



Trunk Injection

Posted by [Brittany Kordick](#)

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[Brittany Kordick](#)

[Trunk Injection](#)

June 07, 2023 11:19PM

Registered: 4 years ago

Posts: 211

Several years ago, when I began helping my mother with her young apple orchard, I knew nothing whatsoever about apple horticulture. Sometimes this was a good thing, since I would often ask questions or come up with ideas that were completely out of the box. After a particularly bad hail storm early on, we struggled with systemic fireblight in our orchard and I remember asking my mother if we could inject the trees with protectants for more systemic treatment than we could achieve by spraying. It was an "I wonder . . ." moment that I pretty much just left hanging.

But it's always been in the back of my mind as something that should be researched, and I was interested to see a brief mention in *Good Fruit Grower* magazine earlier this year indicating that companies are increasingly experimenting with injectable delivery of treatments. Then, at the Berkshire Roundtable meeting in March, Mike Biltonen shared his experience regarding administration of garlic oil (if I'm remembering correctly!) to a tree via injection. He said he had drilled a small hole and used, I believe, an oil can to dribble the oil in and allow the tree's xylem to "sip" it up. Awesome!

For various reasons, today I revisited the idea of injecting apple trees for protection against/treatment for fireblight. We primarily use AgriPhage for fireblight control in our orchard, and I am interested in investigating whether or not higher efficacy can be achieved via injection into tree tissue. I did an internet search regarding the different types of injection systems on the market, and Dr. Srdjan Acimovic's 2014 dissertation, *Disease Management in Apples using Trunk Injection Delivery of Plant Protective Compounds*, immediately came up in the search results. This is a fascinating study that looks at treating fireblight and scab in apple trees systemically via injection systems. He is experimenting with conventional chemicals, but the methodology is what interests me, as well as his stated goal of decreasing necessary applications, thus reducing future resistance. The dissertation can be found here: [\[www.researchgate.net\]](http://www.researchgate.net)

In this paper, Dr. Acimovic mentions his advisor at Michigan State University, Dr. John Wise. It appears that Dr. Wise has continued with research of injectables, with a particular interest in increasing the efficacy of biopesticides that are UV sensitive! Here is a brief article from *Good Fruit Grower* back in 2019 regarding his research of using injectables to better target pear psylla: [\[www.goodfruit.com\]](http://www.goodfruit.com)

Very cool stuff. If trunk injection can increase efficacy of materials, heighten persistence of materials, reduce drift, reduce applications, aid in systemic recovery, I'm all for it! Note, Dr. Acimovic mentions in the closing comments of his dissertation that potential for tree injury from injection must be factored in and further researched, and that injury can take months to show up post-injection. But in the 9 years since his dissertation was published, the further technological development he called for has happened, and it sounds like there are some injection systems now on the market that do not require drilling and are equipped with micro needles, and thus, should limit tree damage.

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Westfield, NC

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[Brittany Kordick](#)

[Re: Trunk Injection](#)

June 17, 2023 10:12PM

Registered: 4 years ago

Posts: 211

I have been corresponding with Dr. Acimovic and Dr. Wise regarding tree injection and have accumulated enough material and experience to write up another substantial entry on the subject, but in the meantime, wanted to at least post that there is at least one OMRI listed material that is currently approved for tree injection! It is called Azasol and is an azadirachtin based product. The label for Azasol has a wealth of information related to injection of that product and can provide an overall picture of considerations and rates involved with injection. Azasol is manufactured by Arborjet, also producer of various tree injection systems. While tree injection has been slow to catch on, perhaps a company like Arborjet, with a vested interest in the approval of more and various materials for injection, will help drive the lobbying of regulatory agencies towards acceptance of tree injection as cultural practice.

I am currently experimenting with ChemJet injectors and highly recommend them as a readily available, low cost, simple introductory

system. Looking forward to upgrading to a needle-based system in the future that allows for efficiency of delivery of more highly diluted solutions (which enhances rapid and uniform movement within the tree's vascular system), as well as the possibility of injecting smaller diameter trees, even whips.

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[Brittany Kordick](#)

[Re: Trunk Injection](#)

July 16, 2023 09:36PM

Registered: 4 years ago

Posts: 211

After a recent necrotia flare-up in our orchard that served to make us visibly aware of the extensive necrotia cankers in many of our trees, we were researching treatment options and wondered if there was anything injectable that might be particularly well-suited to combating existing necrotia cankers. We focused on thyme oil as a possibility, but weren't sure we liked the idea of injecting an oil into a tree's xylem. Further research uncovered a fairly recent article from 2021, *Biopesticide Trunk Injection into Apple Trees: A Proof of Concept for the Systemic Movement of Mint and Cinnamon Essential Oils*, from Belgian researchers. You can find the article here:

[\[www.ncbi.nlm.nih.gov\]](http://www.ncbi.nlm.nih.gov)

Also, it's come to our attention that at least one other OMRI-listed injectable is on the market, and coincidentally, it is a phage formulation, which is exciting for us. The product is called XylPhi-PD and was developed to treat Pierce's Disease in grapes. *Control of Pierce's Disease by Phage* was published in 2015 and one of the co-authors, Carlos Gonzalez of Texas A&M University, did the developmental research behind XylPhi-PD. Within the discussion, the authors state that "To our knowledge, this is the first report of distribution, persistence and multiplication of phages in a plant vascular system." Here is a link to the article: [\[www.semanticscholar.org\]](http://www.semanticscholar.org)

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