



## Fireblight Carryover

Posted by [Robbie Anderman](#)  
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[Robbie Anderman](#)  
[Fireblight Carryover](#)

October 01, 2016 05:34AM

Registered: 10 years ago  
Posts: 56

It's been quite the summer of dealing with fireblight. I'll write more about this soon.... After finishing with harvesting, etc

The question now is: with rampant fireblight in the neighbourhood on apples and pears... especially recurring on pears, even now, we are wondering whether trees that show no sign at all of infection might still be carrying contagion... namely, I'm talking of small nursery trees that have been grafted. Maybe 20 of them. Maybe three got fireblight signs, and were destroyed. The ones that remain look fine.

However, these were grown and grafted for a "customer" with her heritage scion wood. They look healthy, yet it's getting near time to send them to her.... Is it safe to do so?

Might the Edwinia have settled in and still be showing no signs of its presence.. yet might reveal itself next year in its new home?

If so, is there any way to prevent it from growing? Or actually eradicate it completely?  
These are maybe 3 feet tall.

thank you,  
Robbie

[Morninglory Farm](#)  
Zone 3b\* in Ontario

Edited 1 time(s). Last edit at 10/05/2016 01:15AM by Michael Phillips.

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[Michael Phillips](#)

[Re: Fireblight Carryover](#)

October 05, 2016 12:23PM

**Moderator**  
Registered: 11 years ago  
Posts: 621

There's a powerful saying in the microbial world: *Everything is everywhere.*

It's not about the "presence" of fire blight, Robbie, but rather the opportunity for this bacterial disease to take off.

I doubt your grafted trees are infected on the vascular level if you've seen no signs of shoot dieback.

Which doesn't mean the disease potential is not on the surface of those trees . . . or the surface of other trees where those trees will go. Or perhaps even on you!

Too many growers do not understand the disease paradigm, frankly. It's not about medications to deal with the vector but rather system health to make the vector improbable. Don't allow the "stressed niche" (by means of an approach known as holistic orcharding) and the "everything everywhere" more often than not cannot take hold. Fire blight bacteria do not like a crowd thus the underlying strategy here will always be competitive colonization of blossom surfaces and the like.

Lost Nation Orchard  
Zone 4b in New Hampshire

[Lost Nation Orchard](#)  
Zone 4b in New Hampshire

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[Robbie Anderman](#)

[Re: Fireblight Carryover](#)

October 06, 2016 04:26AM

Registered: 10 years ago  
Posts: 56

Thank you for your very philosophical response... and very helpful response. It's been quite the challenging year. I got a late start with pruning.... then kept it up while putting in the big garden... then amidst the gardening noticed fire blight among the blossoms... so on to pruning again... and then more pruning.... which kept up until September.. and there's still a few branches showing recurrence.

I will have to report on which pear trees are actually resistant... and which are not.... Gold Spice is certainly the most resistant, with Ure not far behind... depending on which other tree it is next to and how susceptible it is... John pear was not as resistant as expected. Kikusui Asian pear was hit

hard. Tait had a mild case. South worth and Patten both took a hit, tho' not too bad. Eenie and Meenie (from ottawa) got decimated, as did two of their relatives.

I feel we got side tracked with spraying white vinegar... and then tamarack tea (as an antibiotic spray)... too late for that. Better would have been raw milk.. tho' we didn't have a source at the time.

We didn't want to summer prune and thus open more cuts into the vascular system... so the trees sure look weird with all the sucker growth and the ugly cut stumps. And to make it even more weird, the porcupines invaded again and kept taking down more branches... for the unripe fruit and recently for the leaves themselves. I hear they make a good pie.

And I really feel we need to get some cash to buy a bigger easier sprayer... the one on my back is tiring and can't reach the heights that pears can reach to..... Which would be the only way we can really take a holistic orchard approach it would seem.

The whole thing has been a shock after nearly thirty years of no fireblight.

And it threw my summer into tumult... putting me way behind in most commitments. Plus we mostly left the wild apple trees (which we've been pruning and grafting onto) to their fate... and most seemed to recover without any pruning. the blight stopped at a certain point and did not continue, like it did on the pears. A local friend with an orchard of 20+ trees who has been tending it for over 40 years, said he gets blight occasionally and just leaves it alone... that it takes out a few branches which he cuts off in winter... and then nothing for years... so he doesn't worry about it. Too many other things to deal with on a mixed farm. So I've relaxed about the apples any way.

Added to that is the absence of so many pears... and thus absence of much income.

So there's a bit of a contribution to this "bloody forum" for tonight. I hope it's not really bloody. Lots of sap floating around. And a good bit of pear and apple juice.... much of which will soon go into mason canning jars, "because we can" (and someday we'll find a better way to preserve it... and/or get a cider license.

I greatly appreciate you being there, Michael. I thank you while I'm climbing trees, pruning, picking, etc... and imagine you and all the forum people out there with me, out in your orchards relating intimately with your tree friends. Balancing on branches and ladders. Reaching for the good ones!.... while balancing on one foot, with the other balancing off to the other side... or some such similar motion/stance. A rare breed indeed. Thank you!!!!

[Morninglory Farm](#)

Zone 3b\* in Ontario

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[Brittany Kordick](#)

[Re: Fireblight Carryover](#)

January 29, 2022 01:22AM

Registered: 4 years ago

Posts: 209

I just stumbled upon an eye-opening article regarding the lifecycle of *Erwinia amylovora*. Long story short: we're going to be growing a patch of heirloom tobacco this year as an interesting attraction in our historically tobacco-centric region, and I'm always thinking of new and exciting ways to intercrop under apple trees . . . so I thought, why not shade-grown tobacco under apple trees? I assumed tobacco might serve as a repellent for some pests, but actually, quite the contrary, it's looking like it may be a pest magnet (to some extent, also dispensing with pests when they literally die of nicotine poisoning), although what might overlap between apples and tobacco besides aphids is still something to hope for. Tobacco does have some interesting relations with beneficials: when attacked by certain pests, tobacco plants will release VOCs that attract pest predators; also, the sticky parts of the leaves trap small insects such as fruit flies, and these under-leaf buffets in turn attract plenty of beneficials, such as lacewings, that could directly benefit the apple orchard. Too much to hope that tobacco would overlap with and serve as a trap crop for curculio, I guess.

Anyway, long story actually, um, long, as I research this and absolutely plant a trial patch of dwarf tobacco under some apple trees this summer, I may file this under some devoted thread, but of course, I also looked into potential overlapping diseases between apples and tobacco (tobacco mosaic virus could be transmitted to apple trees), and stumbled upon this fairly recent (from 2017) article in Plant Pathology that looked at whether or not *E. amylovora* actually can survive on dead leaves over the winter, to serve as an infection reservoir come spring. The article is '*Necrotrophic behavior of Erwinia amylovora in apple and tobacco leaf tissue*' [[bspjournals.onlinelibrary.wiley.com](https://onlinelibrary.wiley.com/doi/10.1111/ppa.12444)]

The tobacco angle was, the researchers happened to infect tobacco, a non-host for fireblight, with *E. amylovora*, as well, since it provoked a hypersensitive response in the leaf tissue. So of course, we all know to cut out dead and diseased-looking wood that may contain cankers during dormant pruning. But, while we certainly do our best to break down dead, fallen leaves for plenty of other disease reasons, I was not aware that *E. amylovora* was a potential concern there, as well. The life cycle of this pathogen is so much more complicated than the fly-by articles rattling on about shepherd's crooks and hot, wet conditions make it out to be! We learned a lot in this direction last year as we struggled to come up with the most ideal times to apply Agriphage in order to effect *E. amylovora* mortality.

[Kordick Family Farm](#)

Westfield, NC

Zone 7a

Edited 1 time(s). Last edit at 02/05/2022 01:18AM by Brittany Kordick.

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[Brittany Kordick](#)

[Re: Fireblight Carryover](#)

June 22, 2023 08:28PM

Registered: 4 years ago

Posts: 209

Some crucial puzzle pieces regarding the life cycle of *Erwinia amylovora*, the pathogen responsible for fireblight, are laid out in Dr Srdjan Acimovic's research of late season canker development. We found this to be very, very important, sometimes counterintuitive, stuff that will influence how we think about fireblight going forward. The first article was published back in 2014 and deals with natural infection research on apples in Serbia, tracking canker development post shoot-blight infection and offering insight into how *E. amylovora* bacteria spend their summer, fall, and winter. The second article is from follow-up research involving apples, pears, and Asian pears planted at Cornell's Hudson Valley Research Lab, and was published in 2022. It builds on the earlier research to look at the ideal situations and conditions for late season canker development. And yes, you read that second title correctly: fireblight resistance in cultivars has actually been shown to increase the winter survival of the pathogen . . . Highly recommended reads for anyone struggling to understand the *E. amylovora* life cycle or wondering to cut or not to cut.

*High magnitude of fire blight symptom development and canker formation from July onwards on two apple cultivars under severe natural infections* [[www.researchgate.net](http://www.researchgate.net)]

*Fire blight resistance, irrigation and conducive wet weather improve *Erwinia amylovora* winter survival in cankers* [[www.frontiersin.org](http://www.frontiersin.org)]

[Kordick Family Farm](#)

Westfield, NC

Zone 7a

Edited 7 time(s). Last edit at 06/22/2023 09:00PM by Brittany Kordick.

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[Mike Biltonen](#)

[Re: Fireblight Carryover](#)

June 22, 2023 08:46PM

Registered: 10 years ago

Posts: 298

Brittany, thanks for keeping on about this critical issue - fireblight. I'll read over the links and have some thoughts later perhaps. It was a sad day when Srdjan left Cornell for Virginia Tech - sad for us, awesome for you. He always helped (helps) me better understand what is going on in the orchard - pathologically speaking. As did his predecessor Dave Rosenberger. Anyway, more to come from me on this after I read everything. Thanks again!!

[Mike Biltonen, Know Your Roots](#)

Zone 5b in New York

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[Brittany Kordick](#)

[Re: Fireblight Carryover](#)

June 22, 2023 08:55PM

Registered: 4 years ago

Posts: 209

No kidding! I am sorry I didn't fully appreciate Dr. Acimovic until recently, when I began corresponding with him and poring over his past and present research. He is a very unconventional guy and his publications are very easy to follow, thorough and practical in nature. He constantly hammers home the dangers of resistance, which is refreshing. I've only posted a few of these papers on HON, but comprehensive lists are available at the Acimovic Lab website for VA Tech at [[treefruitpathology.spes.vt.edu](http://treefruitpathology.spes.vt.edu)]. For anyone interested, there are two extensive lists of articles, one under the heading "Publications" and another under the heading "Resources," then subheading "Extension Publications." Many, if not most, are available for free download. Lots of great fireblight, apple scab, and trunk injection stuff from over the years, but also plenty of recent work with *Marssonina* and *Colletotrichum* (Glomerella and Bitter Rot).

[Kordick Family Farm](#)

Westfield, NC

Zone 7a

Edited 2 time(s). Last edit at 06/22/2023 08:57PM by Brittany Kordick.

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[Carol Gudz](#)

[Re: Fireblight Carryover](#)

June 29, 2023 04:39AM

Registered: 1 year ago

Posts: 20

Interesting that fireblight resistance increases winter survival of pathogen - I could get into trouble and make a connection to a vaccine that does not provide sterilizing immunity . . . this seems to suggest in my mind that 'resistance' perhaps amounts to an exercise regime for the pathogen, resulting ultimately in a pathogen doing what pathogens do - find a way to work around the resistance and being more robust in the end. Taking this further, perhaps the nature of the resistance would need to be sufficiently multi-faceted to defeat the very determined pathogens. In the world of natural pathogen destroyers, I have read that a multi-faceted resistance is key. Garlic is famed for its myriad compounds that act in various combinations such that it is most difficult for the bugs to find a work-around. It was a little disappointing to read that some cultivars generally considered as resistant were found not to be. My own experience with Asian pear cultivars has been consistent with this study. Maybe no big loss if resistance is not that helpful. I guess we either just choose plants that are either 'immune' or full on susceptible and cross our fingers?

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[Brittany Kordick](#)

[Re: Fireblight Carryover](#)

June 29, 2023 05:02AM

Registered: 4 years ago

Posts: 209

In the case of the higher survival rates of *Erwinia amylovora* in resistant apple varieties, it actually sounds like it's more a surprising case of physical consequences post-infection associated with fireblight resistance in trees, rather than *Erwinia* engineering a crafty workaround. Fireblight resistant varieties will still be less likely to develop infection, and when they do, the initial damage from infection is less likely to be severe, but ironically, the lack of damage can actually protect the bacteria from degradation due to cold winter temperatures, desiccation of tissue, etc., resulting in higher

overwintering counts of cankers that can serve as an inoculum source the following season. You can read the full article via the link provided in a previous post, but I've pulled out the below quote from it and underlined one section to give an idea of why the authors think they saw higher survival rates of *E. amylovora* in resistant apple varieties.

"As discussed above, once the pathogen cells are trapped within the necrosed bark tissues, exposure of starved *E. amylovora* cells to harsh environmental conditions such as dryness, heat, and cold temperatures from summer through winter quickly might decimate the pathogen populations. As a result, more *E. amylovora* cells would die in susceptible host cankers, leading to lower positive pathogen detection rates throughout October, January, and April. In contrast, *E. amylovora* cells in cankers on more resistant hosts reach lower cell concentrations, the tissue damage is less severe and progresses more slowly. These hosts thus maintain the bark structure and function for prolonged periods, which likely helps protect *E. amylovora* cells against challenging environmental conditions."

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Westfield, NC

Zone 7a

Edited 2 time(s). Last edit at 06/29/2023 05:06AM by Brittany Kordick.

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