



CHESTNUT CHAT – Q & A
CHAT # 20: HYPOVIRULENCE & BIO-CONTROL
DATE: FRIDAY, JANUARY 13, 2021

QUESTION	ASKER NAME	ANSWER(S)
My question is an observation: My maternal side is Matheny. She did a lot of genealogical work. Where is your branch from?	sweet	live answered
Thanks Amy!	sweet	live answered
thank you so much! will you record?	Elaine Gan	live answered
thank you so much!	Elaine Gan	live answered
David means beloved	David Marinelli	live answered
Will seeds/seedlings be distributed to members this spring?	Gail H	Yes they will!
Do we have any idea of the relative numbers of blight spores present in woods where there are scarlet oaks or other host species but few if any chestnuts? In other words, does the fungus actively sporulate and disperse well in the absence of chestnut?	Mike Aucott	Good question ; live answered
I believe oak and chestnut are fairly closely related. Oaks are very little affected by the blight but chestnut badly affected. Why?	frank	live answered
There are some relatively large chestnuts that appear blight free in regions at the periphery of the former range, e.g. the Allegheny Nat'l Forest. Is it likely that the blight itself is present in such areas at low levels?	Mike Aucott	live answered



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Chestnut and oaks are both in the Fagaceae family. The chestnut blight fungus attacks readily American chestnut as shown by the cankers on Amy's slides. Oaks, mostly post oak, can become infected by the chestnut blight fungus and it presents itself as butt swell rather than cankers. While the fungus can sporulate on oaks, it does so significantly less than on chestnut.	Mark Double	live answered
1 - Are there hypovirulent pre-inoculated chestnut seedling sold anywhere and if so how long are there estimated lifespan. 2 - Do the European chestnuts <i>Castanea sativa</i> have a suite of genes that support hypovirulent maintenance in the bark and if so are there plans to breed these genes them into the B3F3 generation	Anonymous Attendee	1 - no, a pre-inoculated tree would not be that helpful, as cankers need to be treated as they develop. 2 - European chestnut is less susceptible to blight and there are fewer strains of the fungus in Europe, which are the main factors that facilitate spread of HV strains there.
Have European chestnuts been as devastated by the blight as American chestnuts?	Tyler Payne	live answered
once infected with hypovirus will the hypovirulent fungus spread to other Ac trees?	Robbie Shaw	live answered
would the virus need to be inoculated to each individual canker or can it be done singularly for the whole tree?	dennishamm	Yes - individual cankers need to be treated. HV does not treat the whole tree.



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If a tree has been treated by the hypovirulent strain of the Chestnut Blight fungus, is it resistant to a subsequent infection on a different part of the trunk?	Anita Klein	live answered
would the hypovirulent inoculant be available to land trusts ?	Craig Repasz	live answered
difference between H. Virus and cruddy bark?	Paul	live answered
Do hypovirulent isolates produce less acid to break down the host tissue?	Linus Schmitz	live answered
Hi. So what can you tell us about whether the hypovirulent fungus you introduce to the forest with your inoculations spreads in the forest?	Bruce Levine	live answered
How many strains of the fungus found in the US harbor the hypovirus?	Kent Wilcox	
Does the "treatment" fungus that gets applied to trees spawn more of itself to spread around later? So it will exist in the wild on its own, spreading its hypovirulence to other trees?	Mary Mangan	HV strains unfortunately do not spread well on their own.
So what actually happens when the hypovirulent strain is applied to the tree? Is it outcompeting the virulent strain?	Mark Ambrose	
Two questions: 1) Are hypovirulent cankers orange? 2) How is "cruddy bark" different from hypovirulence, if it is at all? Seems like cruddy bark is	Anonymous Attendee	live answered



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more of an amalgamation of organisms versus one virus from what I've read.		
Is a hypovirus invading a fungus comparable to a phage virus infecting a bacteria?	Don	live answered
<p>are the different strains regional in any way or could you have multiple strains on an individual tree?</p> <p>does treatment result in any long term protection for the tree or is it just a treatment for individual cankers?</p>	dennishamm	You can have multiple strains on the same tree and all cankers need to be individually treated
Are you going to talk about the super-donor?	Hill Craddock	live answered
How close are we to having a solution for homeowners? How close are we to being able to purchase trees which are immune but which are wholly American chestnuts genetically, except having been altered to be immune?	John Wierenga	I live in near Traverse City Michigan and have at least 6 chestnuts - the blight is very healthy here.
What are some of the "barriers" to using hypovirulence (mentioned on the final slide)? Specifically, are these barriers due to regulations from government agencies (similar to how transgenic ACs are regulated)?	Thomas Bertorelli	The main barrier is that the HV strains used to treat individual cankers need to be sexually compatible with the strain they are trying to pass the virus to. With so many strains, matching these up takes some work. And then the HV strains don't spread on their own so all cankers need to be treated individually. The Super Donor is the best hope for overcoming this, but this will require federal approval for widespread use.



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Are we seeing hypovirulence spreading naturally in American chestnut these days?	frank	No, not really. As previously discussed, there are barriers to spread because strains need to mate, and most hypovirus is spread manually. The hope is that the Super Donor developed by Don Nuss and his lab may help in this regard.
Can a chestnut infected with a hypovirulent strain be reinfected by a virulent strain?	Don	live answered
Once infected and recovered by one strain of virus - is it immune to further infection by the fungi	Robert Gilman	live answered
Thanks for this outstanding presentation. I have a sprout that has grown to about 6" ABH. Is there a way to protect it?	Peter Keefe	There is no preventative blight treatment. Your best bet is to be vigilant and treat individual cankers as they develop. You can mudpack individual cankers (easily accessible to landowners) or treat with hypovirus if you can access it (not commercially available yet). The earlier you treat individual cankers, the more effective the treatment.
Seems like a hypovirulent fungus would be at a selective disadvantage out in the woods, and that overall new strains of resistant fungus would keep arising and be at an advantage. All the live rootstock helps keep the fungus more virulent?	Dennis Liu	live answered
what is it about oaks that make them more resistant to the fungus?	Tyler Payne	



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Would a Limestone solution kill the acidity if sprayed on the canker?	Wilburn Price	live answered
Don't you think in the south that ink disease came first and was the major cause of the demise of the chestnuts?	Roger Willby	Yes, PRR came to the US first, though does not spread as quickly as blight. It has not been as much of an issue in the higher elevations of the south, where we still find chestnut populations resprouting. But certainly an issue.
see chat- will treatment of one canker on a tree be able to spread to other cankers on the same tree, or persist to prevent future cankers on the same tree?	Balfour Sartor	live answered
Is there any connection between this blight and the infections that I see on beech trees?	Tyler Payne	Beech bark disease is caused by a different fungus: https://forestinvasives.ca/Meet-the-Species/Pathogens/Beech-Bark-Disease
Do viruses specific to each of the known blight sub-types exist? Is there a virus "repository" that researchers use?	David	live answered
here I mean the tree not the fungus.	Robert Gilman	live answered
because of the direct treatment requirements and the fact that all 64 strains are here,...what the ultimate value of this technique or is it just about understanding the limits and vulnerabilities of the fungus?	dennishamm	live answered
Has hypovirus been registered with EPA as microbial pesticide?	scovell	live answered



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As I recall from readings, the advice here was to cut the Chestnuts before they died anyway. thus there were few survivor trees. Europe did not do this. They had more survivor trees. Europe is further along on developing resistant trees from the survivors.	janisboury	American chestnut resprouts readily from the root collar and is still present in the US in large numbers...though certainly not as large trees. European chestnut is a bit more resistant to blight, blight came to Europe later, and hypovirulence has been able to spread more easily to help mitigate impacts of the blight.
Blight grows well in ME and has killed about half of our large mother trees.	Roger Willby	live answered
Ursula, can you provide your email address for those of us who would like to contact you?	Mark Double	live answered
Will this video be available after the presentation? I work with American chestnut trees in Alabama and would like to have access to it. Thank you for providing this opportunity to learn more about the fungus and C. dentata!	Weninegar	live answered
How long will stumps keep growing up from the roots?	Bill Loftis	Chestnut will resprout from the root collar several times. There are a variety of factors that impact how many times it can re-sprout. Basically it's a matter of stored energy in the root collar and whether the previous re-sprouts have been able to replenish those stores.
The limestone spray will not work because it cannot get into the bark.	Mark Double	Thanks Mark!



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Point of interest..I have found blight cankers killing Hungarian oak Q. frainetto, in Garrett Park MD which is an arboretum -Phil Normandy	sweet	Neat - thanks for sharing!
Yes, the phage virus infecting a bacterium is similar.	Mark Double	Thanks!
Have the hypoviruses been sequenced?	Daniel Schadler	live answered
Please answer dennishamm's quesiton at 12:12 PM	francisgroeters	live answered
great talk	Robert Gilman	live answered
Thank you all	janisboury	Thank you!
Will there be a link to the video posted somewhere?	dharper	https://acf.org/resources/chestnut-chat-series/ All of our recordings and videos go to the website link above. Thanks for your interest!