Fruit Notes

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Fruit Notes

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Cover: Pink Lady apple at Rutgers Snyder Research & Extension Farm, Pittstown, NJ. Photo by Win Cowgill.

Thinning Peaches with Gibberellic Acid

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Fruitlet thinning is necessary to obtain peach fruit of commercially acceptable size. Farmers expend a significant amount of time and money thinning fruitlets by hand in the late spring and early summer. Much research has searched for techniques that make this process more cost effective. These techniques have included high-pressure water sprays and more recently have focused on mechanical approaches to physically knock flowers off the tree before fruit set. Some of these techniques are used commercially, but equipment can be expensive.

Chemicals caustic to flowers have been used with some success as a way to chemically thin peaches. Ammonium thiosulfate (fertilizer), for instance, can be used if timed properly to stop fruit set at a specific time, allowing only those fruit that have already set to remain. Some research has

Table 1. Effects of varying ProGibb application rates in 2010 on Jersey peach fruit quality at harvest in 2010 and return bloom in 2011 in Massachusetts and New Jersey.

ProGibb (g/acre)[z]	Average fruit weight (g)	Average fruit diameter (cm)	Flesh firmness (N)	Soluble solids concentration (%)	Return bloom (2011, no./cm of shoot)
			UMass Cold Spring Orchard		
0	235	7.59	47.2	11.1	0.42
80	223	7.42	57.1	10.9	0.28
160	221	7.40	57.6	10.7	0.16
Statistical significance	ns	ns	Lin**Quad*	ns	Lin**Quad*
			Rutgers Snyder Farm		
0	136	6.31	48.8	11.0	0.29
80	126	6.16	52.5	10.7	0.25
160	132	6.23	51.2	10.8	0.23
Statistical significance	ns	ns	Lin**Quad*	ns	Linear**

**, *, ns: Significant at $P = 0.01$, 0.05, or nonsignificant, respectively.

[z] Treatments were applied about 4 weeks before harvest and when there were approximately 20 buds per new shoot. All treatments included 0.1% Regulaid. In both Massachusetts and New Jersey, ProGibb resulted in a linear increase in flesh firmness and a linear decrease in return bloom.

Table 2. Effects of varying ProGibb application rates in 2010, 2011, or 2010 and 2011 on Jersey peach fruit quality in 2011 and return bloom in 2012 in Massachusetts.

Year of treatment[z]	ProGibb (g/acre)	Average fruit weight (g)	Average fruit diameter (cm)	Flesh firmness (N)[y]	Soluble solids concentration (%)	Return bloom (2012, no./cm of shoot)[x]
2010	0	279	10.4	42.6	10.0	0.47
2010	80	313	10.8	36.6	10.2	0.48
2010	160	316	10.8	36.2	9.9	0.53
2011	0	274	10.3	42.3	10.3	0.48
2011	80	275	10.4	48.7	10.0	0.19
2011	160	276	10.4	51.1	9.7	0.11
2010+2011	0	292	10.6	39.4	10.1	0.48
2010+2011	80	293	10.6	47.0	9.7	0.25
2010+2011	160	303	10.7	45.6	9.8	0.08
Statistical significance						
Year		**	**	**	ns	**
GA		ns	ns	ns	ns	**
Year x GA		ns	ns	**	ns	**
GA within 2010				ns		ns
GA within 2011				Linear**		Lin**Quad**
GA with 2010+2011				Linear**		Linear**

**, *, ns: Significant at P = 0.01, 0.05, or nonsignificant, respectively.

[z] In both years, treatments were applied about 4 weeks before harvest and when there were approximately 20 buds per new shoot. All treatments included 0.1% Regulaid. Overall differences among the three year treatments were significant in most cases. With fruit weight and diameter, fruit size was larger when treatments were applied in 2010 (either alone or with 2011). With return bloom, bloom density was greater for those treated only in 2010 versus those treated in 2011 (alone or with 2010).

[y] The effects of GA application on fruit size were prominent. The negative linear effect of GA on flesh firmness in 2011 after treatment in 2010 can be attributed to that effect on fruit size. Analysis of covariance showed fruit size to be a significant covariate, and when the interaction was separated, there was no difference in flesh firmness resulting from the 2010 application.

[x] The effects of GA application on return bloom also were prominent. Treatments in 2010 did not impact return bloom in 2012, but treatments in 2011 (either 2011 only or 2010 plus 2011) resulted in a significant negative relationship with return bloom. Although a quadratic relationship accounted for significantly more sums of squares than a linear relationship for the 2011 only treatments, the effects was substantially linear.

studied plant growth regulators as potential thinners, but none have proved effective when applied at bloom or soon after to reduce the current season's crop. In the 1990's, gibberellic acid (GA) was evaluated as a potential thinner, but it was applied the season before, reducing flower bud formation. Interest in the California peach industry declined when it was observed that GA affected growth after

a low-chill winter, a problem that is not a concern in Northeast peach growing.

The objective of our study was to determine the effectiveness of GA applications on fruit quality the year of application and on return bloom the following year.

Materials & Methods

In 2010, 45 trees were selected at the Rutgers Snyder Farm (Pittstown, NJ) and at the UMass Cold Spring Orchard (Belchertown, MA). Trees were divided randomly among three rates of GA in the form of ProGibb (0, 80, and 160 g/acre). All treatments were applied about 4 weeks before harvest, when there were approximately 20 buds per new shoot. All treatments included 0.1% Regulaid. At harvest fruit were weighed and diameter was measured. Flesh firmness was measured with a penetrometer, and the soluble solids concentration of the juice was measured with a hand refractometer. The density of return bloom was measured in 2011 by counting the number of flowers on 10 new 1-year-old shoots of similar vigor per tree (reported

Table 3. Effects of GA applications rates in 2011 or 2010 and 2011 on Jersey peach fruit quality in 2011 and return bloom in 2012 in New Jersey.

Year of treatment[z]	ProGibb (g/acre)	Average fruit weight (g)	Average fruit diameter (cm)	Flesh firmness (N)	Soluble solids concentration (%)	Return bloom (2012, no./cm of shoot)[x]
2011	0	187	7.0	38.8	11.7	0.36
2011	80	174	6.7	43.2	11.0	0.31
2011	160	172	6.7	43.6	10.7	0.21
2010+2011	0	181	6.9	40.3	11.3	0.36
2010+2011	80	184	6.9	40.6	11.2	0.32
2010+2011	160	190	7.0	41.2	11.2	0.23
Statistical significance						
Year		*	*	ns	ns	ns
GA		ns	ns	Linear*	**	Linear**
Year x GA		*	*	ns	*	ns
GA within 2011		Linear**	Linear*		Linear**	
GA with 2010+2011		ns	ns		ns	

**, *, ns: Significant at $P = 0.01$, 0.05, or nonsignificant, respectively.

[z] In both years, treatments were applied about 4 weeks before harvest and when there were approximately 20 buds per new shoot. All treatments included 0.1% Regulaid. Overall differences between treatment in 2011 and in 2010 plus 2011 were significant for fruit weight and diameter, with trees treated both in 2010 and 2011 producing larger fruit. This difference likely occurred because of the reduction in 2011 return bloom from the 2010 treatments. With all fruit measurements, the interaction of GA and year was significant. Separating that interaction as GA treatments within each year treatment showed a significant negative linear relationship between GA concentration and fruit size and soluble solids and a positive relationship with flesh firmness only when the trees were treated in 2011 and not 2010. The lack of a relationship within the data from trees treated in both 2010 and 2011 likely resulted from the confounding effects of a negative linear relationship between GA in 2010 and return bloom in 2011.

as the average number of flowers per cm of shoot length).

In the same trees as used in 2010, 21 trees which had not been treated with GA in 2010 were selected, and divided randomly among three ProGibb rates (0, 80, and 160 g/acre) and treated similarly to 2010. Further, seven trees each previously treated with 0, 80, or 160 g ProGibb/acre were selected and treated in 2011 with the same rates. In Massachusetts only, seven additional trees each treated with 0, 80, or 160 g ProGibb/acre in 2010 were selected and not treated in 2011. Fruit assessment in 2011 and return bloom in 2012 were completed similarly to the previous year.

Results

In both New Jersey and Massachusetts, increasing concentration of GA applied in 2010 resulted in increasing flesh firmness in 2010 and decreasing return bloom in 2011 (Table 1), achieving both of our goals. Both effects were more pronounced in Massachusetts than in New Jersey. Fruit size and soluble solids concentration were not affected by GA.

In the 2011 experiment in Massachusetts, fruit size in 2011 was generally larger if the fruit had been treated in 2010 (Table 2). This result is expected because of the reduced return bloom in these treatments. Similar effects were observed in 2011 on flesh firmness as in 2010, but only if treated in 2011. Return bloom in 2012 was decreased with increasing concentrations of GA applied in 2011 but was not affected by 2010 applications.

In the 2011 experiment in New Jersey, increasing GA rate resulted in declining fruit size and declining soluble solids concentration when the treatment occurred only 2011 (Table 3). If trees were treated with the same rate in both 2010 and 2011, there was no impact on fruit size or soluble solids. Flesh firmness was increased with increasing concentrations of GA, regardless of whether it was applied just in 2011 or both years. Increasing GA application rate resulted in reductions in return bloom, which were the desired results.

Conclusions

Applications of gibberellic acid in the summer can significantly reduce bloom the following year. The reductions result in less fruit-to-fruit competition at the very earliest developmental stages. There are risks with this approach, however. Application at too high a rate can reduce return bloom to levels less than commercially acceptable. Also, factors with further reduce bloom, such as cold winter temperatures or early spring frosts, can result levels with are less than commercially acceptable.

Further work must be completed to determine the expected degree of variability in response. We plan additional experiments in 2013 to fine tune the GA timing for maximum results in the Northeast and Mid Atlantic Regions. It probably will require different applications timed to (1) maximize fruit firmness and (2) to reduce bloom to aid in peach thinning.

Mary Conklin, New Extension Educator in Fruit Production & IPM at the University of Connecticut

Mary Conklin has been involved in the fruit industry for over 35 years as a grower, consultant and an Extension Educator. She holds an A.S. degree in Fruit & Vegetable Crops from the Stockbridge School of Agriculture, a B.S. degree in Plant and Soil Science from UMass, and an M.S. degree in horticulture from West Virginia University where she conducted research on frost protection in orchards, and an M.S. in Education from the College of St. Rose.

She began her extension career with Cornell as a fruit specialist in the Hudson Valley in the 1980s where she developed an interest in plant nutrition working with Dr. Warren Stiles. From there she moved to Penn State University where she worked for Penn State Cooperative Extension, serving as a regional Horticulture Educator with strong programs in fruit, vegetables, landscape, nursery, pesticide application, and Master Gardener volunteer training. Research projects included plant nutrient management in ornamental nursery plants.

In 2009, Mary moved to CT and worked for the University of Connecticut IPM program training fruit and vegetable growers with NRCS-EQIP contracts, teaching Master Gardener classes on tree fruit and small fruit, and assisting with research projects on various grants, while also working as a freelance writer.

Mary joined the University of Connecticut in March 2012 as the Extension Educator for commercial fruit production and IPM. She has a strong interest in soil health and its relationship to plant health and pest management. She is presently involved in a project with Cornell looking at soil health as it relates to berry plant nutrition and health. With the arrival of the SWD in late summer 2011, Mary has been heavily involved in working with growers on monitoring and management of this new invasive pest.

Mary works closely with the CT Pomological Society, and is coordinating the annual fruit grower meeting to be held on Tuesday, December 4 at The Gallery Restaurant in Glastonbury, CT.

In addition to her extension position, Mary and her husband Pete, own and operate a pick-your-own berry farm also growing and selling vegetables, fresh culinary herbs, and cut-flowers.

Strawberries: To Renovate or Not to Renovate, Who Cares?

Mary Concklin
Fruit Production & IPM, University of Connecticut

It is fall, and I'm writing about strawberry renovation. Bad timing? I don't think so. This is a good time to look at your fields and pat yourself on the back for a job well done, or grumble that you wished you had done your renovation.

Immediately after harvesting June-bearing strawberries, growers renovate their strawberry beds, usually by mid-July. Renovation entails mowing off the old foliage, narrowing the rows and getting rid of runners in the walkway, getting rid of weeds and fertilizing.

The reasons for each step are important and necessary for healthy plants and high quality yield the following year.

- Mowing off the old foliage. During the growing season foliar diseases, such as the many fungal leaf spots and bacterial angular leaf spot, attack the plants reducing functional leaf surface. This won't kill the plants but does have the potential to reduce yield. Mowing removes the diseased foliage, shredding it for rapid decomposition which results in reduced inoculum for the following season. It also knocks down foliar insect pests including mites. Importantly, this practice encourages new vegetative growth, opens up the plant to better sunlight penetration for flower bud formation. It is important to avoid hitting the crown with the

Renovated strawberry bed in early fall.

mower. The crown is the heart of the strawberry plant where new runners and flower stalks are produced.

Non-renovated strawberry bed.

- Narrowing the rows. Till or cultivate to narrow the row to 8" - 12". This also has the benefit of putting additional soil up around the plant crown resulting in improved root development. Remove runners that have moved into the walkway or, if there are spaces that need to be filled, move some of the runners back into the plant row. It also provides for ample room between rows for walkways, with rows narrow enough to provide the ability to reach berries without stepping on the plants.
- Get rid of weeds. Weeds within and between the rows harbor insects such as the Tarnished plant bug – a destructive strawberry pest. Weeds reduce air flow for rapid drying after a rain or dew leading to an increase in foliar and berry diseases which results in a reduced marketable crop. Pickers, whether they are your pickers or pick-your-own customers, don't want to have to hunt through weeds for the plants or the berries. Ever seen a weedy strawberry field and wondered where, or even if, there are any viable plants in the mess, let alone marketable berries? Weeds will also outcompete the strawberry plant for valuable water and nutrients resulting in reduced yield. Flower bud formation is dependent on sunlight – weeds block valuable sunlight strawberry plants need
- Fertilizing. Give the plants a needed boost as they put on new growth and develop flower buds.
- Irrigation is very important if rain is lacking during this period to help move the nutrients into the plant, to promote new growth, to promote flower bud formation that occurs during the late summer and early fall, to maintain healthy plants and replace water lost during the heat of the summer.

If you didn't renovate your strawberries this year, I hope this information will make you pause and re-think that decision next year for healthier plants, higher yields and an increase in your profits.

Fungal leaf spot.

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Surround for Control of Brown Marmonated Stink Bug on Apple In New Jersey

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A replicated trial was conducted to investigate Surround and other products for control of Brown Marmonated Stink Bug (BMSB) on mature apple trees at the Rutgers Snyder Research and Extension Farm in Pittstown, Hunterdon County, NJ in 2011. The focus was on controlling BMSB at the end of the growing season, comparing insecticides with known activity against BMSB combined with Surround as compared to Surround alone and an untreated control. Four single-tree replications were utilized for each treatment in a completely randomized trial.

A mature orchard was selected with Suncrisp apple as the treatment trees and Sun Fuji apple trees as the buffer trees. Both of these cultivars ripen in mid October. The block consisted of 8 rows of trees alternating rows by cultivar. These were 12-year-old mature trees 12-14 feet tall spaced 10' x 20'.

Surround was used early season June 26, July 4, and August 1 as a protectant on all treatments except the untreated control. Treatments began August 17. The experimental block was scouted weekly for BMSB with 3-minute observations, beating limbs and collection with trays and visually examining the fruit. During the season, very little BMSB activity was observed in the surrounding blocks and none in the experimental block.

Treatments were applied with a Rears Tower Sprayer (Rears Mfg. CO.2140 Prairie Rd.
Eugene, OR 97402) fitted with air-induction nozzles. Sprays were applied tree-row-volume dilute at 180 GPA.

Fifty fruit were examined visually on each single-tree replicate on August 12, October 4, and the number of fruit with visible feeding was recorded.

At harvest, 100 fruit per single-tree replicate were harvested, stored, and then peeled to look for external and internal feeding.

Results & Discussion

In 2011 BMSB populations were more variable at the treatment location than in 2010. Some adults were observed early in the season, but then visual observations declined. Our experiment was designed to evaluate treatments in August and September when the BMSB clustering starts

Table 1. Treatment list. Treatments were applied August 17, August 31, September 14, and September 28, 2011.

Treatments
Untreated control
Surround @ 50 per 100 followed by 25/100 or 25 /50 followed by 12.5/50
Surround + Actara @5.5 ounces/Actara 2.75 ounces/100or 1.375 ounces /50
Surround + Assail @8 ounces/Acre or 4 ounces/100 or 2 ounces 50
Surround + Acti-Gel[1] @ 2 lb /100 or 1lbs/100 or 1 lb /50 or 0.5lb/50
Surround + Acti-Gel[1] + Actara@5.5 ounces/Acre 0r 2.75 ounces/100 or 1.375 ounces /50

[1] Active Minerals International, LLC

Table 2. Effects of various surround and insecticide combinations on the incidence of brown marmorated stink bug injury in Suncrisp apple in New Jersey. No significant differences were observed among treatments.

Treatment	Visual damage (% of fruit)			Internal damage (% of fruit at harvest)	Average number of stings per damaged fruit
	12 Aug	4 Oct	At harvest		
Untreated Control	14.0	16.0	1.3	31.0	3.4
Surround	11.5	11.8	0.3	28.5	2.9
Surround + Actara	12.8	10.0	0.0	21.0	3.0
Surround + Assail	13.5	15.8	0.0	39.8	2.8
Surround + ActiGel	12.5	10.5	0.0	31.5	2.6
Surround + ActiGel + Actara	9.3	9.0	0.0	23.3	3.5

All data were subjected to analysis of variance with PROC GLM of the Statistical Analysis Systems Software (SAS Institute, Cary, NC). Visual damage, internal damage, and the number of stings per damaged fruit did not differ significantly among treatments. Further, covariance analyses (using PROC CORR of the SAS Software) between visual and internal damage showed no significant relationships.

to occur and typically the most injury appears to occur.

There are many challenges with this insect in trying to design the experiment and collect data. We still do not have an effective way to monitor for this insect to predict the start of treatments and/or determine threshold levels for treatment applications. We observed no insects in the untreated control treatments, so we did not initiate treatments until August 17. Our first data collection was a fruit examination August 12 of 50 fruit per tree on all treatments. Fruit from all quadrants and high and low were examined. Even with no visible BMSB's present prior to this date, we had damage to the fruit. While there were no significant differences between treatments at this date, all treatments had a smaller amount of injury than the untreated control. All these treatments had Surround applied three times during the growing season prior to this date as maintenance sprays. It appears that all treatments with Surround had less injury than the untreated control.

Our second data collection was a fruit examination October 4 of 50 fruit per tree of all treatments. As with the August 12 data collection, the October 4 sampling had no significant differences between treatments, however numerically all treatments had a smaller amount of visible surface injury than the untreated control.

Fruit were harvested on October 17 in non-Retain treated blocks and October 25 in Retain treated blocks. Both sets of fruit were harvested at optimum maturity for Suncrisp. Fruit were peeled and examined between November 14 and 17 and on November 28, respectively.

Surface injury was examined prior to peeling on all samples and rated. While there were no significant differences between treatments, numerically all treatments had a smaller amount of visible surface injury than the untreated control.

The lack of statistical significant results was disappointing in this experiment. However we feel that significant amounts of variability within the data were due to the nature of the insect. It is a rapid flyer, always on the move, and extremely hard to scout for.

Each harvested fruit (100 per tree per replication) was individually peeled and rated for internal damage. The data were expressed as the percentage of damaged fruit by BMSB at harvest. There were no statistical differences however the Surround alone, Surround + Actara, and Surround + Actara + ActiGel. All had a numerically smaller percentage of the fruit damaged at harvested than the untreated control.

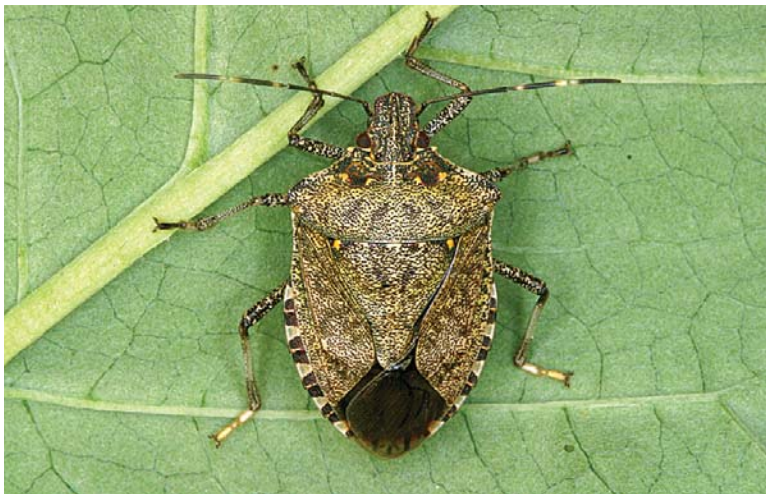
Conclusion

It is our feeling based on the results of the 2011 study above and observations of other Surround-treated apple bocks at Rutgers Snyder farm in both 2010 and 2011 that Surround can and does provide some level of repellency to BMSB on apple. We would like to see additional work with Surround on BMSB done for this reason. In addition, it is proving to be one of the only controls that organic apple growers have for BMSB.

As we learn more about this pest, its cycles, habits, and how to scout for it, we will be better able to utilize tools to control it. Surround has a role to play in its control.

We are have been using Surround successfully on apple for the past 6 years for successful sunburn control on Honeycrisp and to repel Japanese beetles, which prefer both Honeycrisp and Liberty apples.

On PYO-harvested fruit, one limitation of Surround will be its residue on the fruit. Spraying surround late into August and September for an October harvested apple leaves an objectionable residue. The white colored Surround looks like pesticide residue and therefore is not desirable for PYO harvested fruit. All of our fruit harvested at the Rutgers Snyder Farm needed to be put through a Tew brusher washer to eliminated this residue.



University of Massachusetts Extension Fruit IPM Report for 2012

Daniel Cooley, Arthur Tuttle, Jon Clements, and Sonia Schloemann
University of Massachusetts

Information presented here is based on specific observations made at the UMass Cold Spring Orchard in Belchertown. Winter was virtually snowless and relatively mild. A low of zero degrees F. was recorded on January 22. Spring was one for the record books. Very first bloom on peaches was March 23. Apple first king bloom was April 16. Cherries were at a very susceptible bud stage ("water bud") during sub-freezing temperatures in late March that resulted in significant damage. (No sweet cherry crop in Belchertown, but some other growers had a modest crop of sweet and tart cherries.) McIntosh full bloom started April 20. (At least 2 weeks ahead of "normal.") All tree fruit bloom was rather extended in time. Spring frost/freeze damage to apples was dependent on site (high vs. low). Some growers had a very small crop whereas others had a full crop. (Location, location, location.) Bloom stage pictures available on the UMass Fruit Advisor (http://www.umassfruit.com). Summer was generally amiable, albeit quite dry mid-summer, Growers with irrigation were able to supply young trees with water, however, those without irrigation may have seem some deleterious effects of the dry spell. A high temperature of 93 was recorded on July 17.

The peach crop was generally excellent. Despite the fact we expected to see bud damage based on the frosty spring temperatures, almost everyone had a crop that needed thinning. Quality and flavor was generally very good. Green and brown stinkbugs were observed in abundance in peach (and apple) orchards August-September. (It was definitely the year of the stink bug!)

Apple harvest started early, which was expected based on the early bloom. By the end of harvest things were more-or-less on schedule. Drop was mostly a minor issue. (Of course most of the McIntosh crop is now treated with ReTain.) Harvest conditions were good, without excessive rain and some good cool nights in mid-September bringing on good color. Overall, the apple crop was short (maybe by about 20%) because of the early spring freeze. Thus, demand for apples was high with good prices received by growers.

There were 6-8 primary apple scab infection periods, depending on the date primary season was "over" based on the ascospore maturity model. This was a bit of a discussion item in 2012, as the model showed that 100% of the spores had matured by May 1 (with only 3-4 infection events by then.) But this did not feel quite right -- in fact mature spores were still being released in the Hudson Valley into mid-May. Discussion centered on the observation that April was very dry, and although the degree-day model was ticking, mature spores were not being released as they might be in a more normal (i.e., wet) early spring. Thus, growers were advised to maintain fungicide coverage as if it was a more normal spray year, i.e., until the end of May or so. In the end, scab turned out to be quite manageable in 2012. (The dry summer probably helped.)

Fireblight was observed here and there. Although borderline, there was no risk of fireblight infection during most of bloom based on the model(s). One central Massachusetts orchard that supposedly never had a history of fireblight did have significant shoot and blossom blight that was being picked up about a month after bloom. Because the bloom was so long, most likely some blossoms got infected at the tail end of bloom and when they were not protected by strep.

Powdery mildew in apples was kind of the big gotcha in 2012, although probably it should not have been too much of a surprise given the mild winter and dry spring. (Good conditions for mildew.) By far 2012 had the most foliar mildew recently observed here. Fortunately, it did not seem to result in too much fruit russet, but growers are going to have to pay more attention to mildew control in 2013.

Bitter rot in apples was much more common this year than in the past 30 years. It isn't clear what factors are contributing to the increase.

The Massachusetts NEWA network (http://newa.cornell.edu) was expanded to include 17 on-site weather station/orchards (plus 22 airports, total 39 locations) providing fruit and vegetable growers with daily developmental models (including forecasts) to aid in decision-making for management of insect and disease pests; these locations were a centerpiece for providing Extension team-based IPM recommendations on diversified fruit & vegetable farms.

Insects were at average abundance. As already mentioned, it was the year of the stinkbug with brown and green stink bugs readily observed and causing damage. A few Brown Marmorated Stink Bug (BMSB) were caught in pheromone traps (Cape Cod, western MA), and a few other captures/sightings in structures. No "outbreak" or economic injury from BMSB occurred.

Spotted Wing Drosophila (SWD) reappeared as expected after first being found late summer of 2011. UMass participated in a regional monitoring and reporting network with other New England states, monitoring 8 sites on a weekly basis and receiving periodic reports from an additional 3-4 sites. SWD first appeared in traps July 2nd and by July 23rd were being found statewide. As was true in 2011, fall raspberries were hardest hit however late season blueberries also suffered significant damage. Information about control of SWD was presented at five meetings during the course of the season.

We began a Northeast SARE funded study, Towards Sustainable Disease Management in Northeastern Apples using Risk Forecasts and Cultural Controls with 7 commercial orchards in New England and University/extension research facilities in MA, NH, and ME. Collaborating scientists are William MacHardy, Cheryl Smith, and George Hamilton of NH and Glen Koehler and Renae Moran of ME. Scab sanitation strategies, advances in the delayed 1st scab spray strategy (delay until pink), and PAD counts are the focus of the study. Additional commercial orchards will be added over the next 2 years.

We also participated in the 3rd year of an SCRI (Specialty Crops Research Initiative) study, Manipulating Host- and Mate-finding Behavior of Plum Curculio: Development of a Multi-Life Stage Management Strategy for a Key Fruit Pest. We performed "trap-tree" experiments for PC management at 5 orchards in New England and participated in a nematode bio-control study. Tracy Leskey, USDA-ARS Kearneysville is the project director.

There were 30+ research/data-collection/demonstration trials/plots conducted at the UMass Cold Spring Orchard in 2011, including for example: 7 chemical thinning trials, 2 drop control experiments, 2 fruit set, 2 cultivar evaluation (D. Greene); NE-1020 Multi-state Evaluation of Winegrape Cultivars and Clones (S. Schloemann); NC-140 rootstock planting with Honeycrisp and Gala apple, and Redhaven peach (Autio); evaluation of Cyazypyr™ for plum curculio (J. Clements).

Work with the Lipco over-the-row curtain/recycling (tunnel) sprayer purchased with Massachusetts state specialty crop block grant funding continued at the UMass Cold Spring Orchard. See MassCon Project: http://masscon.blogspot.com/. In addition, 3 orchards (5 sprayers) had complete sprayer calibration sessions using the sprayer test bench purchased with EPA Region SAI funds.

We convened six growing season Twilight Meetings for commercial tree fruit growers in Massachusetts, Rhode Island, and New Hampshire during April and May. Healthy Fruit was published 19 times from March-September with timely integrated pest management information for pome and stone fruit. The Massachusetts Fruit Growers' Association Summer Meeting was held at the UMass Cold Spring Orchard in Belchertown – Dean Polk of Rutgers was the invited speaker on managing new/changing insect problems in orchards.

2013 Mid-Atlantic Convention Set for January 29-31, Hershey, PA

The 2013 Mid-Atlantic Fruit and Vegetable Convention will be held January 29 to 31, 2013, at the Hershey Lodge and Convention Center in Hershey, Pennsylvania. Over 2,100 fruit, vegetable, and berry growers and other industry persons from throughout the mid-Atlantic region and beyond are expected to attend. This year's convention will again feature an expanded trade show with over 165 exhibitors expected plus pre-convention workshops.

The day before the main Convention opens, several special workshops will be offered. Challenges and Opportunities for Obtaining Capital with Dr. Clark Seavert from Oregon State University is one of the workshops. Other pre-convention workshops include Vegetable Grafting, Soil Borne Vegetable Pathogens, Developing a Farm Food Safety Plan and Successful Gift Baskets. Special workshops on customer service presented by ZingTrain will be presented on the afternoons of January 29 and 30. On January 30, the session "Técnicas de Producción de Frutas y Hortalizas " will be presented especially for Spanish speaking workers in the fruit and vegetable industries. It will feature various relevant production presentations in Spanish. That evening workshops on Vegetable Seed Heat Treatment, Cut Flower Arranging and Cooking with Vegetables will be offered.

The Mid-Atlantic Convention has been jointly sponsored by the State Horticultural Association of Pennsylvania, the Pennsylvania Vegetable Growers Association, the Maryland State Horticultural Society and the New Jersey State Horticultural Society for the past 35 years. The Pennsylvania State University, University of Maryland and Rutgers University Cooperative Extension plus the National Peach Council all assist in organizing the three days of educational sessions. The Convention has become one of the premier grower meetings in the Northeast.

The Great American Hall at the Hershey Lodge and Convention Center will host the main part of the Trade Show. Additional exhibit space was added beginning last year in the Aztec Room. Specialized horticultural equipment, farm market merchandise, and packaging, will all be on display along with information on the latest seed varieties, fruit varieties, pesticides and other supplies and services for the commercial grower.

Many pesticide applicator update training credits are available to Pennsylvania, Maryland and New Jersey growers attending the sessions. The program covers nearly every aspect of fruit, vegetable, potato and berry production. Commercial growers should not pass up this terrific educational opportunity.

Eight concurrent educational sessions will be offered on all three days of the Convention. Besides a combined session for the keynote address, the opening day will feature breakout sessions on Tree Fruit, Sweet Corn, Direct and Wholesale Marketing, Organic Vegetables, Snap Beans, Sweet Potatoes, Soil Health, Bedding Plants, Mums, Nutrient Management, Value Added Products and Labor/Farm Management.

On the second day, sessions on Direct Marketing, Greenhouse Production, Tomatoes, Tree Fruit, Peaches, Small Fruit, Potatoes, Wine Grapes, Onions and Vegetable Crops for Winter Sales will be offered. The Convention will close on the third day with sessions on: Peaches, Tree Fruit, Small Fruit, Direct Marketing, High Tunnels, Cut Flowers, Pumpkins, Vine Crops, Invasive Species, Farm Taxes/Estate Planning, and General Vegetables.

The seventh annual Mid-Atlantic Cider Contest will be conducted during the Convention to determine the best tasting cider produced in the region. On January 29, fruit and vegetable growers will gather for the annual Fruit and Vegetable Growers Banquet which will include awards and recognitions. On January 30 there will be an Ice Cream Social in the evening.

Registration is required for all persons attending the Convention trade show or educational sessions. Registration with any of the four sponsoring organizations allows one to attend any of the sessions although there are additional charges for some workshops and meals. For further information contact Jerry Frecon, Rutgers Cooperative Extension at Phone- 856-307-6456, Fax-856-307-6476 or email <frecon@njaes.rutgers.edu>

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) _____

Farm or Business Name _____

Address _____

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One, Two, or Three Day Members' Registration Will Cost $75 at the Door

NON-MEMBERS' REGISTRATION (Same for Non Members - Advanced Registration or at the Conf.)

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