a Platform' among others. New content and links will be added as they are published. Website visitors are encouraged to submit or identify new content for publication on tallspindleapple.com.

Tallspindleapple.com is hosted by the UMass Fruit Advisor (umassfruit.com).

Figure 1. The tallspindleapple.com website.

Targit Sales

"Specializing in Farm Market Packaging"

1-800-526-9224

Biodegradable

PLASTIC BAGS

Targit Sales is proud to introduce our line of Biodegradable plastic bags. Our bags use a proprietary additive that renders the plastic ultimately biodegradable.

We are offering the Biodegradable bag program with all of our "Custom Imprinted" plastic bags. Our Biodegradable bags have the "EPI" (the additive company) logo on the bag as proof of its biodegradable properties.

Advertise your business along with a "tag line" to express your company's efforts to keep your community and planet green.

Targit Sales can fully customize your bags to your specifications. We can make any size, strength, and style of bag to fit your needs. We can assist you with your design, setup, and artwork.

COMMON SIZES OF BAGS:

13 x 10 x 24 (Great for pies, cakes and corn)
12 x 8 x 24 (Great for your store front)
8 x 5 x 21 (Perfect size for tailgate markets)

BIODEGRADABLE PLASTIC BAG BENEFITS!

* Superior Strength!
* Less expensive to make and ship versus paper bags!
* Superior imprinting capability and quality...(looks better)!
* Easier and more affordable to store (inventory)!
* Flexibility! (customize the size, thickness, color and style to your specifications)
* Reusability!
* Biodegradable..breaks down quickly!

MOST COMMON QUESTIONS asked about biodegradable bags.

Will the bags begin to break down while being stored? No, the bags will retain its strength and integrity while properly stored. The breakdown only begins after it is directly exposed to certain environmental conditions such as: soil/landfill, heat/moisture, and sunlight.

Is this process more expensive? Not really, the cost increase is only a few percentage points higher. You will more than make this up with the goodwill you will be conveying to your community and customers.

Does the bag lose its strength or feel...does it look different? No, it is almost impossible to tell the difference between the Biodegradable bags and the traditional plastic bags. This is why we recommend putting a tag line on your printed biodegradable bags.

Can these bags be recycled and/or reused? Yes, these bags can be recycled and reused.

For more information or to order contact
Targit Sales
1-800-526-9224 • www.targitsales.com

Targit sales associates
"Specialty Food Packaging"

Apple Growth and Crop-load Management

Steve McArtney
Mountain Horticultural Crops Research & Extension Center,
North Carolina State University
Presented the 2011 Mid-Atlantic Fruit & Vegetable Convention, Hershey, PA

"It's easier to make a big apple small than a small apple big"

Crop load, determined as the number of bushels produced per acre, or on a smaller scale the number of fruit per tree, is a major determinant of fruit size at harvest. Getting the crop load right not only means fruit size will be where you want it to be, but will also make harvesting and packing the crop a more efficient process. So putting effort into managing crop load can make a huge difference to your profitability in different ways. An understanding of some of the physiology behind the process of apple growth will help you to make sound crop load management decisions that will pay off where it counts.

Cells in the Apple Divide First then Expand

An apple fruit is made up of lots of cells. Exactly how many cells are in a mature apple at harvest depends on many factors, including which research report you read. The data vary from 'Gala' having around 26 million cells to 'Golden Delicious' having up to 120 million cells. Developing fruit undergo a period of rapid cell division that lasts somewhere between three and eight weeks after bloom, again depending on which research report you read. The cell division phase is probably shorter and more intense at warmer temperatures but less intense and more prolonged at when temperatures are lower. Cell numbers are higher and fruit size greater when temperatures during the cell division phase are higher. Cell division is certainly finished by the time of June drop. After June drop occurs the growth of fruit is due entirely to cell expansion.

There are a couple of important points to remember regarding cell number. The first is that differences in fruit size at harvest are primarily the result of differences in cell number and not differences in cell size. In a study published back in 1967 small 'Golden Delicious' fruit were found to have only two thirds as many cells as large fruit on the same tree whereas the average size of cells in small fruit were 90 percent the size of those

Figure 1. Stages of apple fruit development during the season. Left to right: king and lateral flowers of 'Royal Gala' within a dormant bud (slide courtesy of T. Foster); 'Gala' spur at full bloom with king flower open and five lateral flowers at the balloon stage; 'Rome' spur in June with two dominant fruit, two weaker fruit, and two fruit about to drop (partially obscured by lower fruit); 'Suncrisp' at harvest.

in large fruit. The second point relates to the fact that the cell division phase is completed relatively early in the season. This means that the number of cells in a fruit, and therefore its potential size, is established at the end of the cell division phase. The cell division phase probably occurs during the first five to six weeks after bloom in the Southeast. What this means is that a fruit that is small in June will still be small at harvest; you cannot make a little apple big. If you want big apples at harvest then you will need to make sure that any thinning you do, chemical or hand, removes only the smallest fruit. Fortunately, most chemical thinners do in fact result in drop of the smallest, weakest fruit within a spur.

What is a Sink?

Developing apple fruits produce practically no carbohydrates themselves so they demand a continuous supply of carbohydrates from elsewhere in the tree. Another way of saying this is that fruit are a sink for carbohydrates. The carbohydrates required for early season growth of spur leaves, shoots and fruit during the period from bud break until bloom come from the remobilization of reserves that were accumulated in the previous year. Most of the reserves are used to fuel growth of the rapidly expanding spur leaves since they also are a sink for carbohydrates during this time. However the reserves in the tree are usually depleted by about bloom, coinciding with when the spur leaves themselves stop being a carbohydrate sink and start to export carbohydrates to other nearby sinks such as flowers and growing shoots.

Apple fruit are carbohydrate sinks for the entire season. Furthermore, during much of the cell division phase fruit are weak sinks, meaning they are not able to compete for carbohydrates as well as other sinks on the tree, particularly growing shoots. Even individual fruit within a spur exhibit different sink strengths, some growing at much faster rates than others. Weaker fruit within a spur are more likely to drop, either in response to environmental conditions or to application of a chemical thinner.

Fruit are weaker sinks than shoots, so when the level of carbohydrates in the tree is low then fruit production can be limited due to a slowing down of the fruit growth rate. If there is a severe limitation in the supply of carbohydrates to growing fruit then they may even start dropping from the tree, beginning with the smallest fruit first. This is one reason why chemical thinners have greater activity when they are applied during periods of cloudy weather or warm nights. Cloudy days reduce the level of carbohydrates available to growing fruit due to reduced photosynthesis whereas warm nights have the same effect because more carbohydrates are used up in the process of respiration.

How Does Crop Load Management Fit Into All This?

If potential fruit size is determined by cell number, then anything you can do to enhance cell division will increase the fruit size potential of your crop. There isn't much you can do to increase air temperatures, at least in the immediate future. However, this may be one situation where global warming will work in your favor. Seriously though, the one area where you can (and do) influence fruit size is with crop load management (chemical and hand thinning). Thinning stimulates growth of the remaining fruit because it reduces the total number of fruit sinks on the tree, increasing the supply of carbohydrates to each remaining fruit and increasing the rate of cell division. As you well know, chemical thinning responses are notoriously

Figure 2. 'Rome' apple spur in June with two dominant fruit, two weaker fruit, and two fruit about to drop (partially obscured by the largest fruit).

unpredictable, because they reflect the combined effects of the chemical thinner and environmental effects on the level of carbohydrates available for fruit growth. If the carbohydrate supply to each fruit is low, perhaps due to a very high initial fruit set (many competing fruit sinks) or to a combination of cloudy days and warm nights, then the chemical thinner will have greater activity.

The Size Thinning Method

The goal of hand thinning is to reduce the number of fruit per tree to a more commercially acceptable level when there has been a poor chemical thinning response. There are some principles that are commonly followed when deciding which fruit to remove at the time of hand thinning. Damaged or misshapen fruit are normally the first to go. Then the number of fruit per spur might be reduced down to one or two; and finally fruit are removed so that the remaining fruit are spaced 6-8 inches along the branch. Do these hand thinning rules sound reasonable? Note however that the number of fruit per tree and fruit size was a primary consideration in any of these decisions. One problem with the traditional approach to hand thinning is that in the process of reducing the number of fruit per spur and spacing the remaining fruit at intervals along a branch many of the largest fruit may be removed and many of the smallest fruit may remain on the tree.

You can make a big apple small, by leaving too much crop on the tree, but you can also grow a crop of small apples by leaving the smallest apples on the tree and removing many of the largest apples when you hand thin. I visited several 'Gala' orchards in Henderson County the day after the trees were hand thinned in 2008 and measured the diameter of a random sample of 100 apples on a tree and the diameter of a further 100 apples lying on the ground beneath the same tree. When I compared the sizes in these two samples, I found that there was no difference between them. After hand thinning, many of the smallest fruit remained on the tree while many of the largest fruit on the tree had been removed.

'Size-thinning' is an alternative approach to hand thinning that uses fruit size (diameter) as the primary basis for deciding which fruit to remove. This method places a lower priority on the number of fruit remaining per spur and on the spacing between fruit compared to traditional hand thinning methods. Before adopting this method there are a couple of things you need to know. You must have an accurate count of the number of fruit on each tree after the completion of fruit drop (pre-thin number), and you must have determined a crop load target (target number) for your trees that is based on fruit number. The actual number of fruit per tree can be counted on five or six representative trees, taking two people three or four minutes per tree for typical trees on M.9 or M26 rootstock. From these two numbers (the actual fruit number and the target fruit number) the percent of the crop that must be removed in order to reach a crop load target can be calculated. For example, if an average of 400 fruit were counted on each tree and the target is only 300 fruit then 100 fruit, or 25 percent of the total number, will need to be removed from each tree.

Figure 3. The size thinning method only results in removal of the

The 'size thinning' method of hand thinning ensures that only the smallest fruit on the tree are removed. In order to do this you will need to determine the size limit that defines the upper limit of the smallest 25 percent of all the fruit on the tree in this example. This is achieved by first measuring the diameter of a random sample of 100 individual fruit; a procedure that will take approx. ten minutes with a digital caliper. Then you will need to arrange the diameters in order from the smallest to the largest which is easily done using the sort command in any spreadsheet. Finally, run down the column of sorted diameter measurements until you find the 25th data point from the smallest and you will have the upper size limit. Hand your thinning crew an apple the same diameter as the upper size limit and instruct them to remove all fruit that size or smaller and you should end up with the largest 300 apples remaining on each tree and the smallest 100 apples on the ground. The

size thinning method has two main advantages: first it ensures that only the largest fruit remain on the tree after hand thinning, and second it can be a reliable way to reduce the number of fruit per tree to a desired target crop load based on fruit number. The size thinning method may have some disadvantages that you will need to consider. Size thinning will probably result in more spurs in the tree carrying multiple fruit which will negatively impact red color development in some cultivars such as weak coloring strains of 'Gala'. Here in the southeast we have also found that hand thinning according to the size thinning method can result in an uneven distribution of fruit throughout the canopy with fewer fruit in the lower, shaded regions of the canopy and more fruit in the upper canopy. This phenomenon is probably a result of the uneven pattern of flowering that can occur across the tree here in the southeast, and may not occur in areas where flowering is more synchronous.

Summary

Apple fruits grow first by cell division and then by cell expansion. The cell division phase continues for the first 5 to 6 weeks after bloom. Large fruit have more cells than smaller fruit, indicating that the fruit size potential is determined within 5 to 6 weeks after bloom. Fruit growth can still be limited after the cell-division phase by factors which will slow cell expansion, such as excessive crop load or drought. Fruit are weaker sinks than shoots, and the weakest fruits are more likely to drop, either in response to adverse environmental conditions (cloudy days and/or warm nights) or to a chemical thinner. You can make a potentially big apple small but you cannot make a small apple big. The smallest fruit should be targeted for removal in the hand thinning process. Size thinning is a method for reaching a crop load target based on fruit number per tree that removes only the smallest fruit.

'Mini' Apple Orchard Systems Trial: A Comparison of Central-leader, Vertical-axis, and Tall-spindle Apple Orchard Systems on Three Different Rootstocks

Jon Clements
Center for Agriculture, University of Massachusetts

Introduction

When planting a new apple orchard in Massachusetts or the region, growers are faced with an important decision – which apple orchard system to plant? Currently, there are three logical choices. The central-leader (CL), planted on semi-dwarf rootstocks including M.7, MM.106, and G.30 (among others). Tree density is about 300 trees per acre and trees are generally not supported. Trickle irrigation is optional. The vertical-axis (VA), planted on vigorous dwarf and smaller semi-dwarf rootstocks such as M.9 (vigorous clones), G.16, M.26, and G.30 (among others). Trees are typically supported with a metal conduit at each tree tied to a single (high) wire and tree density is about 600 trees per acre. Trickle irrigation is highly recommended. The tall-spindle (TS), becoming increasingly popular, is a high-density planting system using dwarf rootstocks such as M.9, B.9, G.11, and G.41 (among others). Trickle irrigation is mandatory and tree density is high, ranging from 1000 to 1200 trees per acre.

Materials & Methods

To help growers answer this question, in 2006 a 0.5-acre 'mini'-apple orchard systems research and demonstration orchard was planted at the UMass Cold Spring Orchard, Belchertown, MA, with the objective of comparing the three systems in terms of establishment cost, management, and productivity. The orchard was planted with two cultivars, McIntosh (Snappy Mac or Rogers) and Honeycrisp and three tree spacing/rootstock/systems as detailed in Table 1.

The systems trial was planted in an experimental design with three replications. There were a total of nine rows, each row comprised of one system with each cultivar (McIntosh or Honeycrisp). For CL, there were five trees per cultivar per row (30 trees total); for VA, 7 trees (52 trees total); and for TS, 13 trees (78 trees total). Trickle irrigation was installed on all trees.

No data were collected on establishment and maintenance cost(s), since the cost of establishing such orchards has been documented elsewhere. When talking

Table 1. 'Mini'-apple orchard systems trial training system details.

Training system	Rootstock	Tree support	Tree spacing (in-row x between-row)	Density (no. trees/acre)
Central-leader	MM.106	No	10 x 15	290
Vertical-axis	M.26	Yes	6 x 14	520
Tall-spindle	B.9	Yes	3 x 12	1200

with growers about the cost of establishing an orchard, I typically use a figure of $10 per tree multiplied by the number of trees per acre. The cost of trees is the over-riding factor. Therefore, it is assumed the approximate cost per acre for establishing these three orchards is: CL, $2,900; VA, $5,200; and TS, $12,000. Ongoing maintenance and harvest costs generally increase as tree density increases (tree training and per-bushel harvest costs), however, the difference between orchard systems is not significant and beyond the scope of this study. In the early years, the high-density systems will take more time, but later, they become more labor-efficient than the lower-density orchards.

Additional data collection has been minimal, consisting of yield beginning in 2008 (3rd leaf) and continuing in 2009 and 2010. Two methods were used for estimating yield per acre: in 2008, all fruit on each tree were counted after 'June drop' in mid-July, and assumed to average 100-count fruit per 40 pound box (0.4 pounds per fruit) at harvest in September. In 2009 and 2010, all fruit were picked and either weighed (2009) or put in bushel boxes or bins (2010) and total yield recorded.

Results

Comparing Honeycrisp to McIntosh only (Table 2), Honeycrisp yielded more apples per acre in 2008; however, McIntosh yielded more in 2010. In 2009, they yielded the same. Cumulative yield was higher for McIntosh than Honeycrisp.

Looking at rootstocks (i.e., system: TS, VA, or CL) only (Table 3), B.9 produced the highest yield per acre for all three years. M.26 and MM.106 did not differ in yield during the individual years; however, M.26 produced higher cumulative yield than MM.106. Remember that rootstock is confounded with system, i.e., B.9 is tall-spindle (TS), M.26 is vertical-axis (VA), and MM.106 is central-leader (CL). Therefore the tall-spindle system had the highest yield per acre across-the-board.

Table 4 shows yield per acre by cultivar/rootstock (planting system) combination. In general, yield per acre did not differ by cultivar/rootstock combination except as described above for cultivar and rootstock individually. But, in 2010, yield of McIntosh/B.9 was significantly higher than Honeycrisp/B.9 (Figure 1). The same was true for cumulative yield (Figure 2).

Conclusion

Overall, regardless of cultivar, the tall-spindle (TS) system planted on B.9 rootstock (Figure 3) had the highest cumulative yield of fruit during the 3rd, 4th, and

Table 2. Apple yield (40-lb boxes/acre) by cultivar and year.

Cultivar	2008	2009	2010	Cumulative (2008-10)
Honeycrisp	111 a	138	582 b	831 b
McIntosh	55 b	238	777 a	1070 a

Cultivars within year not followed by same letter are significantly different.

Table 3. Apple yield (40-lb boxes/acre) by rootstock and year.

Rootstock	2008	2009	2010	Cumulative (2008-10)
B.9 (TS)	140 a	350 a	1061 a	1551 a
M.26 (VA)	79 b	121 b	596 b	796 b
MM.106 (CL)	29 b	93 b	382 b	504 c

Rootstocks within year not followed by same letter are significantly different.

Table 4. Apple yield (40-lb boxes/acre) by cultivar/rootstock and year.

Cultivar/rootstock	2008	2009	2010	Cumulative (2008-10)
Honeycrisp/B.9 (TS)	176	288	738	1202
Honeycrisp/M.26 (VA)	109	55	619	783
Honeycrisp/MM.106 (CL)	47	71	390	508
McIntosh/B.9 (TS)	105	412	1385	1902
McIntosh/M.26 (VA)	49	187	574	810
McIntosh/MM.106 (CL)	11	115	373	499

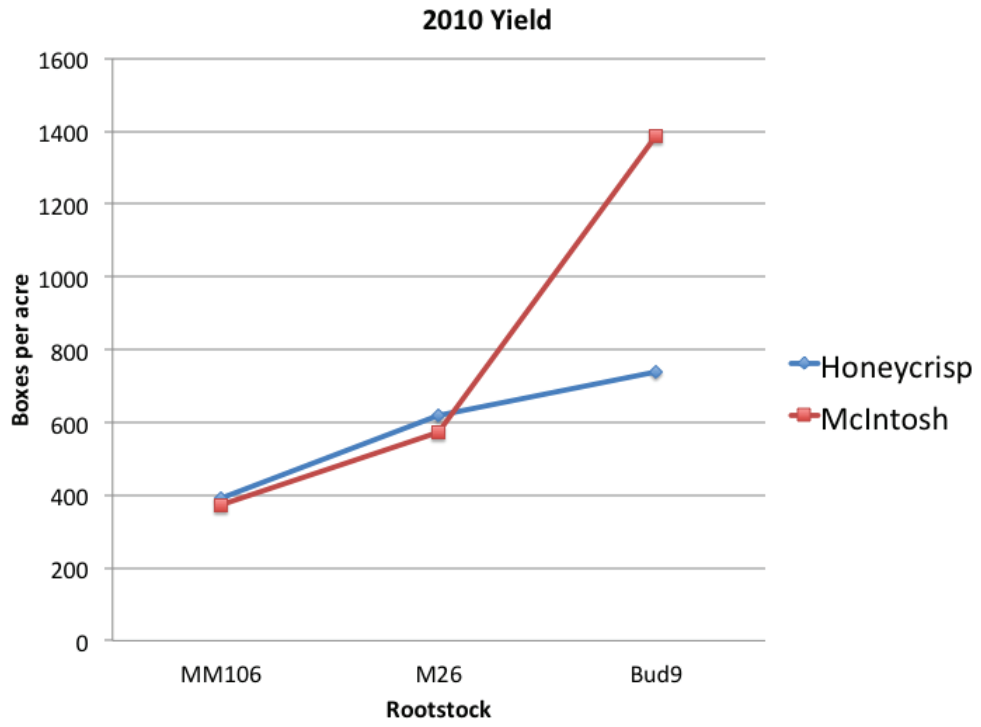


Figure 1. Yield per acre (40-lb boxes/acre, 2010) for cultivar by rootstock (planting system) combinations.

5th seasons. In fact, cumulative yield was almost twice that of the vertical-axis system (Figure 4).

Now, let us consider the estimated economics briefly by looking at estimated cost of establishment, cumulative yield at the end of the 5th leaf, and estimated gross return from the harvested apples, assuming a retail price of $40 per box (Table 5).

Now, admittedly this economic analysis assumes that fixed and variable operating costs per acre per year are the same, which is probably not altogether true, although I would contend it is not going to make a big difference in the final conclusion of this economic analysis. It also assumes that all of the yield is sold as top-quality fruit at retail.

Although the cost of establishing the tall-spindle orchard seems high, the potential to make considerably

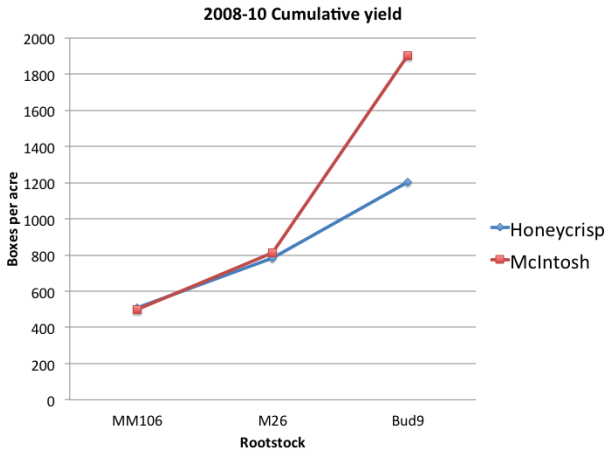


Figure 2. Cumulative yield (40-lb boxes/acre, 2008-10) for cultivar by rootstock (planting system) combinations.

Figure 3. Tall-spindle Honeycrisp apple tree on B.9 rootstock, September 2010.

more money in the early years and recover that return on investment is very high, assuming all goes well. This is why the number one proponent of the tall-spindle orchard in North America, Dr. Terence Robinson of Cornell University, is often espousing the tall-spindle apple orchard as "the way to fabulous riches" (Figure 5) for the progressive apple grower.

Thanks to the Trustees of the Horticultural Research Center for the financial support to establish this research and demonstration planting and the staff of the UMass Cold Spring Orchard Research & Education Center for harvest help.

Figure 4. Vertical-axis Snappy Mac McIntosh tree on M.26 rootstock, September 2010.

Figure 5. The tall-spindle apple orchard is "the way to fabulous riches."

PLAN AHEAD - DON'T BE LEFT OUT!

Are You Prepared for Your Harvest of Tomorrow?

PLAN AHEAD

2013 BUDDING CONTRACTS DUE JUNE 1st!

Order dwarf cherry trees NOW for 2011-2012

Use our **knowledge** and **experience** to secure your tree needs. **All at no cost to you**.

STS

SUMMIT TREE SALES

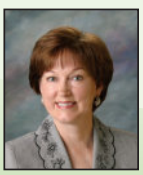
REPRESENTING THE COUNTRY'S FINEST NURSERIES

800.424.2765 / 269.674.8866 / Fax 269.674.3758

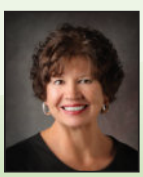
summit@summittreesales.com

Wally Heuser

Wanda Heuser Gale


Jan Melvin

Helen Classen


Katie Schuld

Dawn Melvin

summittreesales.com

RIGHT...FROM THE START

Start your orchard RIGHT with Willow Drive Nursery's Proven Performers™. Call for a complete and updated inventory.

Calling us today can help you tomorrow!

APPLES

Braeburn
Mariri Red™ (Eve®)
Kumeu Crimson®

Fuji
Aztec Fuji® (DT 2 Variety)
Rising Sun®
Morning Mist™
Early Fuji

Gala
Brookfield® Gala
Buckeye® Gala
Ultima Gala®

Other
Cameo® brand
Granny Smith
Honeycrisp™
It® Red Delicious
Morren's® Jonagored Supra™
Ruby Jon®
RubyMac®
Smoothee® Golden
Spartan

CHERRIES

Attika®
Benton™
Bing
BlackGold™
BurgundyPearl™
Chelan™
Early Robin®
EbonyPearl™
Lapins
Montmorency
Rainier
Regina
Rynbrandt
Schmidt
Selah™
Skeena™
Sweetheart™
Tieton™
Ulster
WhiteGold™

PEARS

Bartlett
Columbia Red Anjou™
Concorde™
Comice
D'Anjou
Forelle
Golden Russet Bosc®
Red Clapp's Favorite

PEACHES

Stellar Series
Allstar®
Autumnstar®
Brightstar™
Coralstar®
Earlystar™
Flamin' Fury
PF 8 Ball
PF Lucky 13
PF 19-007
PF 25
PF 35-007

WILLOW DRIVE NURSERY

WILLOW DRIVE NURSERY, INC.
1-888-54-TREES

Ephrata, Washington · 1-888-548-7337 · Web Site: www.willowdrive.com

Establishment of a Research Apple Orchard in Southern New Jersey

Norman Lalancette and Kathleen McFarland
Agricultural and Extension Center, Rutgers University

A research apple orchard for plant pathological studies will be planted at the Rutgers Agricultural Research and Extension Center (RAREC), Bridgeton, New Jersey. The following report summarizes activities to date. Partial funding for the orchard is being provided by the New Jersey State Horticulture Society.

Ground Preparation

The location designated for the new apple orchard had been previously occupied by a 'Jerseyglo' peach block planted in 1997. This orchard was removed in spring/summer of 2009. The trees were taken to another location on the research farm for drying and burning. After cultivation, the land was deep chisel plowed to aid the break up and decay of any remaining peach roots. The soil type is an Aura sandy loam, very low in organic matter.

Green Manure / Nematode Control

During October of 2009, a 'Dwarf Essex' rapeseed cover crop was planted in the block. After fall 2009 and early spring 2010 growth, this crop was plowed under. A second rapeseed cover crop was planted late spring 2010, which grew through the summer, eventually being plowed under in September 2010 (Figures 1 & 2).

The purpose of the rapeseed was three-fold. First, rapeseed plants produce long tap roots that can extend several feet into the ground. Upon plowing, these roots and top growth help provide much-needed organic matter for the sandy soil; on heavy soil, the organic matter can help maintain soil structure. Second, upon decay, the rapeseed gives off a natural fumigant that has been shown to kill many resident nematodes. Since similar nematodes species attack both peach and apple, it made sense to use a cover crop that could provide both green manure and

Figure 1. Spring 2010 view of fall 2009 rapeseed cover crop planted on future apple site. Orchard in background is 'Redgold' nectarine.

Figure 2. Close-up view of a flowering rapeseed plant. Cultivar used and recommended was 'Dwarf Essex'.

nematode control.

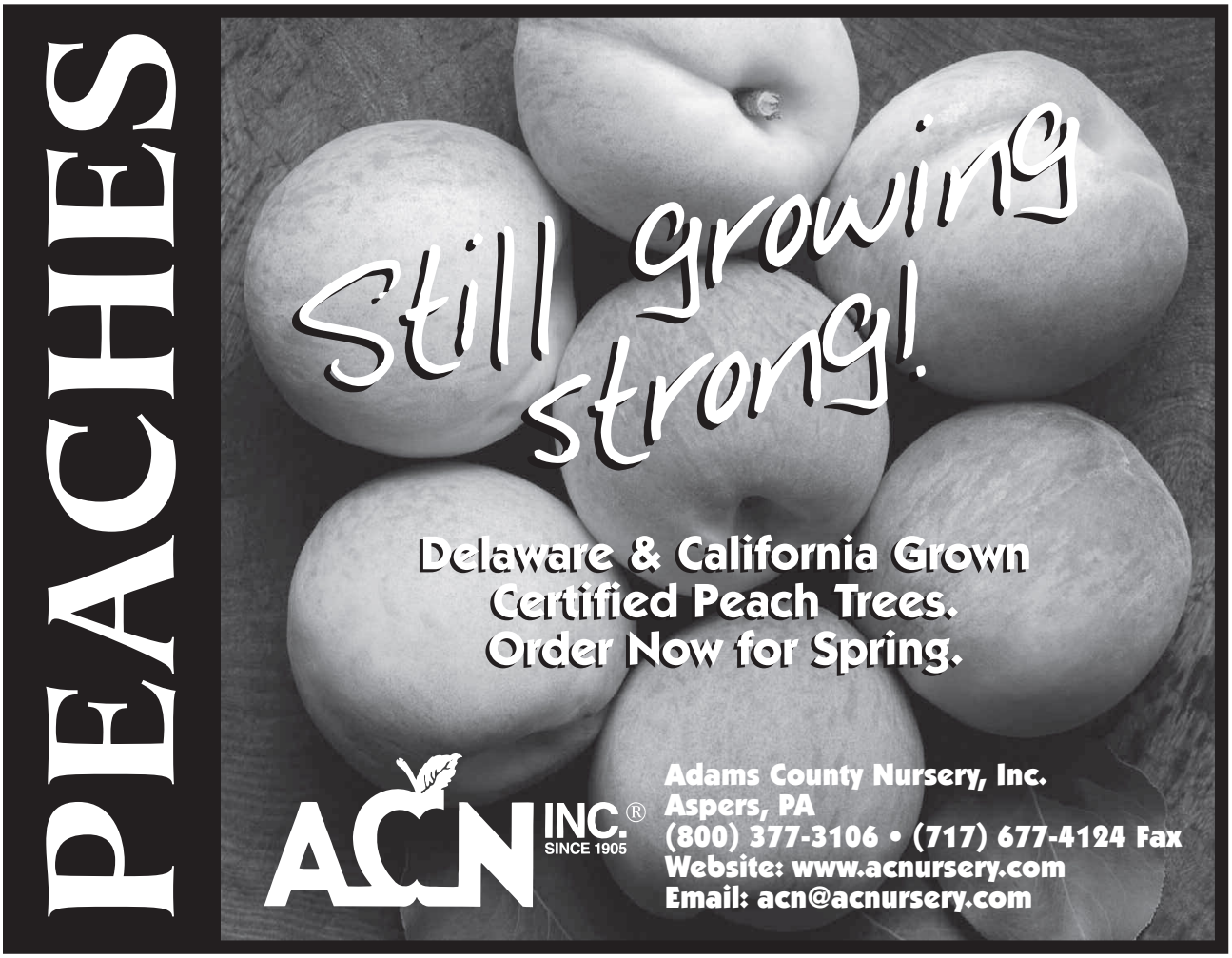
The final purpose of the rapeseed was to act as a demonstration plot for growers. This block was shown during the June 22, 2010 RAREC Fruit and Wine Grape Tour. Dr. John Halbrendt, visiting nematologist from Penn State, gave an excellent presentation of the details of using rapeseed as a green manure / natural nematicide. In prior years at Penn State, he researched the use of rapeseed for pre-plant nematode control in orchards.

Sod Establishment

During October 2010, the turf-type tall fescue cultivar 'Rebel Exceda' was planted over the entire block. This grass variety was previously planted in a peach orchard and has provided a very thick, droughttolerant sod for the orchard middles. As with all fescues, very little nitrogen fertilizer is needed and irrigation has not been required.

Future Work

In spring of 2012, the block will be planted with at least three different apple cultivars susceptible to a wide variety of apple diseases. Subsequent reports on the establishment of this block will be provided at later dates.



2008 Tall Spindle Apple System Trial

Win Cowgill, Rebecca Magron, Suzanne Solnar-Figler, and Geff Slifer
New Jersey Agricultural Experiment Station, Rutgers University

Jon Clements
Center for Agriculture, University of Massachusetts

In 2008, a system/cultivar demonstration trial was established at the NJAES Rutgers Snyder Research and Extension Farm in Pittstown, NJ. The trial consisted of five cultivars/strains grown to the tall spindle system utilizing full dwarfing rootstocks at a spacing of 3 feet x 14 feet, or 1,037 trees per acre.

The objective of this 10-year project is to establish a grower demonstration of a tall-spindle apple system and to evaluate the performance of five apple cultivars under northern New Jersey conditions in a tall-spindle system. A secondary goal will be to evaluate the systems profitability and determine its cash flow. Our goal is to recommend the best complete systems to growers to ensure their economic sustainability.

Materials & Methods

Treatments are listed in Table 1. The land was prepared the year before planting in 2007. Primary tillage was done with deep sub-soiling followed by chisel plowing, deep discing, fertilizer and high calcium limestone applied as per soil tests, disked again, roller harrow and seeding of turf type tall fescue cv. Titan with a Brillion Seeder (Brillion Farm Equipment, Brillion, WI) at 300 pounds per acre. The trees were planted with Mechanical Tree Planter for Orchards and Nurseries (Phil Brown Welding, Conklin, MI) on April 24, 2008. Trees were set with the graft union 6 inches above the soil line. Soil type is a Quakertown silt-loam. Immediately following planting, all trees were hand watered at 3 gallons per tree. A trickle irrigation system using Toro Blue Strip Tubing POS2042-18 orchard tubing with internal 2-gallon-

Table 1. Cultivar, strain, rootstock, and number of trees grown to the Tall Spindle System at the Rutgers NJAES Snyder Research and Extension Farm in Pittstown, NJ.

Variety	Strain	Rootstock	Number of trees
Gala	Buckeye	M.9 Nic 29	50
Gala	Gale	B.9	52
Golden Delicious	Gibson	B.9	143
Honeycrisp	Honeycrisp	M.9 Pajam 2	294
McIntosh	Linda Mac	B.9	100

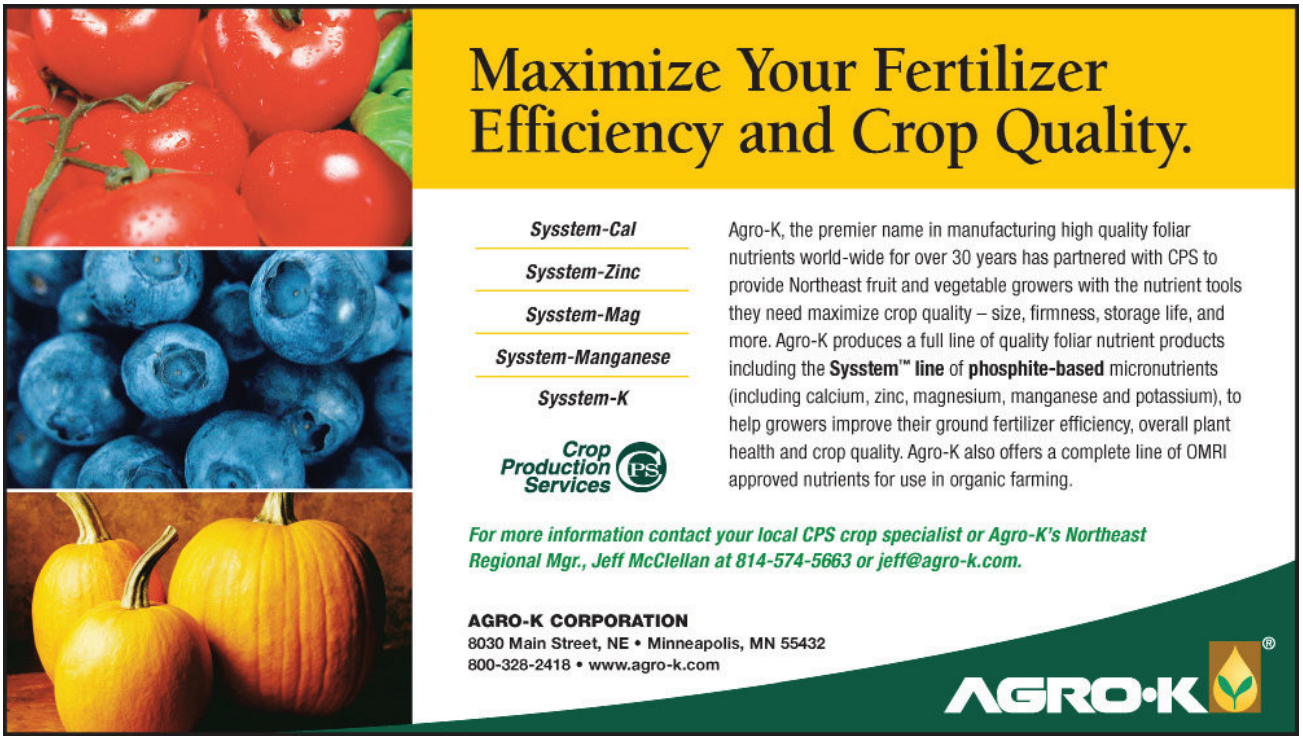
per-minute emitters, spaced at 18 inches, were installed within a week of planting. Bi-weekly irrigations were made to supply the equivalent 1 inch of rain fall per week. Three applications of Calcium nitrate at ¼ lb. per tree were soil applied in year one, two applications in year two. A 2-foot herbicide strip was maintained weed free with split applications of pre-emergent herbicides, spring and fall, the first made 3 days after planting.

During 2008, trees were de-fruited. During 2009, trees were allowed to fruit, but crop load was adjusted with hand thinning using the Cornell University Young Apple Thinning Guide. In 2010, trees were chemically thinning with Sevin XLR at 1 quart per acre, and then crop load was adjusted by hand using the Cornell Guide. Standard orchard production practices were followed, since planting. Pest management was done following New Jersey Tree Fruit IPM guidelines with weekly scouting. Trees were trained with a four-wire system using U-clips to the wire. Branches were tied down with Tougas Clips and Wire Ties available from Oesco Inc. (www.oescoinc.com) and Finger Lakes Trellis Supply (www.fingerlakestrellissupply.com).

Results

Table 2. Cumulative yield per tree, total yield per acre (2010 and cumulatively) by cultivar of trees grown to the Tall Spindle System at the Rutgers NJAES Snyder Research and Extension Farm in Pittstown, NJ.

Variety	Cumulative yield (2009-10, lbs./tree)	Yield (2010, bu/acre)	Cumulative yield (2009-10, bu/acre)
Buckeye Gala	22.4	273	554
Gale Gala	21.8	265	539
Gibson Golden	17.2	249	425
Honeycrisp	22.9	336	567
Linda Mac	17.0	212	420



New Jersey News

Ron Good of the New Jersey Department of Agriculture Retires After 30 Years

To many, Ron Good was the face of the Jersey Fresh Program of the New Jersey Department of Agriculture. Jersey Fresh is credited by many as playing a major role in helping our New Jersey farmers remain profitable.

After a productive 30-year career, Ron retired in November of 2010. Over 100 friends, coworkers, and members of his family attended a Retirement Celebration Dinner for Ron on November 19 at the Mountain View Clubhouse, Ewing, NJ. Secretary of Agriculture, the honorable Doug Fisher, began the accolades for Ron at the festivities.

Ron was one of the few employees at the NJDA who was there before "Jersey Fresh" began. Ron Good was born and raised in Ohio. He came to New Jersey while in the air force and was stationed at McGuire Air Force Base. After his service, Ron worked in an orchard for several years before going to the Department of Agriculture.

Ron rose through the ranks from Farm Products Marketing Representative to become the Bureau Chief of Market Development and Product Promotion, where he oversaw all of the Department's advertising, promotion, and market development programs. In addition to Jersey Fresh,

the responsibilities include eight commodity councils, agri-tourism, seafood marketing, and countless others.

Ron's expertise was as a resource and helping organize community farmers markets. Ron was instrumental in helping these markets grow from approximately 35 to well over 140.

Ron was the face of the Jersey Fresh program for the Department of Agriculture. Here are some statistics:

- Jersey Fresh just completed its 25th year.
- In 25 years, Department of Agriculture invested over $21 million.
- Consumer awareness is up to 48%.
- Jersey Fresh has expanded to include:
  - Jersey Bred – Livestock
  - Jersey Grown – Horticulture
  - Jersey Seafood – Aquaculture
  - Jersey Wine
- A study conducted by Rutgers University showed that for every dollar spent on the Jersey Fresh program, New Jersey's fruit and vegetable sector revenue increased $31.
- Surveys show us that 65% of all consumers are inclined to purchase NJ Farm products if identified as Jersey Fresh.

New Jersey Agribusiness Association Awards

Presented December 2, 2010 at the Association's Annual Meeting
Rutgers Cooperative Extension of Burlington County

Business of the Year

HELENA CHEMICAL COMPANY

Founded in 1957, Helena Chemical Company has grown to be one of the nation's foremost distributors of crop protection and crop production inputs and services for agricultural, turf & ornamental, forestry, aquatics and vegetation management markets. Headquartered in Collierville, TN, just outside of Memphis, Helena has approximately 3,000 employees, including 600+ sales representatives, who work out of more than 350 sales locations in strategic markets across the country. Our core strength is our commitment to provide customers with efficient delivery of products and services that help increase productivity, enhance crop yields, and provide reliable product performance. Our company theme- *People, Products, Knowledge*- reinforces that commitment. We believe our success revolves around *People, Products, Knowledge*. Our People provide the correct combination of Products based on our Knowledge of our customers' business and our interest in helping extend and sustain their success. As an example, the New Jersey, southern New York, Long Island, and parts of Eastern Pennsylvania. Both Woodstown and Hammonton have been operating a successful pesticide recycling project, in cooperation with Salem County Board of Agriculture, for the last 3 years. Collections have significantly increased each year of the program and have kept a considerable number of containers out of our landfills. Helena Chemical Company is proud to partner with our local Board of Agriculture, our State Department of Agriculture, as well as the NJ State DEP in operating this program.

Stephen A. Johnston Award

ALLEN D. CARTER, JR.

Allen became a member of the Cape May County Board of Agriculture in 1987 and has been serving on the Board of Directors since that time, holding the office of Vice-President, President, and Secretary. Through appointment by the Board of Agriculture, Allen then became a director on the Cape May County 4-H Foundation, of which he is their current Treasurer. Allen has worked full time for Turf & Farm Supplies, Inc. of Hammonton, NJ since 1988. In August of 1993, Allen became a partner in the ownership of this

business. Turf & Farm Supplies is known throughout Southern New Jersey as being the premier grass seed and fertilizer distributor. Allen has also spent several years as an alternate to the New Jersey Farm Bureau, Board of Directors, becoming a Director in 2004; and currently sits on the finance committee. In 2001 he was appointed to the Cook College Board of Managers and has served as the Vice President and Chair of Finance Committee. Allen was asked to return and be on the Emeriti Committee. Also during his tenure Allen was appointed by University President McCormick to the Search Committee for the Executive Dean of Cook College, which resulted in the hiring of Dr. Goodman. Allen also serves the County as a member of the Overall Extension Advisory Council for Rutgers Cooperative Research and Extension of Cape May County. In 2001 he graduated from the New Jersey Agricultural Leadership Development Program. Allen now serves as the Chairman of the Leadership Program working closely with the Director and 23 students.

Heritage Award

ROBERT BRUCH

Bob received his Bachelor of Science in Agricultural Business from Rutgers University in 1969. He then went on to earn his Master's Degree from Rutgers in Agricultural Economics in 1977. Bob's career in agricultural economic development with the New Jersey Department of Agriculture spanned 38 years. His focus was always in providing practical, straight-forward assistance to farmer, agribusiness entities, and to government itself in Garden State. Bib is known throughout New Jersey as being extremely knowledgeable on many topics of significant importance such as sales and use tax, farmland assessment, farmland preservation and many other economically related topics. Bob left a legacy of hard work and dedication that friends and colleagues from the New Jersey Department of Agriculture remember with admiration. We all wish Bob and his wife Rosemary the best in Bob's second career as a Christmas tree farmer in Chesterfield, New Jersey.

2010 Annual Edward A. Platz Memorial Scholarship

MEGAN MUEHLBAUR

Megan Muehlbauer is a senior at the School of Environmental and Biological Science at Rutgers, the State University. Megan wrote the following essay to win the scholarship.

"I am a senior at Rutgers, and I had always known I would study at Rutgers School of Environmental and Biological Sciences, with a focus in plant science. My father, a grain farmer and my mother plant pathology major taught me the importance of supporting local farmers, which lead me into my current agricultural interests. My immediate goal at SEBS is to obtain a degree with a double major in plant biotechnology and plant science. I entered Rutgers SEBS knowing that I wanted to study in the field of plant science, for the first two summers of my college career I worked at Rutgers Snyder Research & Extension Farm to delve into the vegetable research being done at SEBS. Snyder Farm is where I discovered how much I enjoyed working with fruit and vegetable crops and where I decided to direct my education and career path into the area of horticultural plant science research.

The work I did at Snyder farm introduced me to the research end of agricultural science. I worked on a number of projects under the mentorship of Win Cowgill at Snyder farm including one research project on the effect of plant growth regulators (PGRs) on

yearly fruit set in Fuji and Suncrisp apples, which are normally biennial. The study also looked at the effect of PGRs on chemical thinning, stop drop control, sucker control, fruit quality, and fruit size enhancement.

After learning fieldwork research at Snyder farm, I decided that plant science was the field I wanted to continue to pursue in greater depth. One year after working at Snyder farm I decided to take on a double major in Agricultural Plant Science, to prepare myself academically for the knowledge in soil fertility, plant pathology and agricultural crop science that I would need for a career in agricultural and horticultural field work. Over the past two years, I have greatly enjoyed my plant science classes at SEBS, and now as a senior I have decided I want to further pursue a masters degree in horticultural plant science.

I have decided to go onto pursue a masters degree because I wanted to continue to do research at the university level, with a focus on horticultural plant science and plant breeding. I still feel there is a lot of information on the topic that I would like to understand it in greater depth, to solidify my background in horticulture before moving on into my career. In particular I have only just begun to understand the depth and processes involved in the tree fruit breeding program at Rutgers university. One of my goals in graduate school is to have a more active role in this program, and work to help to benefit the commercial agricultural community.

After obtaining my masters degree I plan to work in the agricultural industry, as a pomologist, but I want my work and research to make a difference at the commercial grower level. I have always found it fascinating that an apple tree can be breed for resistance to deadly fire blight, or cedar apple rust. I hope to develop an understanding of the physiology of commercial agricultural crops, and then go on to do research to develop disease resistant, or high yielding cultivars through a breeding program. My goal after is to ultimately be able to introduce the trees or plants into the commercial agricultural industry.

Although I ultimately plan to do research consulting work in horticulture as a career, I also plan to take on ownership and continue to work my family farm in Hunterdon county. Ideally I would like to develop a small orchard on a segment of the land and keep the other part in commercial grain production that it is in now.

Farming in New Jersey can be difficult, and I have seen this from the work that my own father has done and put into his grain farm. Growing tree fruit commercially is even more difficult, it requires constant scouting and prevention of disease, and also requires a huge amount of labor, to produce a profit. Through my work with Win Cowgill, I have learned that it is one of the most costly commercial agricultural products to produce, yet the rewards of breeding, and producing a beautiful delicious apple that farmers can put on the market it well worth the hard work. Through my graduate school work and education, and ultimately in my career I want to make it easier for farmers in New Jersey to farm their land, through new cultivars of apples, peaches and grapes."

Dr. Lewis DeEugenio Jr. Receives New Jersey State Horticultural Society Outstanding Fruit Growers Award

Dr. Lewis DeEugenio was recently honored for his leadership in the fruit and agricultural industry and for the management and quality of his fruit farming and marketing operation. Ken Wightman, President of the New Jersey State Horticultural Society read a citation and presented a plaque at the New Jersey Agricultural Convention in Cherry Hill on February 8, 2011. Dr. DeEugenio, a medical doctor, is President and owner of his family farming operation in Gloucester and Salem Counties. Farming under the name Summit City Farms with his wife Leila, the DeEugenio's grow 500 acres of apples, peaches, and nectarines. "Their farm has been a leader in fruit growing pest management practices, and one of the early subscribers to the Rutgers Integrated Pest Management Program," said President Wightman. Extensive research on Summit City Farms has been conducted on Mating Disruption, Biological Control, Reduce Risk Pest Management funded by the USDA Sustainable Agricultural Research program and the Rutgers NJAES, Said Mr. Wightman. Summit City has been a leader in the implementation of low-water-use irrigation, ground-cover management, wind-machine frost control, field food safety practices, and product traceability and the used of the H2A farm labor program.

All of Dr. DeEugenio's fruit, except a few apples, are marketed under the Jersey Fruit label and packed at Eastern ProPak in Glassboro for which he is a founding owner-member.

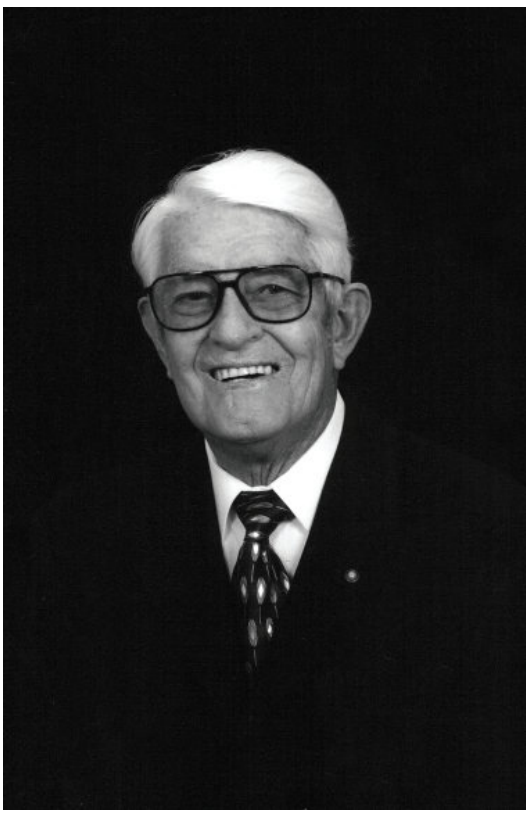
Dr. DeEugenio was also recognized for his leadership positions in agriculture. He is a member of the State Board of Agriculture representing the interests of the fruit industry. He is a former director of the Gloucester County Board of Agriculture and a former director and chair of the Gloucester County Agricultural Development Board. He was a recipient of the GCBA's Distinguished Service to Agriculture Award in 2001. He currently is President and a member of the Board of Directors of the Jersey Fruit Marketing Cooperative in Glassboro, which is responsible for marketing over 50% of the state's peach crop and a significant portion of the blueberry crop.

The New Jersey State Horticultural Society is a statewide organization of fruit and vegetable growers that has been operating and representing the interest of growers since 1875.

Left to Right Ken Wightman, President of the NJ State Horticultural Society, presents Outstanding Fruit Growers Award to Dr. Lewis DeEugenio.

Warren Welsh
Friend of New Jersey Agriculture
11/13/1921 – 1/8/2011

Warren became part of Sussex County's agricultural history when he joined the Rutgers Cooperative Extension Office of Sussex County as its agricultural agent in 1950. New to Sussex County, he embraced the position and became a friend and supporter of our farmers. As an agricultural agent, it was his job to take the most current research-based information and share it with farmers in a practical and useful way. How many Sussex residents grew up listening to "Five Minutes With Your County Agricultural Agent" on early morning radio five days a week? From 1950 until his retirement in April 1985, Warren assisted his farmers through good times and bad, going out to them whenever and wherever needed. He set a high standard for what was expected of a Sussex County agent. He was also asked to weigh in on other innovative agricultural programs.



Farmland Preservation in Sussex County started with the creation of the Sussex County Agriculture Development Board on July 12, 1983. Warren was one of its' founding members – appointed by the Freeholder Board with a mission that persists to today. Every one of the over 16,000 acres now preserved in perpetuity had Warren's input. With each farm discussion came a question – who owned the farm before you? This was because Warren's knowledge spanned so many decades that he could identify land usually by previous owners. As the program grew over the years, so did its scope.

Warren always felt that it was not enough to just preserve the land – he believed that something more should be done to help the farmers. When the County Agritourism program took off, Warren was a strong supporter. He not only provided input on each and every farm it promoted, but also brought the agritourism focus to his other love – the Sussex County Farm and Horse Show. The Sussex County Farm and Horse Show was incorporated in 1940; Warren was elected to the position of Secretary (the fourth in its' history) in 1964 – a position he held until recently. To promote agriculture at the State's largest agricultural fair was something he embraced. He was a strong supporter of the initial purchase of the McDaniels property (the current fairgrounds land) and the later acquisition of the contiguous Smith Farm which he felt would allow for Fair growth. Given a chance, Warren would happily tell you the history of this great County institution and encourage all to participate. The Fair could not be officially open until Warren's famous rooster crow graced the airwaves. In 2001, Warren was honored with the State Board of Agriculture's Distinguished Service award. This award, begun in 1932, recognizes "people who have given unselfishly of their time and talents to the advancement and betterment of the agricultural industry and rural life in New Jersey." Warren treated all with professionalism and respect – he left a remarkable legacy to both Sussex County and New Jersey's agricultural community.

Tak Moriuchi a Great Fruit Grower and an Extraordinary Man

Jerome L. Frecon
New Jersey Agricultural Experiment Station, Rutgers University

Takashi Moriuchi, an fruit grower, farmer and businessman died on Saturday, November 13. Mr. Moriuchi, 91, formerly of Moorestown, died of heart failure, at Medford Leas, the Quaker-run retirement community in Medford.

It is hard to summarize all of Mr. Moriuchi's achievements. He was an outstanding apple and peach farmer in New Jersey, and a founder of the Jersey Fruit Cooperative, started the Moorestown Bank, and established a farm equipment business. He led the founding of the Medford Leas continuing care retirement community, and volunteered for a multitude of organizations, including Rotary, Moorestown Friends Meeting, the Friends Committee on National Legislation, and the Japanese American Citizens League.

Born in California in 1919, Mr. Moriuchi received a bachelor's degree in business administration from the University of California at Berkeley in 1941. An internee during World War II (from June 1942 to March 1943, in camps in California and Colorado), he went to Washington when President Reagan signed a bill in 1988, providing restitution to and apologizing to Americans of Japanese descent who had been put in camps at that time.

After World War II, the American Friends Service Committee helped put Takashi Moriuchi in touch with Cherry Hill Quaker farmer Lewis Barton, who employed him and helped him obtain financing for his first farm in New Jersey, 100 acres in Mount Laurel, planted in vegetables.

He made his reputation growing strawberries, asparagus, tomatoes, pumpkins, rhubarb, cucumbers and forage crops. From his humble beginnings in the State of New Jersey he developed a family owned farm corporation of over 1,000 acres located in Moorestown, Burlington County, New Jersey named Tak Moriuchi, Inc. Tak Moriuchi, Incorporated, produced 192 acres of apples and 301 acres of peaches at the time of his retirement. All sales were handled by New Jersey Fruit Cooperative Association, Inc., a grower owned and controlled marketing group in Riverton and Mooretown.

Along the road to his faming success, Tak devoted his time and efforts to the development of the fruit industry in New Jersey. He was President of the New Jersey State Horticultural Society and President of the Jersey Fruit Cooperative Association. He was also active in the National Peach Council, the New Jersey State Grange, the New Jersey Farm Bureau, and

has served as a past director and President of the Farm Credit Bank of Springfield. Tak had also been past President of the Small Fruits Industry Council, Camden County Board of Agriculture, and the New Jersey Apple Institute. He also served on the Board of Directors of Red Cheek, Inc. one of the largest producers of fresh US apple juice.

Gary Mount, Treasurer of the NJSHS fondly remembers all the help Tak Moriuchi provided him when he started in the business. "I remember a trip to the IDFTA conference in Michigan following my first year in business. I was lucky to sit next to Tak. I learned more on that airplane than can be imagined" said Mr. Mount. " Later Tak asked me to make it a project of the Hort Society to find the funds of the New Jersey Small Fruit Council and make the organization active again. The funds originated from royalties on the sale of strawberry plants--Tak said that a lot of that money had come from his purchases over the years.

Tak represented New Jersey for many years on the board of the International Apple Institute (IAI) which is now US Apple. He was a great guy--we are all fortunate in having known him." said Mr Mount.

Win Cowgill, Area Fruit Agent, RCE and Editor of Horticulture News, remembered Tak as a positive influence on his career as well. "Early in my extension career, my mentor Ernie Christ took me to Tak's orchard and packing house where I first met Tak. He shared some insights of peach growing at that time that made a lasting impression on me. Tak was always a gentle man willing to share his knowledge and experience. I am better to have know him."

For his service to the horticultural industry and his community he received the 1st Annual Outstanding Fruit Grower Award in 1985 by the New Jersey State Horticultural for his unselfish contributions and dedication to the NJ Fruit Industry.

In addition to his service to the New Jersey Fruit Industry, Tak has also served in other civic organizations, including the Japanese-American Citizens League and the Burlington County Hospital Foundation

Takashi Moriuchi was one of the founders and a past president of the Medford Leas retirement community. Additionally, he was a former member of the Friends Fiduciary board, and played many roles in the leadership of the Friends Monthly and Quarterly meetings.

After his retirement from farming he was federally appointed New Jersey Director of the Farmers Home Administration from 1989 to 1994.

At one time, he was partner (with the late Harold Wright) in Cherry Valley Ford Tractor Co. in Marlton. He also helped to found Moorestown National Bank and was a past president of the Moorestown Rotary.

In 2008, Medford Leas honored him as the lone surviving founder of the thriving retirement community. He has also received prominent recognition from the Japanese government, including, in 1990, the Emperor's prestigious Kunsho award, and from Japanese American organizations for his lifelong commitment to the Nissei community.

He also spearheaded a $300,000 endowment fund for religion teaching in Morristown Friends School (MFS). Called the Chester Reagan Chair for Religious and Quaker Studies he advocated for its importance in the life of the School. As a Trustee and member of the Assets Committee, Tak provided critical insights and guidance to administrations over more than 50 years. It is appropriate that the Moriuchi Room has become an important hub of the School's daily life and future planning. He was involved in many committees and activities at the school and in 2006 received the MFS Alumni Association's Service Award.

Takashi Moriuchi married his wife Yuri in 1946. He is survived by his wife and four children, Fred, Agnes (Miyo) '67, Carol (Kiyo) and Nancy (Chiyo) '73; eleven grandchildren, and four great-grandchildren.

Takashi Moriuchi, 91; found freedom and success as Southern New Jersey farmer and it was a privilege for all of us that knew this outstanding fruit grower and extraordinary man.

New Jersey Grower-Shipper Frank Donio Dies at 72

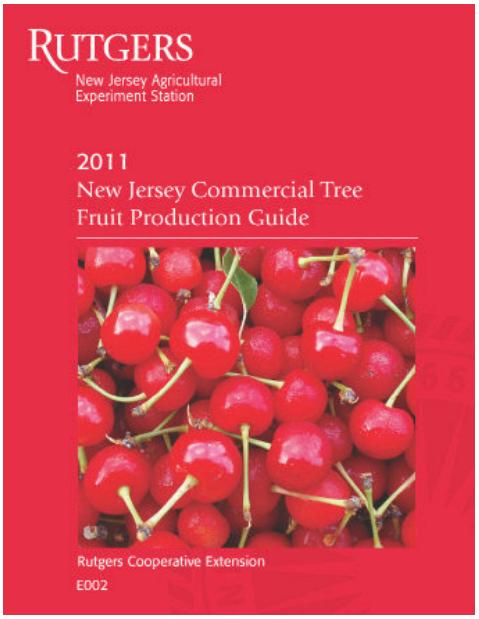
Frank Donio, 72, president of Frank Donio Inc., Hammonton, N.J., died of a heart attack on January 1 at his home in Berlin, N.J. One of his sons, company co-owner, Jim Donio, said his father, who worked in the produce industry for 45 years, was considered a pioneer in the New Jersey deal.

Jim Donio said his father worked with customers to help in produce packaging, to ship berries from the state's blueberry deal during its early stages. Frank Donio took over running the company from founder Frank Donio Sr., who died in 1971. "As the Jersey Fresh program in general really expanded and blueberries gained more notoriety, he tried to help by banding together different growers and treating them like other states would have done," Jim Donio said. "He took the best of the co-op style and branded them under our Top Crop label and marketed the products all over the country." Founded in 1933, the grower-shipper and distributor expanded to operations in Nogales, Ariz., and San Diego and began importing product.

Frank Donio also headed Donio Trucking Inc., and Donio Leasing Co. Retiring from the produce industry in 1999, Donio entered the motel business as owner and manager of the Knolls Resort Motel in Wildwood, N.J., which he sold in 2006. Donio managed other real estate holdings throughout southern New Jersey.

Born in Hammonton, Donio grew up in nearby Rosedale, N.J., and lived in Hammonton since 1969. After graduating from high school in 1956, he entered the U.S. Marine Corp and was lauded as a community volunteer serving as president of the Hammonton Exchange Club, a member of the Sons of Italy and the Knights of Columbus Pallotti Council, and served in other community organizations. He also coached youth basketball. Survivors included his wife of 51 years, Angela (nee Bilazzo), sons Frank Donio, John Donio, Gabriel Donio and James Donio, and three grandchildren and a sister.

In lieu of flowers, the family requests donations be made in Donio's memory to the Anchor of Hope Foundation Inc., 101 Tilton Street, Hammonton, N.J., 08037.



Order you copies of the Rutgers 2011 New Jersey Fruit Production Guide: $23.00 plus postage. Contact Diana Boesch: telephone -- 908-788-1339, email -- boesch@njaes.rutgers.edu.

North Jersey Commercial Fruit Meeting

Monday, March 7, 2011
Warren Grange #10
102 Asbury Broadway Road, County Route 643
Asbury, New Jersey 08802 (Warren County)
8:30 a.m. - 4:15 p.m.

Selected Featured Talks- for the complete program and registration contact
Diana Boesch @ 908-788-1339 boesch@njaes.rutgers.edu
Note: Pre-registration required for program and luncheon. Deadline March 2, 2011.

Tall-spindle: How did I get There?
Jon Clements - Extension Educator, UMASS-Amherst
Spreading the Good News of Jersey Grown Peaches
Pegi Adam, Media Relations, Marketing Communications, Promotions
NJ Peach Promotion Council
Real Experiences With Crop Insurance to Manage Your Risk
Dave Lee - County Agricultural Agent, RCE - Salem County
Win Cowgill - County Agricultural Agent, RCE - Hunterdon County
New Peach and Nectarine Varieties
Jerry Frecon - Rutgers Cooperative Extension/NJAES
Impact of the Brown Marmorated Stink Bug in Tree Fruit
Dean Polk - Fruit IPM Agent, Rutgers Cooperative Extension
Potential Management Practices for the Brown Marmorated Stink Bug
Dean Polk
Applying Pesticides on the Urban Fringe
Dr. John Grande - Director of the Rutgers Snyder Farm
Harvesting and Handling of Gloria™ NJ351 and Similar NJ Peach Varieties to Optimize Fruit Quality
Dr. Dan Ward – Specialist in Pomology, Rutgers Cooperative Extension/NJAES
Update in Disease Control Strategies and Materials for 2011
Dr. Dave Rosenberger – Ext. Plant Pathologist, Cornell University, NYAES Hudson Valley Lab
The Tall-Spindle: Critical Steps to Success
Jon Clements
Best Weed Control Programs for Tree Fruit - how far have we have come?….
Dr. Brad Majek - Extension Weed Specialist, RCE

NJ Pesticide Credits will be awarded at the end of the program

Thank you to our Industry Sponsors who include: Adams County Nursery, Growmark FS, Treen Box & Pallet, Helena Chemical Company, Crop Production Service

Horticultural News

New Jersey State Horticultural Society
P.O. Box 116
Clayton, NJ 08312