Fruit Notes

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Fruit Notes

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Cover: Darwin 300 String Thinner (designed Fruit-Tech) for vertical apple canopies. Photo by Loy Elliott.

Blossom Thinning Results in an Early Bloom Season

Tara Auxt Baugher, James R. Schupp, Catherine Lara, and Sladjana Prozo
The Pennsylvania State University

Hand thinning is a necessary and costly management practice in peach production. Stone fruit producers are finding it increasingly difficult to find a workforce to manually thin fruit crops, and the cost of farm labor is increasing. The conventional method for adjusting crop load in peach and nectarine orchards is to remove excess fruit by hand at 35 to 40 days after full bloom. Plant growth regulators are available for thinning pome fruit; however, chemical thinning options for stone fruit are limited and unpredictable.

In mechanical blossom thinning trials conducted over five seasons, string thinner crop load management technologies (Figure 1) were tested in four peach producing states, and detailed research on pruning modifications and application timing provided information to guide producers in maximizing mechanical bloom thinning benefits. The original string thinner evaluated in 2007 (Darwin 300, Fruit-Tec, Deggenhausertal, Germany; Schupp et al., 2008) was designed to thin narrow vertical apple canopies and therefore was evaluated on peach trees trained to either a perpendicular V or quadrilateral V system. A prototype designed in 2008 was successfully tested to operate in a horizontal position for thinning trees trained to an open-center system (Baugher et al., 2009). A "hybrid" string thinner (PT250; Figure 1) designed to adjust crop load in either vase or angled tree canopies was evaluated in fresh fruit and processing plantings in 2009 to 2011.

String thinner trials with variable tree forms uti-

Figure 1. Blossom thinning in peach with a prototype Fruit-Tech PT250. Photo by Mark Wherley.

lized by producers in California, Washington, South Carolina, and Pennsylvania demonstrated reduced labor costs compared to hand-thinned controls and increased crop value due to a larger distribution of fruit in marketable and higher market value sizes (Baugher et al., 2010a). Blossom removal ranged from 17% to 56%, hand thinning requirement was reduced by 19% to 100%, and fruit yield and size distribution improved in at least one string thinning treatment per experiment.

Research in Pennsylvania orchards was conducted over two years to evaluate string blossom thinner efficacy at variable stages of bloom development, ranging from pink to petal fall (Baugher et al., 2010b). Blossom removal at the pink stage of bloom development was lower than at other stages in 2008; however, a 150 rpm versus 120 rpm spindle rotation speed resulted in blossom removal similar to a 80% full bloom treatment in 2009. Blossom removal at the petal fall stage was similar to the open bloom stage. Savings in hand thinning time and/or increases in fruit size in both years associated with the bloom stage treatments resulted in a net positive impact of $49 to $554 per acre compared to hand thinning alone.

Pennsylvania studies also were conducted over two seasons in peach orchards trained to perpendicular V or open center systems to evaluate possible pruning strategies to improve tree canopy access by string thinners (Schupp et al., 2011). The objectives were to demonstrate if modifications in fruiting shoot orientation, pruning detail, and/or scaffold accessibility improved flower removal, reduced follow-up hand thinning requirement, and/or increased fruit size. Blossom removal was improved by either detailed pruning (elimination of short or excessively long shoots) or partial pruning (elimination of all shoots on the side of a limb inaccessible by the thinner spindle) in both training systems. The best treatments resulted in a thinning savings of $49 to $282 per acre in perpendicular V plantings and $11 to $19 per acre in open center plantings.

Case study interviews of 11 Pennsylvania growers and orchard managers who had thinned a total of 154 acres suggested that commercial adoption of mechanical string thinning technology would have positive impacts on the work place. All case study cooperators reported that blossom string thinning impacted orchard management by making crop load management more efficient and by reducing follow-up hand thinning time. Eighty percent of the growers noted fruit from thinned trees were larger. Additional observations included the following: 1) hand thinning of peaches was completed earlier allowing more timely work in other crops, 2) employees were satisfied with mechanical thinning as it saved them time and minimized ladder use, and 3) the seasonal distribution of labor-intensive work was improved.

What about Thinning during an Early Bloom Season?

One lingering question that producers considering bloom thinning have had is "Should we bloom thin in an early season when the potential for freeze injury may be greater?" The hypotheses tested were: 1) bloom thinning in an early season should only be conducted on cultivars that will withstand some additional thinning from freeze injury, and 2) string thinner spindle rotation speed should be reduced in a year when there may be more potential for freeze injury.

Materials & Methods

In 2012, South-central Pennsylvania peach orchards began to bloom four weeks ahead of the normal timing (early March vs. mid-April). Many producers kept their string thinners in their equipment sheds, but two growers agreed to participate in trials in open-center trained orchards with two early maturing cultivars for which optimizing fruit size is important—'Rising Star' and 'Glenglo'—and in two 'John Boy' blocks that tend to be reliable producers. In each of the four trials, two string thinner spindle rotation speed treatments were compared to control treatments that were hand thinned at the green fruit stage. Flowers/fruit were counted before thinning, during the physiological drop stage, and prior to follow-up hand thinning. Follow-up hand thinning at the green fruit thinning stage was conducted on the rpm treatments to assess effects on labor requirement. Fruit were measured at harvest to assess effects on fruit size. The plots were arranged in randomized complete block designs with six multiple tree replicates. Data were collected from center trees and subjected to analysis of variance. Labor costs were provided by cooperating growers, and machine costs were obtained from equipment manufacturers. Peach market values for various size categories were obtained from the USDA Agricultural Marketing Service report for the Appalachian region (USDA, 2012).

Results & Discussion

Peach Blossom Thinning and Fruit Set Response in a Year with Increased Potential for Freezing Temperatures during Bloom. Initial flower density ranged from 15.3 to 25.1 flowers per cm2 limb cross-sectional area across the four orchard plots. Flower density was reduced by thinning treatments in two of the four peach orchard plots (Table 1). In the plots where flower density was not reduced (Orchard A), flower removal ranged from 6.8% to 22%; whereas in the plots where flower density was reduced, the grower (Orchard B) had selected rpm treatments that removed 42% to 61% of the blossoms. In 'John Boy', Orchard B, the 220 rpm treatment removed more flowers than the 200 rpm treatment; however flower removal in 'Rising Star' was equal in 175 and 200 rpm treatments. Prior to the green fruit thinning stage, crop load was more than desired across all treatments and all required follow-up hand thinning.

There were two freeze events prior to thinning (low temperatures of 29° to 32°F) and three freeze events following bloom thinning (low temperatures around 32°F) (Figure 2, minimum temperatures from weather station at Penn State Fruit Research and Extension Center, Biglerville, PA). The freeze events prior to thinning reduced crop load by approximately 10%. In Orchard B, percent change in flowers/fruit remaining from the dates of bloom thinning to fruit set was significantly higher in the control treatments than in the string thinning treatments. The reduced natural drop might be explained by the reduced competition between fruitlets, which may provide a "cushion" in years with an increased possibility of freeze injury. During the prior six years during which we conducted bloom thinning studies in Pennsylvania orchards, there was one trial that was subjected to freezing temperatures following bloom, and a similar trend was observed. In this case, flower density was reduced by 90% by freezing temperatures, but at fruit set, the crop load in string thinned treatments was equal to that in the control treatment (Baugher et al., 2010b). Since temperatures did not drop below 32°F in the current study, we cannot draw conclusions about critical temperature events that kill 90% of blossoms.

Mechanical Blossom Thinning Effects on Labor Requirement and Fruit Size. Hand thinning in Orchard B's 'Rising Star' and 'John Boy' was reduced by all bloom thinning treatments, and the thinning savings ranged from $25 to $48 per acre. Although the crop load comparisons in Orchard A were non-significant, hand thinning of 'John Boy' was reduced by the 210 rpm treatment, which resulted in a $36 savings per acre. The loss in the other Orchard A treatments was $15 per acre—the cost of mechanical thinning.

Fruit diameter was improved in the 200 rpm treatment in 'Rising Star' and the 200 and 220 rpm treatments in Orchard B 'John Boy'. Fruit in the higher value 2 ¾ inch and higher fruit size categories was increased in both 'John Boy' plots and in 'Rising Star'. As the season progressed, fruit of variable sizes and shapes were observed in the two early season cultivars, which were probable effects of sub-lethal temperature injury and pollination conditions interacting with genetics, and harvestable yields were reduced across the bloom thinning treatments and the controls. In these plots, the net impact per acre of bloom thinned compared to hand-thinned control treatments (taking into account effects on labor requirement and fruit size) ranged from -$15 per acre for 'Glenglo' to $171 per acre for the 200 rpm treatment in 'Rising Star'. By comparison, value added by increases in fruit size, increased in both 'John Boy' plots, and net impact ranged from $619 to $1624 per acre, which is consistent with the impacts in prior research conducted in more normal bloom seasons (Baugher et al., 2010a, 2010b; Schupp et al., 2009, 2011).

Conclusions. In a growing season that began four weeks early, temperatures dropped to freezing levels on three occasions but did not reach critical lows. Therefore, the hypotheses could not be fully tested. Across four research plots, the thinning effects on a reliable producing cultivar were generally positive, but effects on early maturing cultivars were variable. The higher compared to the lower rpm resulted in more fruit in higher value size categories in two of the four trials but equal reductions in follow-up hand thinning requirement. The economic impacts from the increases in fruit size were $146 and $562 per acre greater for the higher rpm treatments in 'Rising Star' and Orchard B 'John Boy', respectively. The question of whether or not to bloom thin in an early bloom season will remain a question to be addressed for specific orchard blocks based on site history and cultivar susceptibility, but the early 2012 season provided an opportunity to obtain some guiding information. As producers gain experience with optimum spindle speed in various cultivars and sites in a normal bloom season, they will learn how to adjust rpm for a year in which crop potential may be reduced.

Table 1. Peach blossom thinning and fruit set response to mechanical thinner treatments applied in an early growing season.

Cultivar/Orchard	Treatment[z]	Flower removal (%)	Flower density before/after thinning (flowers/cm^2 LCSA[y])	Crop load (fruit set) 30 DAFB[x] (fruit/cm^2 LCSA)
Glenglo Orchard A	Hand-thinned control 30 DAFB	--	25.1/25.1 a	8.3 ab
	String thinned 150 rpm	6.8 b[w]	20.5/17.1 a	11.3 a
	String thinned 180 rpm	18.4 a	21.5/15.6 a	6.4 b
John Boy Orchard A	Hand-thinned control 30 DAFB	--	19.3/19.3 a	9.8 a
	String thinned 180 rpm	15.2 a	17.1/14.4 a	7.9 a
	String thinned 210 rpm	21.6 a	20.1/15.7 a	7.6 a
Rising Star Orchard B	Hand-thinned control 30 DAFB	--	11.8/11.8 a	9.3 a
	String thinned 175 rpm	50.7 a	12.2/6.6 b	5.5 ab
	String thinned 200 rpm	61.1 a	10.6/4.4 b	3.6 b
John Boy Orchard B	Hand-thinned control 30 DAFB	--	17.8/17.8 a	11.2 a
	String thinned 200 rpm	42.2 b	15.3/8.4 b	6.5 b
	String thinned 220 rpm	61.0 a	17.5/6.9 b	5.0 b

[z] Peach trees were thinned at 50 to 100% full bloom. Tractor speed was 2 mph.
[y] Limb cross-sectional area.
[x] Crop load assessed just prior to hand thinning at the green fruit stage. DAFB = Days after full bloom
[w] Mean separation within columns and cultivars by Fisher's protected least significant difference at $P \leq 0.05$.

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Table 2. Follow-up hand thinning required for mechanical thinner treatments applied in an early growing season.

Cultivar/Orchard	Treatment[z]	Hand thinning at 30 to 35 DAFB (h/acre/1 person)	Thinning savings[z] ($/acre)
Glenglo Orchard A	Hand-thinned control	28.2 a[y]	--
	30 DAFB String thinned 150 rpm	28.8 a	(15)
	String thinned 180 rpm	29.7 a	(15)
John Boy Orchard A	Hand-thinned control	26.8 a	--
	30 DAFB String thinned 180 rpm	24.5 ab	(16)
	String thinned 210 rpm	22.8 b	36
Rising Star Orchard B	Hand-thinned control	9.9 a	--
	30 DAFB String thinned 175 rpm	7.2 b	25
	String thinned 200 rpm	6.1 b	35
John Boy Orchard B	Hand-thinned control	17.9 a	--
	30 DAFB String thinned 200 rpm	12.5 b	48
	String thinned 220 rpm	13.4 b	41

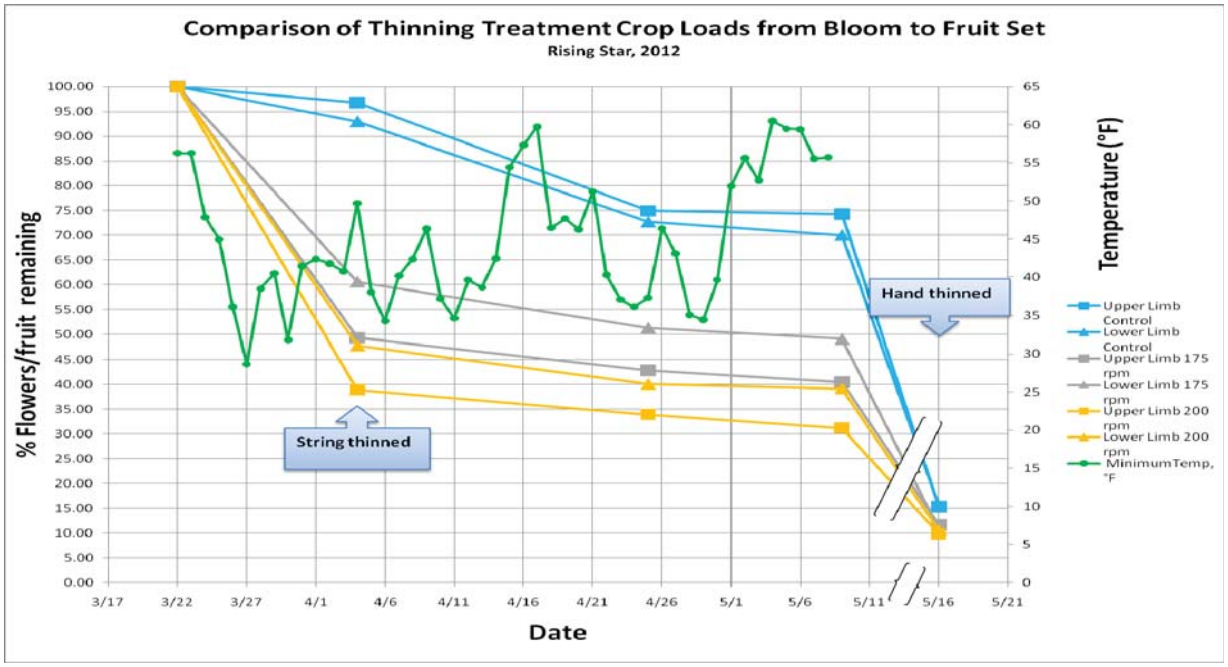
[z] Thinning savings includes reduced follow-up hand thinning inputs and added mechanical thinner, tractor, and labor inputs. Values in parentheses are negative and represent cost of mechanical thinning.
[y] Mean separation within columns and cultivars by Fisher's protected least significant difference at $P \leq 0.05$.

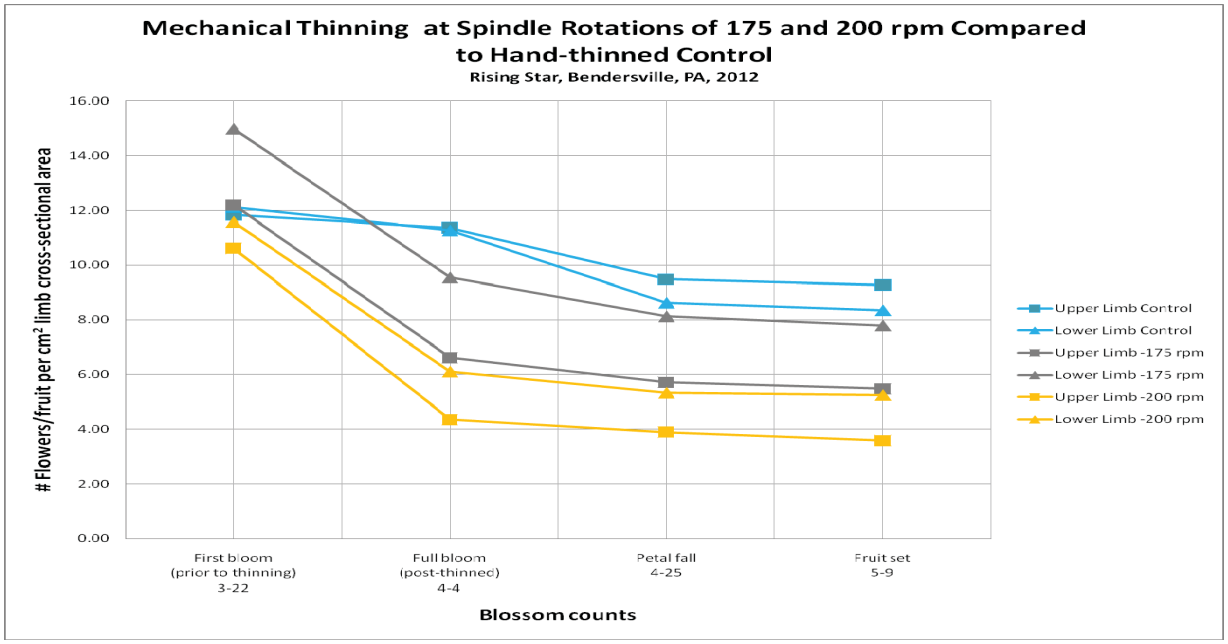
Table 3. Peach fruit size, high value packout distribution, market value based on fruit size, and net economic impact from both labor savings and/or fruit size increase.

Cultivar/Orchard	Treatment	Fruit diameter[z] (cm)	Fruit ≥2 ¾ inch[z] (%)	Added value ($/acre)	Net impact ($/acre)[y]
Glenglo Orchard A	Hand-thinned control	7.4 a	69 a	--	--
	30 DAFB String thinned 150 rpm	7.4 a	60 a	--	(15)
	String thinned 180 rpm	7.4 a	63 a	--	(15)
John Boy Orchard A	Hand-thinned control	7.4 a	48 b	--	--
	30 DAFB String thinned 180 rpm	7.4 a	60 a	635	619
	String thinned 210 rpm	7.5 a	62 a	648	668
Rising Star Orchard B	Hand-thinned control	7.7 b	79 b	--	--
	30 DAFB String thinned 175 rpm	7.7 b	79 b	---	25
	String thinned 200 rpm	7.9 a	89 a	171	171
John Boy Orchard B	Hand-thinned control	7.5 b	40 b	--	--
	30 DAFB String thinned 200 rpm	7.7 a	55 ab	1015	1062
	String thinned 220 rpm	7.8 a	79 a	1584	1624

[z] Fruit diameter and high value packout distribution determined on 40 fruit harvested per treatment from each of six replicates.
[y] Net economic impact (realized economic savings) is defined as cost or benefit beyond hand thinning alone and takes into account reduced hand thinning inputs and increased value of fruit in higher size categories. Values in parentheses are negative.
[x] Mean separation within columns and cultivars by Fisher's protected least significant difference at $P \leq 0.05$.

Figure 2. Crop load and low temperature mean comparisons from bloom to fruit set (minimum temperatures from weather station at Penn State Fruit Research and Extension Center, Biglerville, PA).





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Pesticide Reduction with Containment Spraying of High-density, Dwarf Apple Orchards

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Project Purpose

With the adoption in commercial apple orchards of fully dwarfed trees and ultra-high-density planting/training systems, containment or tunnel spraying becomes a feasible alternative to conventional airblast spraying. By spraying only within a moving canopy extending from the sprayer on both sides of the row being treated, tunnel spraying can dramatically reduce drift of agricultural chemicals to non-target areas and substantially decrease the quantity of chemical required. The potential environmental benefits are unmeasured. The quality of pest control should be enhanced, while at the same time, significantly reducing the quantity of pesticide used. A change in technology such as this can only enhance the sustainability and competitiveness of apple farming in a steadily urbanizing part of the US.

Through this project, the Massachusetts Fruit Growers' Association (MFGA) and the University of Massachusetts Fruit Program (UMass) addressed the following objectives: (1) demonstrate the feasibility of tunnel-sprayer technology in Massachusetts orchards; (2) estimate drift to demonstrate whether or not this approach will reduce environmental risk within and near orchards; (3) assess efficacy of reduced chemical application rates per acre in an effort to adjust rates and recommendations to account for much smaller tree volume per acre.

Summary of Results

The Lipco Tunnel Sprayer was delivered to the UMass Cold Spring Orchard on October 1, 2010. Hans Wörthle from H&W Equipment visited on October 19 and 20, along with a crane, to assemble the tunnel sprayer. It was tested briefly and then winterized.

Figure 1. Lipco Tunnel Sprayer at the UMass Cold Spring Orchard Research & Education Center.

Significant work with the sprayer began in April 2011. Because of the dramatic differences between it and conventional sprayers, it took time to become familiar with its operation and manipulation. First observations were: 1) the sprayer is very tall and because it is offset behind the tractor, it requires more care when driving down a tree row; 2) a wind parallel to the row can blow drift out of the front or back of the sprayer; and 3) the tunnel sprayer is much quieter than an airblast sprayer.

Using published charts relative to the fluid flow out of the sprayer nozzles, we adjusted the tunnel sprayer and an airblast

Figure 2. Rear view of a typical airblast orchard sprayer.

Figure 3. Even under nearly calm conditions, the airblast sprayer has the potential to create spray drift if it is not well calibrated.

sprayer to deliver the same amount of material per acre. Observation suggested that the airblast sprayer resulted in much more drift, but coverage appeared better than with the tunnel sprayer. This observation puzzled us, so we measured flow out of all of the nozzles and found that the published flow rates were wrong. To obtain the desired flow, we purchased new nozzles, and selected air-induction nozzles (to increase particle size and reduce drift potential). With the new nozzles, the tunnel sprayer provided excellent coverage, with far less drift than the airblast sprayer.

Drift (utilizing water-sensitive paper) was measured on a reasonably calm day. The airblast sprayer, although calibrated well, produced some drift beyond the target trees. It was estimated to be approximately 10-20% of the spray material; this amount would be much larger on a windy day. The tunnel sprayer, however, produced no measurable drift.

To measure the relative effectiveness of spraying with a tunnel sprayer versus a conventional airblast sprayer, a study was conducted in 2012, comparing the applications of two nutrient sprays with each sprayer. A block of approximately 200 Silken trees that were trained to a tall-spindle system was used for this trial. Trees were divided among six replications of an experiment including an untreated control and calcium chloride (at the recommended rate) and an experimental formulation of calcium from Key-Plex applied with the tunnel sprayer or with the conventional airblast sprayer. Treatments were applied three times throughout the summer. Leaf samples and fruit samples were collected at the end of August. Leaf samples were submitted to the UMass Soil & Tissue Analysis Laboratory for the assessment of nutrient element concentrations. The fruit samples were submitted to the Fruit Program's Fruit Analysis Laboratory for the assessment of calcium concentrations. Unfortunately, fruit tissue results were not yet available at this writing. Leaf analyses, however, showed no significant differences between the types of sprayers, and

Figure 4. Airblast orchard sprayer in operation. Spray material clearly passes through the canopy. Likely, most will fall on the trees in the next row, but if weather conditions are undesirable, this material may move into non-target areas.

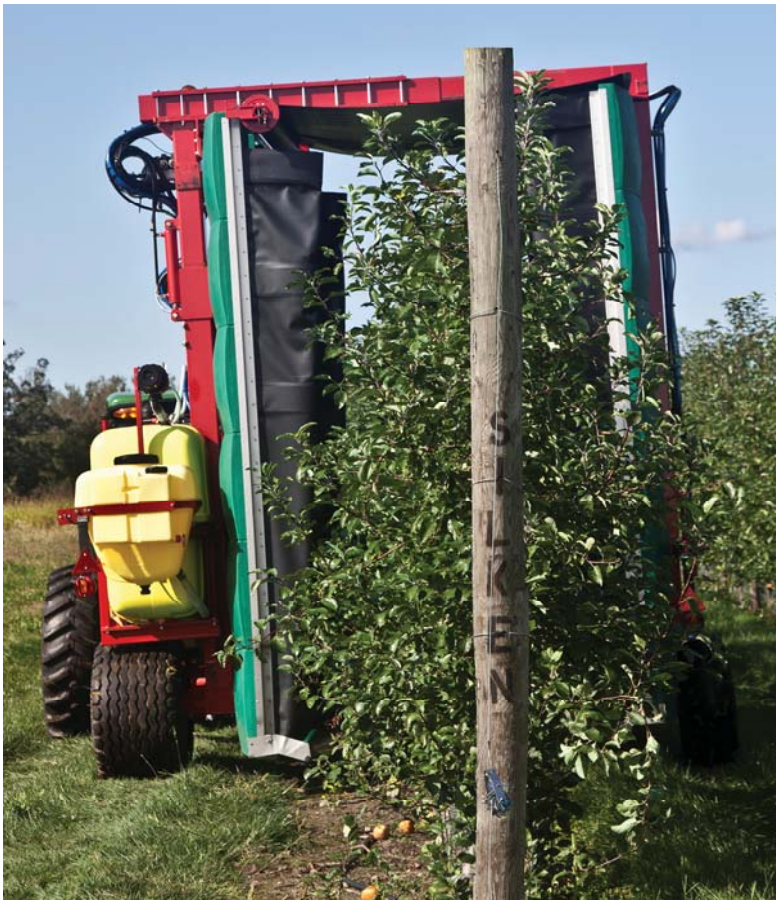

Figure 5. The Tunnel Sprayer directs material into the canopy from the outside and captures that which passes through the canopy.

Hands-on demonstrations were conducted at twilight meetings on May 17, 2011, and April 17, 2012, at the UMass Cold Spring Orchard Research & Education Center (35 and 30 farmers in attendance in 2011 and 2012, respectively), and presentations (with video) were given at three additional twilight meetings (May 18, 19, and 26, 2011) with total attendance of 129 farmers. It also was demonstrated at the 2012 Annual Summer Meeting of the Massachusetts Fruit Growers' Association at the UMass Cold Spring Orchard Research & Education Center on July 16, 2012, with approximately 100 farmers in attendance. Small-scale demonstrations were conducted several times during the two years to a total of approximately 200 individuals.

In total, about 350 people have seen a hands-on demonstration of the tunnel sprayer. About 130 have seen presentations given in person with video demonstrations, and another 4,700 have viewed web-based presentations.

the expectation is that there likewise will be no differences in the fruit samples.

Educational programs began in earnest in 2011. Details of this project have been recorded in a blog: http://masscon.blogspot.com (Massachusetts Containment Spraying Blog). Four video presentations are provided in the blog to describe progress during the early stages of the process. The blog has been visited a total of 1,579 times since its creation 16 months ago. The videos were also provided on YouTube (http://www.youtube.com/user/wrautio1) and, in total, have been viewed 3,142 times.

Figure 6. Water sensitive paper showing drift from the airblast sprayer (left photo) and the lack of any spray drift from the tunnel sprayer (right photo).

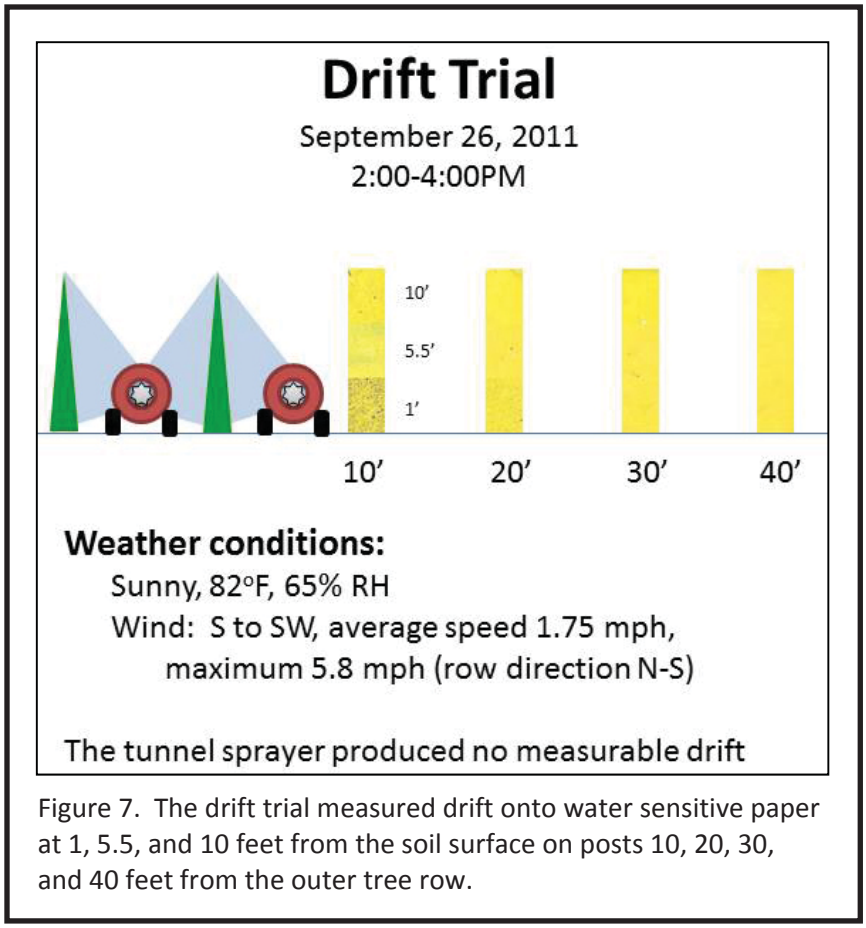

Figure 7. The drift trial measured drift onto water sensitive paper at 1, 5.5, and 10 feet from the soil surface on posts 10, 20, 30, and 40 feet from the outer tree row.

Outcomes and Lessons Learned

1. *Sprayer is feasible under our orchard conditions. Hydraulic manipulation of the height and widths of the sprayer allows adjustment specific to tree size and slope.*
2. *Spray use is reduced by 10 to 20%, likely with no change in efficacy (the latter point still needing full verification).*
3. *Drift is nearly nonexistent with the tunnel sprayer; whereas, it is represents 10-20% of the spray material with an airblast sprayer. Environmental benefits are not easily measured but could be significant. Likewise, eliminating drift may allow farming closer to humans, without any risk of off-target exposure.*
4. *This technological advancement comes at a cost of about $30,000 per sprayer. The extra cost cannot be offset by the cost benefit of reduction in spray material. The potential environmental benefits must be weighed before deciding to purchase such a sprayer. In some settings, it may be becoming impossible to use airblast technology because of the proximity to human dwellings, and this sprayer provides an alternative.*
5. *Overall, the sprayer worked very well, performing exactly as expected. We cannot recommend it to the general grower because of price; however, we can recommend it under situations where drift is an insurmountable problem.*

Acknowledgements

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Appletesters.net – A New Website to Assist Apple Growers and Apple Testers in Variety Selection

Win Cowgill
New Jersey Agricultural Experiment Station

Jon Clements
University of Massachusetts Extension

Appletesters.net is a new website designed to assist apple growers in variety and cultivar selection for new orchard plantings. It is also designed to provide a location for anyone conducting cooperative apple evaluation and testing to report and archive their findings using a unified protocol for apple variety fruit and trees.

Variety and cultivar selection is the largest economic decision a grower can make when establishing a new high-density orchard block of a thousand trees or more per acre using tall spindle systems.

Appletesters.net allows growers or potential growers to log on and view records of a variety from different locations over multiple years to assist making their planting decisions.

The online records allow cooperators and growers to see what variety characteristics are performing best in their area. The database will include pictures and casual observations in addition to fruit quality measurements and important horticultural characteristics including tree habit, bloom time, disease tolerance, mortality, precociousness, fruit appearance, taste, storability, and more.

Directions for Use

Point your web browser to: http://appletesters.net. Click on the apple testers database Guest Login. This brings you to our login page, select the guest account button and click login. This brings you to a data base record; you are now in the system. The first thing you should do is familiarize yourself with the database layout. In the tool bar at the top, all the way to the right is a help button. Click the help button to open a new window that contains the directions as to how the database works. Read through and see what it's all about. This window will stay open for reference for you at any time.

Example of Use

Lets look at one search as an example of one way to use the database. In the tool bar select the button Find. This will bring up a blank data base record, you can search on any criteria but lets select the cultivar box by typing a cultivar/variety, lets say Zestar. Then go back up to the tool bar and click the Perform Find button. This brings up 7 records for Zestar. You know this by again looking at the toolbar on top in the left hand corner at Found Records. With Zestar (As of 12/15/12) you will see 7 records that you can cycle trough using the arrows to the left of the Found Records icon.

Appletesters.net will become an important repository of cultivar/strain information on tree growth and fruit quality over many seasons. Such information should be very useful to apple growers looking for more and/or unbiased variety/strain information to make future planting decisions.

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Funding for this project was provided by a North East SARE partnership grant.
http://www.nesare.org/.

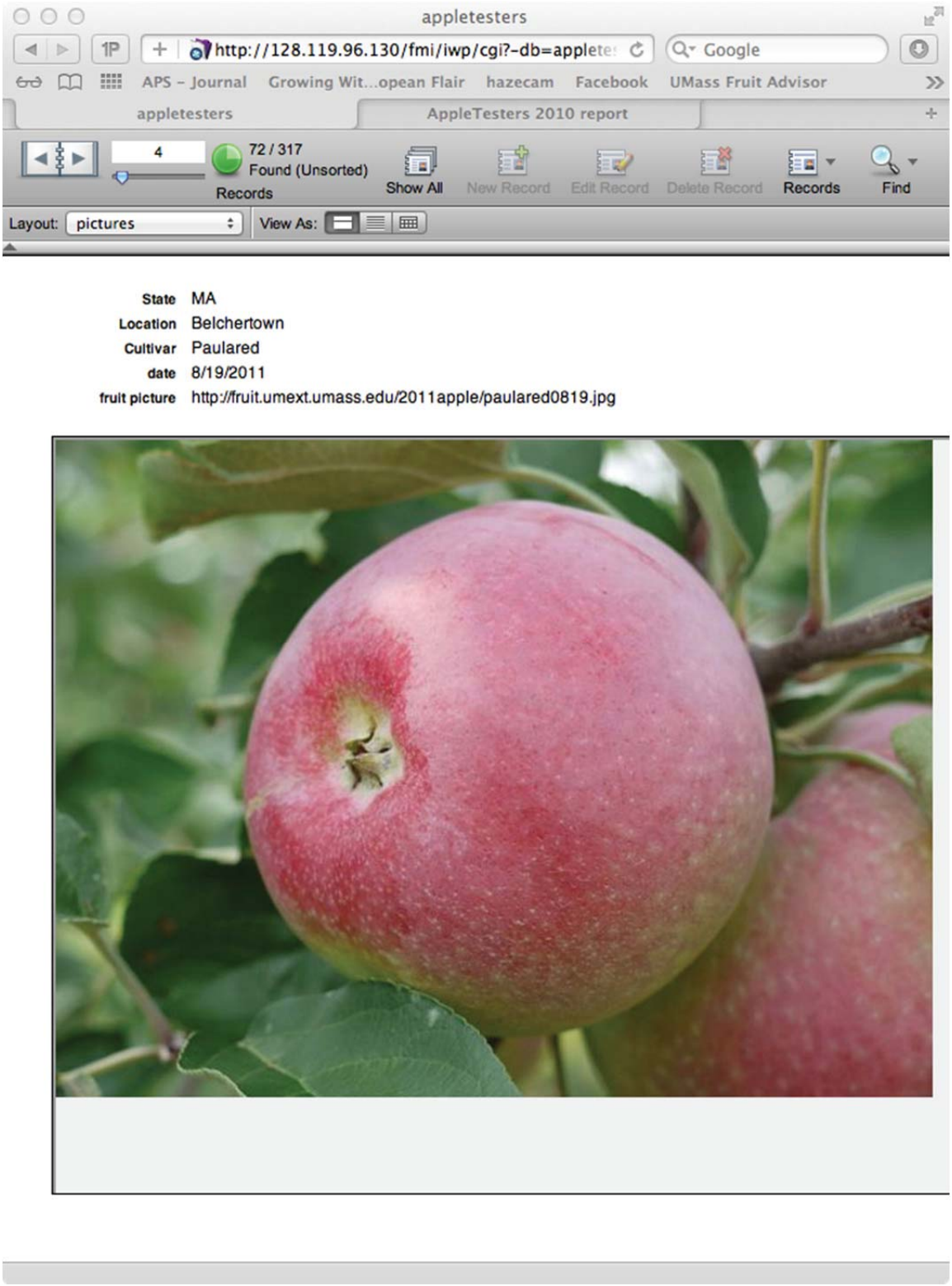

Figure 1. Apple Tester database picture of Paulared record, Belchertown, MA 8/11.

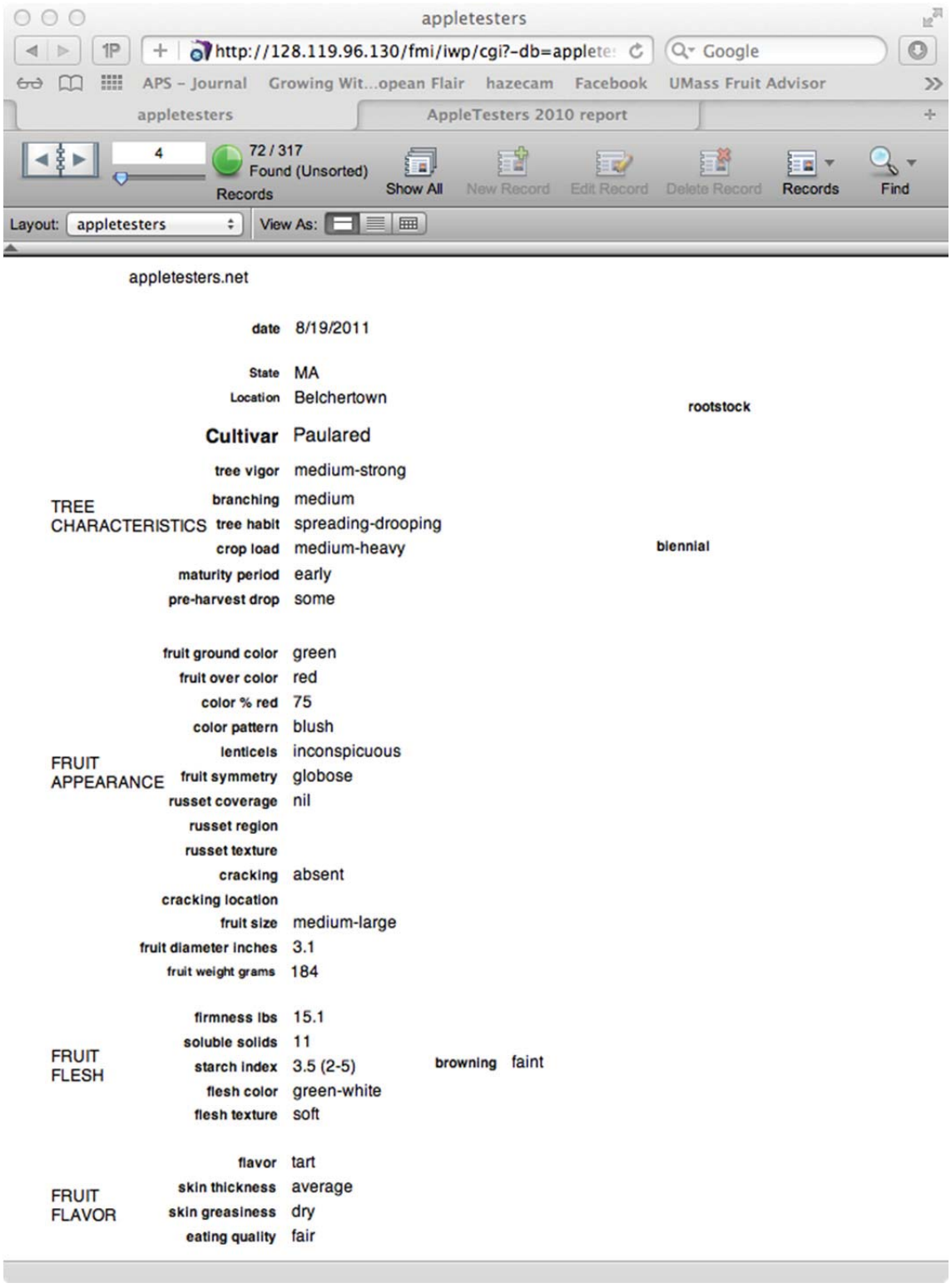

Figure 2. Blank Apple Tester Database Record Form.

Dr. Anne Nielsen, New Fruit Entomologist Joins Rutgers Cooperative Extension

Anne L. Nielsen is the fruit entomology extension specialist located at RAREC in Bridgeton, NJ. Her responsibilities include tree fruit, small fruit (excluding blueberries and cranberries) and grapes. Dr. Nielsen joins Rutgers after postdoctoral research experiences at UC Davis and Michigan State University. Happy to be returning to Rutgers, where she completed her dissertation under the direction of George Hamilton, Anne's research will focus on developing and refining phenological models for key pest species. This basic research is combined with information on the physiology and behavior of insects into management programs that are both economically and environmentally sustainable. Currently, much of this research is focused on invasive species, particularly Halyomorpha halys, the Brown Marmorated Stink Bug. Anne's dissertation was on the biology of BMSB and was among the first to study this pest in the USA. Her laboratory also evaluates monitoring, biological control, and the integration of management tactics to provide a systems-level approach. This multiple tactic approach is the center of a new $2.67 million USDA multi-state grant she is leading on BMSB. She looks forward to finding solutions for NJ fruit growers so that we can continue to provide local quality foods.

Dr. Anne Nielsen, RCE Fruit Entomologist, visits a wine grape block at Terhune Orchards, Princeton, NJ with owner Gary Mount. Photo credit: Win Cowgill.

2013 Mid-Atlantic Fruit & Vegetable Convention

January 29-31, Hershey, PA

(www.mafvc.org)

Tuesday Morning January 29

General Tree Fruit Session

9:00 Invocation
9:05 President's Address – Carolyn McQuiston
9:15 Worker Protection Standards – Jim Harvey, PSU
9:45 George Goodling Lecture: Pre and Postharvest Handling of Honeycrisp for Maximum Storage Life and Quality – Chris Watkins, Cornell
12:00 Lunch

Tuesday Afternoon January 29

General Tree Fruit Session

1:30 The USDA-NRCS partnership with the mid-Atlantic specialty crop industry – Dave Biddinger, PSU
2:00 Orchard Renewal Decisions – Clark Seavert, Oregon State
2:30 Show & Tell
2:45 Vacuum Assisted Harvest for PA Orchard Conditions and Systems – Paul Heinemann and Phil Brown
3:30 Comprehensive Automation for Specialty Crops – Looking Ahead after 4 Years of SCRI Funding – Sanjiv Singh, Carnegie Mellon
4:15 Adjourn

Wednesday Morning January 30

General Tree Fruit Session

9:00 Favorite Cherry Varieties A Grower Panel – Win Cowgill, Rutgers (moderator); Gary Mount, NJ; Evan Milburn, MD; Justin Weaver, PA; Tom Haas, PA
9:45 Common Mistakes to Avoid in Training Tall Spindle Trees – Mario Miranda Sazo, Cornell
10:15 Show & Tell
10:30 Use of SmartFresh on Different Varieties – Chris Watkins, Cornell
11:15 New Fire Blight Resistant Pear Cultivars – Richard Bell, USDA
Noon Lunch

National Peach Council

9:00 Late Season Fruit Rots on Peach – Norm Lalancette, Rutgers
9:30 Ernie Christ Lecture: A Look at the Past and the Future of Peach Varieties – Jerry Frecon, Rutgers
10:15 Show & Tell
10:30 Using a phenological model and border sprays for Brown Marmorated Stink Bug - moving towards IPM – Anne Nielsen, Rutgers
11:15 Bacterial Spot on Stone Fruit – Sarah Bardsley, PSU
12:00 Lunch

Wednesday Afternoon January 30

General Tree Fruit Session

1:30 Maintaining Native Pollinator Habitat and Managing Blue Orchard Bees – Dave Biddinger, PSU
2:15 Show & Tell
2:30 Pesticide Record Keeping Options – Kerry Richards, PSU
3:00 US Apple Association Working to Help the Industry – Nancy Foster, US Apple
3:30 Pennsylvania Apple Marketing Board Program Update – Karin Rodriguez, PAMB
4:00 Adjourn

National Peach Council

1:30 National Peach Council Update – Kay Rentzal
2:00 Peach Training System Trial – Jim Schupp, PSU
2:45 Show & Tell
3:00 Peach Rusty Spot Management – Norm Lalancette, Rutgers
3:30 Plum and Stone Fruit Hybrids – Jerry Frecon, Rutgers
4:00 Adjourn

Thursday Morning January 31

General Tree Fruit Session

9:00 YGA on the Move: Young Grower Alliance Panel – Catherine Lara (moderator)
9:45 Show & Tell
10:00 Pear psylla complex on pears – Peter Shearer, Oregon State
10:45 Finding a Good Crop Insurance Program – TBA (Lynn Kime)
12:00 Lunch

National Peach Council

9:00 Is Your Air Blast Sprayer Calibrated for Your Peach Trees or Apple Trees? – George Hamilton, UNH
9:45 Use of Entomopathgenic Nematodes for Borer Control – John Halbrendt, PSU
10:15 Show & Tell
10:30 Training Young Peach Trees – Rich Marini, PSU
11:00 Strategies to Boost Retail Sales – Kathy Kelley, PSU
11:30 Grower Experience with Mechanical Blossom Thinning (Grower Panel) – Tara Baugher (moderator); Henry Allenberg, MD; Dave Wenk, PA; Eddie Rankin, PA
12:15 Adjourn

Thursday Afternoon January 31

Special Joint Session with PVGA and Small Fruit Program

INVASIVE SPECIES

1:30 Brown Mamorated Stink Bug Panel – Tracy Lesky, Greg Krawczyk, Dean Polk
2:30 Spotted Wing Drosophila – Peter Shearer, Oregon State, Kathy Demchack, PSU
3:15 Invasive Weed Species – Tracy Harpster, PSU
3:45 Invasive Vegetable Pests – Shelby Fleisher, PSU
4:15 Adjourn

ADVANCED REGISTRATION AND MEMBERSHIP INVOICE
For the Mid-Atlantic Fruit & Vegetable Convention
and Membership to the New Jersey State Horticultural Society
Hershey Lodge and Convention Center – Hershey, PA
January 29, 30 and 31, 2013

Membership Name(s) _____

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