



Herbal Antibiotics

Posted by [Nathaniel Bouman](#)
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[Nathaniel Bouman](#)
[Herbal Antibiotics](#)

February 24, 2017 08:36PM

Registered: 9 years ago
Posts: 81

I originally posted this in another thread but it was suggested to me that it should probably be it's own topic so here it goes:

I just read this [article](#) written by two scientists studying the effect of essential oils made from various types of herbs, including oregano and thyme, on fire blight bacteria. The results look impressive. I'm going to start my own trials.

However, this brings up a concern. Using oils of herbs or hops as, essentially, a broad spectrum antibiotic seems quite counter to the [competitive colonization approach](#). I want to favor competitive colonization. Is there a sensible way to integrate the effect of herbs/hops with this approach?

Nat Bouman
Growing cider varieties in Zone 5b
On B.118 at 18X24
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Edited 1 time(s). Last edit at 02/24/2017 08:43PM by Nathaniel Bouman.

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[Michael Phillips](#)
[Re: Herbal Antibiotics](#)

February 25, 2017 04:05PM

Moderator

Registered: 11 years ago
Posts: 621

Fire blight has different entry mechanisms, from the open blossom to wind-whipped shoots to hail-torn bark. I think the antibiotic approach applies primarily to the flowers . . . so let's think about that time. King bloom opens followed by secondary bloom followed by tertiary bloom. Nor is it any where near this simple as all the blossom clusters throughout the tree are basically continuously opening over the course of several days to a week or more. Nevertheless, a given blossom last how long? A few days at best before fertilization potential is gone? And does shutting of the "ovule gate" change the odds for *Erwinia* bacterium to get in? The opportunity in turn needs to coincide with warm temperatures and moist conditions. The timing of an antibiotic spray cues to conditions being right, and typically is considered a 24-hour treatment. Which makes sense as more blossoms are opening quickly at these kind of temperatures, and those virgin surfaces require either essential oil protection or friendly microbes being put in place should the very next day continue to be ripe for fire blight to strike. The alternate scenario would spread things out, with cooler temps between infection events, and thus a more reasonable pace to needing to expand coverage.

Either approach strikes me as useful here. Cost will probably be the determining factor as herbal essential oils are not inexpensive. There's also the fact that the word "antibiotic" implies effectiveness against bacteria, and essential oils may indeed have that kind of impact on lactobacilli and other benign bacteria . . . but not necessarily yeasts. Both ideas may have a role, depending on the scenario. And if older blooms are still susceptible, does the mechanism underlying essential oil coverage carry forward? Microbes definitely do. Regardless, eventually the bloom period ends and then the surest bet is competitive colonization. The difference lies in all surfaces being in play once there's no longer virgin territory to exploit.

[Lost Nation Orchard](#)

Zone 4b in New Hampshire

Edited 2 time(s). Last edit at 02/28/2017 02:53PM by Michael Phillips.

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[Nathaniel Bouman](#)
[Re: Herbal Antibiotics](#)

February 27, 2017 09:19PM

Registered: 9 years ago
Posts: 81

My cursory look into the research on mint family herbs and non-bacterial life indicates that essential oils of these herbs would knock back yeasts as well. Thyme is used as a treatment to kill candida yeast in humans.

Common sense just tells me that combining a spray which kills microbial life indiscriminately (even if it's herbal) with an effort to colonize with competitive microorganisms doesn't make a whole lot of sense.

If one has a nasty gut infection a gastroenterologist might treat it by prescribing a course of antibiotics--knocking back the offending organism as well as all the beneficial organisms in the human gut. So, the infection is treated but the gut is now much more vulnerable as the beneficials are lower in number. In come the probiotics to try to help restore the gut microflora before a nasty gets into the empty house.

So, if I had a blight infection the prior season would it make sense to "drop the piano" on the microbiome prebloom and then quickly try to repopulate with effective microbes and keep up that treatment through bloom as virgin tissue is exposed? So, utilize essential oils instead of copper. I

understand the "[everything is everywhere](#)" issue but perhaps an orchard that had a blight infection the prior season has a lot more blight bacteria waiting to wreak havoc than an orchard that is relatively untouched. In this case, perhaps it makes sense to knock everything back and then introduce a huge dose of EM to try to tilt the balance back to something healthier?

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Edited 2 time(s). Last edit at 02/27/2017 09:47PM by Nathaniel Bouman.

[Reply](#) [Quote](#)

[Michael Phillips](#)

[Re: Herbal Antibiotics](#)

February 28, 2017 03:29PM

Moderator

Registered: 11 years ago

Posts: 621

Say an herbal essential oil completely protects exposed blossoms for 24 hours beyond application. A couple of assumptions there but let's proceed. Flowers open, fire blight conditions are right, bacteria are on the move . . . and all that find their way into the vascular opening of each flower are dealt with externally by the antibiotic effect of the essential oil. The oil constituents in all likelihood induce a systemic response in tree tissues as well but this alone is usually not sufficient against opportunist pathogens. That scenario is what I was describing above for the moment when infection takes place.

Extending this conversation forward to earlier in the season is another matter. *Erwinia amylovora* bacteria overwinter on canker edges and then disseminate throughout the orchard, possibly in late fall in warmer zones, definitely in early spring everywhere. No infection is taking place at this time, just troops on the move, getting in position in bud scales and bark crevices. A blast of copper around green tip makes all such staging locations less hospitable. Using herbal essential oils at this point may have impact and may not . . . because these bacterium may be in a dormant phase and far more protected by a lipid coating or such. (I've not read about this anywhere so know this is an extrapolation of what's true for overwintering fungal pathogens like scab conidia or peach leaf curl.) Certainly try it, Nathaniel. Other growers employ vinegar or hydrogen peroxide sprays to "clean the slate" in early spring before employing biology. What I call the "fatty acid knockdown" is a holistic riff on this thinking. All such approaches key to if conditions getting out of hand the previous season.

Otherwise competitive colonization is where it's at once the season is underway. Leastways, that's what I experience here. Quite a thing to visualize all these nuances and then grasp how we humans can shift prospects and support natural systems. Nor should anyone take what I just said as gospel: poke holes, offer up what ifs, explore you own intuitions. This sort of conversation is exactly what I hoped for when we set up this forum!

[Lost Nation Orchard](#)

Zone 4b in New Hampshire

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