



cedar apple rust trials

Posted by [Michael Phillips](#)

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[Michael Phillips](#)

[cedar apple rust trials](#)

June 06, 2015 05:55PM

Moderator

Registered: 11 years ago

Posts: 621

The research committee has put together a protocol for making comparison trials of holistic and conventional organic methods for curtailing this problematic disease. Go to the Library to read the newly-posted [Cedar Apple Rust Protocol](#). Aye, a little late for this year but good things to think about for your own trials come 2016 and beyond.

Meanwhile, out in Iowa, Maury Wills of [Wills Family Orchard](#) has jumped right in. I've been working with Kathleen Delate of Iowa State University along with Maury to implement an initial round of trials. Here the goal is to compare "product holistic" with "alkaline w/holistic" with an Iowa extension version of "conventional organic" where micronized sulfur and liquid copper are alternated weekly. (See that protocol to better define what each of these entails.) Maury got a late start in obtaining some of the spray materials but has been up to speed since petal fall. It's going to be most interesting to see what effect the separate bicarb treatments have in the holistic approach ... despite the deliberate depletion of competitive colonization in the face of actively germinating rust spores. The varieties being subject to this array of treatments are Crimson Crisp on M.7 and Winekist on Bud.9.

[Lost Nation Orchard](#)

Zone 4b in New Hampshire

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[Mike Biltonen](#)

[Re: cedar apple rust trials](#)

May 04, 2016 07:32PM

Registered: 10 years ago

Posts: 298

We're getting to that time of year again...in some places we are already there: Cedar Apple Rust control. Is there any news from last year's trials? Changes to this year's approach? Maybe even a protocol. But mostly looking for data - and hopefully I haven't missed it elsewhere.

[Mike Biltonen, Know Your Roots](#)

Zone 5b in New York

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[Michael Phillips](#)

[Re: cedar apple rust trials](#)

May 08, 2016 02:54PM

Moderator

Registered: 11 years ago

Posts: 621

Ducks weren't in a row last season in Iowa. Products were purchased late and the requirements of different treatments weren't fully recognized. The one takeaway was not to bother with conventional organic in the trials to be done this season. (I wish Maury participated in this forum to tell you why himself.) Excitement currently points to Regalia in conjunction with Stylet oil. Recently I saw in [Dave Rosenberger's blog concerning rust](#) (via the Scaffolds link) however that this combo works best when applied to germinating spores . . . much like potassium bicarbonate. This short window seems to be a problem in terms of application timing given that you need to be out there 6 to 8 hours after a significant wetting event begins. This observation about Regalia doesn't make sense to me in thinking about immune mechanisms but that's why we do trials.

[Lost Nation Orchard](#)

Zone 4b in New Hampshire

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

[Russ Martin](#)

[Re: cedar apple rust trials](#)

March 02, 2018 06:43AM

Registered: 8 years ago

Posts: 19

I just read Michael's encouragement to join in any and all discussions.

I am completing house remodeling. My wife decided to line our closet with aromatic cedar boards- yes red cedar boards. So I read up on cedar boards and closets. I discovered red cedar oil in bottles which can be applied to older cedar boards to rejuvenate the cedar smell. Red Cedar oil is naturally insecticidal and fungicidal according to my research. Red Cedar boards and oil got me thinking about cedar apple rust (CAR) and why organisms might need to complete it's life cycle on two totally different plants. More than likely one stage is inhibited by red cedar oils. So what if we spray cedar oil like we do Neem Oil during prime CAR infection times? It might inhibit fungus development or maybe just fool spores into thinking they landed on cedar trees rather than apple trees.

Has anybody ever tried this? Has a university trial been done that anybody knows about?

I understand bottled red cedar oil is probably not organic, but bottled oil is available. If it were to work, I could see finely chopping red cedar boughs into buckets and making tea with hot water as a way to organically extract oils. Just a thought.

Also, I was looking up cider apple varieties more susceptible to CAR and not having much luck with putting a list together. Any help here would be appreciated. Cortland is one variety I see CAR on in my orchard, but I have not had many CAR problems.

All input welcome.

Thanks,

Russ Martin
Zone 4b Extreme west Central Wisconsin Hager City, WI

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

[Michael Phillips](#)

[Re: cedar apple rust trials](#)

March 03, 2018 03:45PM

Moderator

Registered: 11 years ago

Posts: 621

Good on ya, Russ! That's an interesting angle to consider, a pathogen utilizing dual hosts because during a certain phase of its development the one host (cedar) can overcome its mechanisms. I would be willing to try cedar oil if I lived in the "rust belt." I've long mentioned in my classes that a fermented tea of cedar needles may have value with CAR, this with respect to terpenoid content and thus stimulating immune function in the apple tree. This tends toward homeopathy and is very much untried ground. Obtaining resins and essential oils from plant material typically requires a menstruum with high alcohol content so its unlikely that a water extraction would work. Cedar oil is used commonly as a tick and flea repellent, and I see the word *fungicide* in product descriptions. Marijuana growers use it to treat for powdery mildew. Figuring out the dilution rate will help determine how cost-effective this might be.

[Lost Nation Orchard](#)

Zone 4b in New Hampshire

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[Russ Martin](#)

[Re: cedar apple rust trials](#)

March 06, 2018 06:36AM

Registered: 8 years ago

Posts: 19

Hello All,

So let's put our heads together and talk about levels. We know too much oil in sprays tends to burn leaves. Neem oil is usually applied at 0.5% level when applying to trees in leaf. Dormant oil sprays can burn green leaf material. But some lighter summer oils can be applied safely. Has anyone sprayed these and at what rate? Does anyone spray Karanja oil? What is recommended inclusion for leafed trees? What other oils are sprayed? What levels? From this we should be able to deduce a safe starting level for red cedar oil research trial.

Here is a nice Cedar Apple Rust (CAR) guide from the University of Minnesota:

[\[www.extension.umn.edu\]](http://www.extension.umn.edu)

From this guide it looks like there are really up to four similar looking CAR type culprits.

Anybody else live in the rust belt? What varieties do you grow that are CAR sensitive? Even if you have one variety or one answer, please share with us.

Cortland is one variety I have which I have seen yellow CAR lesions.

Thanks,

Russ Martin
Zone 4b Extreme west Central Wisconsin Hager City, WI

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

[Fabio Chizzola](#)

[Re: cedar apple rust trials](#)

March 06, 2018 07:04AM

Registered: 11 years ago

Posts: 35

Unfortunately, I have a FOREST of cedar trees all around my orchard. I proposed to 1 of my 3 neighbors to have me cut his trees if he ever wanted to and he accepted! Yes!

But I still have lots of cedar trees around my orchard and I grow apple varieties like Goldrush, Crimson Topaz, Idareds, Zestar, to name few that are highly sensitive.

The one try that seemed to work was Regalia with Stylet oil, but the problem for me, wasn't the timing after the wetting period, but more the thinning factor with Regalia. Last year was a very wet spring and it seemed it would never stop raining and having a potential fantastic crop (which we had!!), after a disaster year, we decided to stop spraying regalia+oil, to avoid to thin too much, but rain didn't stop, so we got kind of hammered with CAR.

I really like this idea of brewing a tea of cedar needles.....Question: should this tea be separate from the tea we make with Comfrey, Garlic

scapes and Horsetail? I guess yes because of different timing?

We are certified organic and we have been able to fend off Scab pretty successfully, but CAR is giving us a hell of a time. Let's talk more about this and come up with some ideas of trials before we start spraying for the season

[Westwind Orchard](#)

Zone 5b in New York

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[Mike Biltonen](#)

[Re: cedar apple rust trials](#)

March 06, 2018 05:05PM

Registered: 10 years ago

Posts: 298

This is a very interesting path to take with this thread - and some new intel that I think may lead us to some solutions. A while back I posed this email to Kerik Cox (Cornell):

To me, figuring out Cedar Apple Rust is the holy grail of organic pomological pathology. We've tried what is supposed to work, but with limited success. Here's what I know [or think I know]:

1. No red cedar trees = no CAR
2. Above 1100' = no red cedar trees = no CAR
3. Proximity [distance] to/from red cedar trees increases/decreases your trees' susceptibility to infection.
4. There is distinct varietal susceptibility.
5. Cool wet springs increase the potential for susceptibility to CAR and other diseases [e.g., marssonina leaf blotch].
6. Control is required as long as those nasty CAR galls are a clear and present danger, even though symptoms may not show up for weeks after infection.

I know the basic biological cycles of the disease, so, my initial questions are:

1. What is about the epidemiology of CAR that differs from other diseases that make it so much harder to control organically than say Apple Scab?
2. We know what drives varietal resistance in apple scab, but what drives it for CAR?
3. For anyone in the "red zone," have you tried any organic materials that really, truly work? I've tried Regalia and oil, but with limited success in high pressure areas.

I do plan to investigate these questions over the next few weeks, because this seems to be the big stumbling block for many organic growers.

In response, I received this:

CAR is a radically different fungus than apple scab. It's more related to a mushroom. It has the two hosts and unlike ascospores or conidia, spore stages of rusts can reach the wind currents and be carried 100s of miles. Ascomycete spores [apple scab] are 100 - 150 meters at best. So CAR can literally act like a cloud. We see it in the organic blocks here in Geneva and there are no cedars. The gave up on eradication attempts in the 60s for this reason. It's definitely worst when the hosts are next to each other. I also think routine mancozeb and DMIs kept it in check, which is why it's worse in organic.

For resistance to both is single and multigene resistance just like all plants, it's just that scab is more heavily studied, but even after 100 years, there is only one Rvi gene cloned thanks to work done in Europe. I've seen best resistance to CAR in Varieties from Europe where breeding for resistance is big component, but they don't even have the loci mapped. Here's it's taste color, and storage.

I've dig some trials with regalia too, but was not happy. I had best luck with Cueva & DN and microthiol & Badge X2 often. The level of control is nothing like a DMI + Manzate.

Of course, DMI and Manzates (EBDCs) are standard controls for CAR and not for organic. As far as the Regalia, apparently there is a new formulation that doesn't have the same thinning effects as the old formulation - both a good thing and a bad thing, since it may mean greater CAR control, but now we lose a thinner potentially. That said, Kerik doesn't think that Regalia works as well as the other above mentioned products. RE: fabio's question - is there any background on making a cedar leaf tea and/or using extracted oils for control of CAR? I think this a critical question to answer before running any trials. I do operate in the rust belt and have plenty of opportunities to try various recommendations.

Sorry I'll miss Stump Sprouts, but look forward to massive amounts of new intel!

[Mike Biltonen, Know Your Roots](#)

Zone 5b in New York

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[Michael Phillips](#)

[Re: cedar apple rust trials](#)

March 06, 2018 05:12PM

Moderator

Registered: 11 years ago

Posts: 621

FULL SPECULATION ALERT! Just to establish the parameters, eh?

Essential oils are entirely different than seed oils (like neem and karanja) so don't get locked in on the word "oil" as implying one and the same thing. There are spray products utilizing essential oils like rosemary and oregano. Sporan is one product name. I would look up on that label what percent active ingredient and dilute rate to get a handle of how to handle cedar essential oil.

A cedar needle tea could be separate from the other herbal brews. I would suggest doing that so as to learn further about extract effectiveness and be able to spray some trees but not all (of the same variety) and thus learn does this contribute to limiting CAR?

I do not understand the mechanism by which Regalia is a thinner, especially since having learned directly from the Marrone Bio-Innovations rep a couple months ago that the formulation has been changed. Someone should start a thread about that in the [Organic Thinning](#) category. Meanwhile, I recognize the correlation involved here if an *alcohol extract of knotweed* (which Regalia is) is indeed effective against CAR. Any CAR protocol should include this as part of a grower trial. I can see how a rainy season -- with limited photosynthesis -- would get complicated, Fabio, needing additional immune boosts while at the same time using a material that contributes to further thinning when grey skies are already boosting that effect.

[Lost Nation Orchard](#)

Zone 4b in New Hampshire

Edited 1 time(s). Last edit at 03/06/2018 05:23PM by Michael Phillips.

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[Mike Biltonen](#)

[Re: cedar apple rust trials](#)

March 06, 2018 06:16PM

Registered: 10 years ago

Posts: 298

Not to be confused with petroleum based or seed based oils, for sure, but they are still oils and at high enough rates can likely cause some damage. I have seen what I define as phytotoxic effects with higher rates of neem, applied with/without other products, higher than 1% after 1/4" green. Essential oils can be used homeopathically, but that doesn't mean that commercial essential oils are homeopathic or even that that is where they are the most effective. It is important to read the label for all products, not matter what level of perceived safety - to avoid damage from the "oil" but also make sure you're deriving some benefit from their use. ThymeGuard, the hot new essential oil product, is 23% thyme oil extract + 77% inert ingredients. Is 23% extract high enough to damage when applied at the wrong time or higher than recommended rates? probably, that's why we still need to be aware that oils are oils, even though they may be different from each other on a certain level. On another note, I was also recently reading about how Japanese beetles love feeding on roses, but also on white geranium [that attracts and kills them as they feed on the geranium if planted nearby]. It got me thinking about an oil extract of geranium that could be sprayed to deter and kill Japanese beetles [yes, I know this should be a new thread], but we don't know what concentration would work or even if anyone is making that much GO for use in orchards at a reasonable cost. Or even if it would work? It may just be a deterrent or it could kill them. Using geraniums as a companion plant seems a better first step. But still the whole use of seed oils and essential oils in orchards [differently than we may already be using them] is becoming more and more obvious to me. Which brings us back to CAR and cedar oil extract -> hopefully we'll be able to pull off some trials this year and see if it works. Michael: couldn't find Sporan anywhere after a quick Google search. Can you provide us with a link?

[Mike Biltonen, Know Your Roots](#)

Zone 5b in New York

[Reply Quote](#)

[Michael Phillips](#)

[Re: cedar apple rust trials](#)

March 06, 2018 07:33PM

Moderator

Registered: 11 years ago

Posts: 621

OMRI tells me a slew of essential oil products manufactured by KeyPlex are being registered: <https://www.omri.org/mfg/key>. Sources and actual labels would still need to be tracked down. I have friends in the herbal world who distill essential oils on the home scale, which requires an intense amount of plant material, but just so growers know there may be ways beyond expensive products.

Good exploration of oils in general, Mike. But even that ThymeGuard product isn't applied full strength, is it? (I know you know this; I'm making it clear for others.) The dilute rate needs to be figured in here as well to get at the actual remnant of the essential oil in spray solution. Only then can you compare with something like the neem foliage rate of 0.5% concentration when all is mixed and out the nozzle.

[Lost Nation Orchard](#)

Zone 4b in New Hampshire

[Reply Quote](#)

[Mike Biltonen](#)

[Re: cedar apple rust trials](#)

March 06, 2018 07:51PM

Registered: 10 years ago

Posts: 298

That's a good point. I was thinking more in terms of making a concentrate, but of course wouldn't want anyone to apply thymeguard or anything concentrate - always read the label. But in terms of making essential oils, and using TG as an example, you could start by mixing 3: 1 carrier to essential oil. In the case of TG, the carriers are water and citric acid (they don't specify in what proportions), though I

suspect the CA is just enough to acidify the entire mixture to a point to prevent alkaline hydrolysis, so its likely mostly water. Then you apply 1 qt/acre of TG applied in an appropriate amount of water (100 gal?) - but never concentrate. I am going to start another thread and see if I can't run down some of these burning questions.

[Mike Biltonen, Know Your Roots](#)

Zone 5b in New York

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

[Russ Martin](#)

[Re: cedar apple rust trials](#)

July 07, 2018 06:07AM

Registered: 8 years ago

Posts: 19

Well... I had to try cedar oil. I purchased product from Giles and Kendall called Cedar Oil through Home Depot. It is steam distilled from Juniperus virginiana- Eastern Red Cedar. Their website calls it "pure". I mixed it at 0.5% like Neem Oil and mixed it with dish washing soap prior to adding to water. We have had another wet spring and I noticed my Ashmeads Kernel with small yellow dots. There were 6-8 yellow dots per leaf. I sprayed Cedar Oil (0.5%) with dish soap emulsifier in water. Nothing else added. I was not sure if it would burn leaves off so I only sprayed one half of several trees. All trees are 2-3 leaf and 4' or less tall. Results. Leaves were not burned or even affected. Yellow dots did not increase in diameter on the sprayed side, while they seem bigger on the unsprayed side.

In one of my full holistic sprays (EM, Seaweed, Neem Oil, horsetail tea, chive tea, comfrey tea, etc) I substituted 1/2 Cedar Oil for 1/2 Neem (Rate of 4 ounces per 4 gallons, so 2 oz of Neem, 2 oz of Cedar Oil.). I saw no ill effects to any apple varieties. I think CAR has been stymied. This was not exactly proper scientific method. However, I believe I saw a positive effect to Cedar Oil. I will continue to spray Cedar Oil, probably alternating neem and Cedar every other spray at least through July. I will continue testing. I will also try it as a preventative next year.

Varieties in my orchard that are CAR susceptible include Ashmeads Kernel, Wickson, Cox's Orange Pippin, Golden Russet, Cortland, Graniwinkle, Hewes Crab and Harry Masters Jersey.

I also noticed Michael has a suggested research protocol earlier in this thread. I need to spend so time with reading that material.

Russ Martin

Zone 4b Extreme west Central Wisconsin Hager City, WI

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[gloria bell](#)

[Re: cedar apple rust trials](#)

June 30, 2019 01:50AM

Registered: 5 years ago

Posts: 20

Any I'll effects Russ? Report?

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