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# Tree Fruit News



### A note from Anna :

It is with mixed emotions that I have to tell you I will be leaving my position with Cornell Cooperative Extension as the Northeastern NY Regional Tree Fruit Specialist. I will be leaving to pursue a PhD at Cornell University in the Plant Pathology and Plant-Microbe Biology Section in the School of Integrative Plant Science, where I will continue my study of tree fruit with Dr. Kerik Cox. I will be leaving at the end of this month (June).

Over the past 3 years I have learned a tremendous amount about apple production in the Champlain Valley, in New York State, and across the country. I've worked hard to offer opportunities for the industry in Northeastern NY through research, educational programs, and working one-on-one with individuals. I hope that the impact I've made is a fraction of what the industry has done for me. Although I'm leaving my position, I will not be going far. I will still be working in tree fruit, and in NY at Cornell. My goal is to increase my specialization, hone my expertise, so that I can better serve the apple industry in the future.

I want to extend a sincere thank you to the industry and all of the individuals—farmers, Cornell faculty, CCE personnel, and other industry members—that I have worked with. I'm extremely grateful for the opportunities and support you have provided me during my time. A special thank you to Dan, for his patience and assistance, it has been an extremely productive and positive working relationship.

At this time, I am working closely with my ENYCHP teammates and other project collaborators to coordinate program and grant responsibilities in my absence. I hope to make this transition as smooth as possible. Interviews are already scheduled in July to select a new individual for the Tree Fruit Specialist position. We hope to make this transition as quickly as possible, and do not anticipate any gaps in supporting the industry.

Thank you,  
Anna

### In this issue of Tree Fruit News:

- ◇ **A Note From Anna** **1**
- ◇ **Fire Blight Management Survey Results** **2-3**
- ◇ **Compensation for Farm Managers** **3-4**
- ◇ **Financial Consequences of Losing a Year** **4-5**
- ◇ **Welcome Jim Meyers** **6**
- ◇ **Upcoming Events** **6**

Temperature and Rain 5/22/17 - 6/27/17				
Locations	Avg Temp (F)	Max Temp (F)	Min Temp (F)	Total Rain (in)
Chazy	63.7	90.7	43.6	4.7
Peru	64.0	89.2	41.4	4.5
Crown Point	66.3	94.4	43.2	3.9
Clifton Park	65.1	93.8	42.9	6.3
Hudson	65.9	96.9	42.8	4.9
Highland HVRL	66.1	91.8	47.9	5.7
Marlboro	50.2	83.4	N/A	3.7
Riverhead	68.1	93.1	49.5	5.2

# Fire Blight Management Survey Results

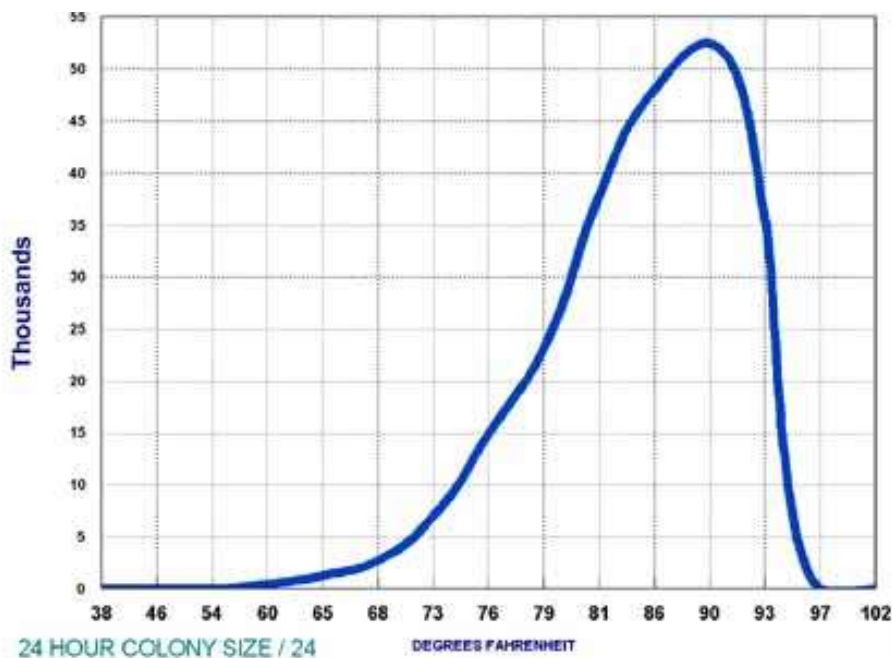
*Elizabeth Higgins, Anna Wallis, Dan Donahue—ENYCHP*

Over 60 apple growers participated in a fire blight management survey at our petal fall meetings in May. Here are the results. First the good news. Most of you are knowledgeable about fire blight (at least those of you who turned in the survey). Most of you knew -

- Fire blight is a bacterial infection, not a virus or a fungus. This is why antibiotics are the primary tool used to manage fire blight.
- Antibiotic resistance is a concern in fire blight management.
- Heat and humidity during bloom time increases the risk of fire blight infections. Heat causes the bacteria to multiply and humidity can aid in the spread of the bacteria. Blooms are a pathway for entry of the bacteria into the trees.
- Old cankers and diseased wood are a source of infection, so pruning and good orchard sanitation are important to control fire blight.

One area of confusion in the survey was the true/false question that asked for the optimal temperature for fire blight to spread. We had two versions of the survey. Some of you were given a range of 60-70 degrees and some were given a range of 60-65 degrees. Neither was correct. The key word was *optimal*. As you can see in the bacteria growth chart from Washington State University's Cougar Blight model, fire blight bacteria colonies reproduce most rapidly above 70 degrees. Having high numbers of bacteria present will drastically increase the risk of the infection spreading.

**Hourly *E. Amylovora* colony size growth on the stigma tip vs. temperature**



However, in hindsight, we also realized that for fire blight management, which is the goal of our education program, our question wasn't the most important piece of information for you to know. It is more important for you be aware of the range of temperatures where you should be concerned about the fire blight bacteria becoming active so you can be **prepared to act**. Many fire blight management fact sheets reference temperatures in the 50-70 range for that reason. We were glad to see that most of you seemed to be aware that you should be concerned about fire blight when temperatures are in the 50-70-degree range during bloom.

Another question that many growers missed was the true/false question that said that "*Vigorous trees, supplied with nitrogen to promote growth, are better able to fight off infection than trees with lower vigor*". The correct answer was false. Vigorous trees are more susceptible to fire blight spread. According to Dave Rosenberger in his blog:

*"Fire blight only attacks actively growing trees! This is an essential principle for understanding fire blight and formulating control measures. In general, both the establishment of new infections and the extension of visible infections ceases when trees set terminal buds and are no longer producing new blossoms or leaves."*

Apogee, a plant growth regulator, is recommended as a fire blight treatment, not because it does anything to the fire blight bacteria, but because it reduces shoot growth during the period when fire blight bacteria are the highest threat.

Antibiotic resistance is a critical concern in fire blight management. Streptomycin, an antibiotic, is an extremely effective treatment for fire blight. However, in some areas the bacteria have become resistant to this antibiotic. The current thinking among fire blight experts is that 3-4 treatments of streptomycin during bloom time, if the models are predicting fire blight, are unlikely to result in antibiotic resistance - **but** after bloom, streptomycin should not be used to treat shoot blight. It is not effective for this use and use during this period significantly increases the likelihood of antibiotic resistance to streptomycin. Antibiotic resistance removes an important tool from our arsenal to combat fire blight.

On a side note, streptomycin is an an-

tibiotic used to treat human diseases, including tuberculosis (another question on the survey that many of you missed). Most researchers agree that it is very unlikely that use of streptomycin as a treatment for fire blight will have an impact on antibiotic resistance of bacteria that cause human diseases. However, general and legitimate concern about the agricultural use of antibiotics jeopardizing the effectiveness of antibiotics to treat critical human diseases is why antibiotics are restricted for use in some countries and in organic production.



*This project is supported by a grant from the NY Farm Viability Institute.*

**Thanks to all of you who participated in the survey!**

**Compensation for Farm Managers– How do you keep them down on the Farm?**  
*Liz Higgins, ENYCHP*

One question that we get frequently is how much should I pay a farm manager? As you can see in the tables below, there can be a great deal of variance in pay depending on the complexity of the operation and the experience of the manager. Farm managers can make anywhere from \$30,000 per year to \$125,000 depending on the specific job and local labor market.

**US Bureau of Labor Statistics, Occupational Employment Statistics for BLS Code 45-1011, First Line Supervisors, Agricultural Labor, Salaries May 2016. (Does not include fringe benefits)**

Percentile	10%	25%	50% (Median)	75%	90%
Hourly Wage	\$16.84	\$22.67	\$31.91	\$43.68	\$60.61
Annual Wage	\$35,020	\$47,160	\$66,360	\$90,860	\$126,070

**US Bureau of Labor Statistics, Occupational Employment Statistics for BLS Code 11-9013, Agricultural Managers, Salaries May 2016. (Does not include fringe benefits)**

Percentile	10%	25%	50% (Median)	75%	90%
Hourly Wage	\$12.78	\$16.05	\$21.79	\$28.73	\$36.67
Annual Wage	\$26,570	\$33,380	\$45,320	\$59,770	\$76,270

At the median and higher levels of pay, you would expect to see first line supervisors and managers who are experienced, have more training/skills, and have higher levels of autonomy and responsibility. Lower rates would be appropriate for less complex positions and for entry-level,

less experienced supervisors and managers.

In general, when setting your pay scales for your farm, a good wage structure is: (a) fair across the organization - people on the farm are paid similar levels for similar levels of work/seniority; (b) on-par with industry norms – for example, offering a \$25,000 annual salary for a management position would be low and make it difficult to retain staff; and (c) provides enough income (maybe combined with other benefits like housing) for the recipient to be able to have a reasonable standard of living in the area. Interestingly, paying significantly above industry norms

for a position was found, in some studies, to have an unexpected negative effect on employees as it caused stress. Employees couldn't internally justify the additional salary so they felt vulnerable to being replaced or their position eliminated. Employees were happiest when the position paid just above the "going rate" for their level of responsibility and experience.

Another factor to consider is that wages are only a part of the compensation "package" to attract and retain good employees. Although wages are important, studies indicate that working conditions, opportunities for advancement, and other benefits also are very important to employees. When "selling" your farm management opportunity to potential

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candidates, what other fringe benefits does your farm offer? Do you offer housing, meals, the opportunity to gain equity in the farm business, health insurance, paid leave, educational opportunities, retirement savings, or opportunities for advancement? The dollar value of fringe benefits can add 30-80% to the overall level of compensation. Any of these non-wage benefits can increase the attractiveness of your position relative to other jobs. Because different workers have different needs, consider offering employees options for benefits. An example could be a payment that could go

towards retirement savings, childcare, or an education benefit, depending on the preference of the employee.

Finally, you need to make sure that you are offering a package of wages and benefits than you can afford to maintain. Employees will be happier if you increase their compensation but will be disproportionately unhappy if you reduce a benefit. Even if at the end you are still offering a generous salary and benefits, employees will tend to focus on what was taken away.

## **“Something Went Wrong in my Orchard and I Lost a Year”- What are the Financial Consequences of that Lost Year?**

*Dan Donahue & Liz Higgins, ENYCHP*

For those of you who attended the Premier Apple Conference last week in Syracuse – one clear message is that the pressure on growers to change their orchards into more profitable apple varieties will only intensify in the future. Increasingly apple growers will aim for a significant commercial crop in year three, and full bearing by year six. We are ready to declare victory if the orchard has a productive life of 15-20 years. Why so short? Because consumer tastes and expectations are changing at an increasing rate, with new varieties are being introduced rapidly, the chances of making a variety choice that will be a consistent winner over the next 30+ years is pretty slim.

When you move from a traditional 30+ year orchard to an orchard with a 15-year (or less) life expectancy, the financial impact of “lost years” becomes higher, and more financially significant. Rather than amortizing the costs of establishment over a 30-year return period, tall spindle growers, or other high density orchards now only have 15-20 years of revenue to recoup their, not insignificant, costs of establishment. So, how can we lose a year? Any number of ways, some catastrophic, others more subtle, they include, but are not limited to:

- Planting a poor quality nursery tree
- Crop loss to a hail, frost or freeze event
- Development of a biennial bearing habit
- Slow and inadequate canopy development due to early cropping, weed competition, poor fertility practices, delayed trellis installation, and/or a lack of appropriate tree training.
- Tree loss to fire blight, or more generally to apple tree decline.

Some losses are limited to a single season and are factors outside the control of growers, such as frost damage and hail. Others are more chronic, and negatively affect financial returns over multiple years, such as planting poor quality trees, an unresolved biennial bearing habit, or poor horticultural practices.

For the purpose of remaining focused and to the point, let’s take a look at the following circumstances:

1. Winter injury to new nursery trees, resulting in delayed growth and reduction in productivity.
2. Development of a biennial bearing habit for 5 years due to poor crop load management in year 8.

Using the spreadsheet financial model developed some years ago by Alison DeMarree that strives to identify the potential for financial success of a planting system based on a net present value analysis over a 20-year productive life. By modifying variables such as the annual yield curve and the price of trees, it is possible to compare the different loss scenarios above to put these loss scenarios in financial perspective. Actual amounts will vary depending on the interest rate selected and actual prices and costs. The numbers are intended to demonstrate the magnitude of impact that yield losses can have in an orchard.

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	<b>Scenario 1</b>	<b>Scenario 2</b>	<b>Scenario 3</b>
	20-year orchard, optimal management	Winter damaged nursery stock, 1 year delay (no yields until year 4)	Bi-annual fruit pattern years 9-13
First year of positive returns on investment	6 <sup>th</sup> year	9 <sup>th</sup> year	7 <sup>th</sup> year
Cumulative Net Present Value	\$88,866	\$64,600	\$69,935
Percent of 20-year return	100%	73%	79%

**Scenario 1:** The benchmark – a 20-year orchard at full productivity, based on \$300 per 20 bu. bin orchard run returns, a 5% discount rate, and a mature yield of 1,210 bu./acre.

**Scenario 2:** A 20-year orchard where damaged saplings come from the nursery and the farm’s returns are delayed by a year because the orchard is a year behind while the trees recover.

**Scenario 3:** Yield losses due to a biennial pattern in the orchard, all else is the same with the benchmark. In the 8<sup>th</sup> year there is a problem with thinning and fruit load and the orchard block goes to a biannual pattern in years 9-13 with 80% yields in year 9, 90% yields in year 10 (due to small fruit), .72 percent yields in year 10, 90% yields in year 11 due to aggressive thinning, 80% in year 12 and 90% in year 13 due to aggressive thinning. In year 14 the orchard is stabilized. An orchard is considered to be in a biannual pattern when the yields vary by more than 20% from the 5-year average.

**The Bottom Line**

We all can agree that planting a modern high-density apple orchard is a risky business, but with risk comes the potential for reward. The objective of this brief newsletter article is to bring your attention to the magnitude of how just two of these risks can impact the profitability of an orchard. There are many scenario’s that could be modeled in this fashion, with the resulting article achieving the length of a book chapter. For example, Honeycrisp may return more than our \$300/20 bu. bin estimate, but yields would likely be less than the 1,210 bu./acre we used in the analysis. Let’s discuss the results of our focused analysis:

**Scenario 1:** Everything has been done right, orchard run returns are good, per acre mature yield is strong, the yield curve builds quickly in the early years, and no crop losses are suffered. This orchard will generate \$88,886 profit over 20 years in current, “real” dollars, an excellent, and achievable result.

**Scenario 2:** The trees arrived damaged, and require severe heading into healthy wood. Effectively the tree needs to be re-grown, and a year is lost. All other capital inputs, such as the trellis, are made on time and according to plan. After this calamity, the next 19 years go well. Even so, the grower has given up \$24,266 in profit (current dollars) over the life of the planting. The orchard investment was still profitable, just 73% as profitable as it could have been if healthy trees were originally planted.

**Scenario 3:** Even a moderate case of biennial bearing hurts financially. Our modest assumptions, that the grower manages to correct after five years, still results in a lost profits of \$18,931 per acre in current dollars, a 21% reduction over the life of the orchard.

In conclusion, the lost profit potential from our two calamities are real, and significant. Growers should be aware of the “cost” of planting trees that are of substandard quality adds up over time, as does accepting a biennial bearing habit in mature orchards.

## Introducing Jim Meyers as the new Viticulture Specialist with the Eastern NY Commercial Horticulture Program



Jim has been working with wine grapes for 10 years, first as a Viticulture Ph.D. student at Cornell then as a Research Associate. Prior to coming to Cornell, Jim studied Chemistry and Biology (B.S. West Chester University of Pennsylvania), Computer Science (M.S. Brown University), and had a successful career as software technology entrepreneur. This background is reflected in his viticultural research which has focused on computational tools for mapping canopy and vineyard variability, quantifying relationships between variability and fruit chemistry, and optimizing efficiency of vineyard operations. As an Extension Associate,

Jim will continue some of these research activities while also looking for new projects that provide targeted benefits to appellations in Eastern New York. Jim will kick off his new appointment by visiting growers at their vineyards to gather first hand knowledge of the sites and to discuss vineyard operations, goals, and challenges. Building a complete catalog of vineyards in a territory that runs 300 miles along the Route 9 corridor may take a little while, but Jim feels that the effort will lay a solid foundation for future program activities while also clearly differentiating the needs of each appellation.



## Upcoming Events

### Ag Business Tuesdays this Summer – free farm business technical assistance.

Are you a farmer in Eastern New York with a question about the management side of your farm business? The Cornell Cooperative Extension Eastern NY Commercial Hort Team, in collaboration with CCE County offices, is offering free farm business technical assistance appointments this summer on Tuesdays at various locations in our service region. The first session will be on Tuesday, May 16 from 9:00am-5:00pm at CCE Dutchess County. If you can't physically come to the office, we can also schedule an appointment by phone or a video conference.

Topics for consultations can include: labor regulations and management, risk management (insurance and best practices), land use regulations and zoning, other food-regulations (labels, processing), personal finance and farm transition planning, tax and other grant and incentive programs, bookkeeping and recordkeeping, pricing products and market channel assessment, contract terms and negotiation, and loan programs and financing decisions. At your appointment we can either help to answer your questions or help direct you to the right resources.

### Planned locations for July 2017

- July 11 CCE Clinton County, Plattsburg NY
- July 25 CCE Warren County, Warrensburg NY

Appointments are in 1.5-hour increments starting at 9:00 am. In some cases, early morning or early evening appointments may be available. Pre-registration in advance is required - we cannot accommodate walk-ins. To register go to: <http://bit.ly/2oyaGpM> or call (518) 949-3722 and leave your name, preferred date and preferred time and the best way to reach you. Liz will also be doing farm visits in the counties on the following Wednesday. If you would like a farm visit, contact her directly at [emh56@cornell.edu](mailto:emh56@cornell.edu).