



Q&A from Pesticides & the Chesapeake Bay Conference December 14, 2023

Some questions were answered live and those answered below were typed in by presenters.

Asker: Michael Ichniowski

Question: What types of grasses were planted in the restoration area?

Answer: indigenous species identified by the restoration contractor. We can send the blend to you.

Asker: Ruth Cassilly

Question: Where do your microbial derivatives/microbial populations come from? There is research that says it is better to restore the native microbiome of a particular soil/area rather than introduce a standard microbial population- curious to know whether you source and culture the microbes from your application sites or if you use a standard microbial mix

Answer: We mine the forest around the site to get the indigenous mix that will work on that farm. It's all similar so far on the eastern shore.

Asker: Anonymous

Question:

Can the restoration of the soil microbiome contribute to the remediation of contaminated soils?

Answer: Yes.

Asker: Amy Steffen

Question: Can you please briefly review what the treatment consisted of?

Answer: On Mason farms it was liquid extract applied at 20 gallons per acre. 2x each season, spring and fall.

Asker: Roger Williams

Question: Ref: the organic farm. Can you give examples of the actual harvest change? Secondly, how long would a drench last, in terms of soil improvement? In other words, does it require a yearly input; bi-yearly? Monthly?

Answer: Our on-farm test plots showed around a 10% increase in bushel per acre of corn versus the untreated control plots and other alternative treatments. The drenches are a progressive yearly application, customized based on the soil's needs. Those needs are determined through Ohryn's microscopy results.



Asker: Shaun Goldberg

Question: Are you doing any applications in urban areas?

Answer: yes

Asker: Anonymous

Question: Do these microbial products cost less to the farmer than conventional inputs?

Answer: yes. Typical field inputs are measured in pounds of nitrogen or other nutrients. An inoculant tea is restoring the soil ecosystem and creating a living, breathing (yes, health soil respire!) organism. As Dr. Elaine puts it in terms of an investment in your soil, which it precisely is. Conventional farmers are spending \$700.00 plus per acre. We can do the treatments for around \$250.00 per acre.

Asker: Leslie Lewis

Question: What do you amend your compost with?

Answer: Carbon, infused with biology as the home for the biology to be housed and go to sleep until there's a plant root to wake it up.

Asker: Anonymous

Question: Does the restoration of the soil microbiome enhance the resilience of plants?

Answer: yes

Asker: Michael Ichniowski

Question: Is there any evidence of decreased nitrogen/phosphorus runoff into streams from your products?

Answer: We can provide studies that confirm this process reduces runoff significantly

Asker: Richard Ochs

Question: How is it organic when chicken litter may not be?

Answer: USDA organic regulations do not yet distinguish between litter pulled from organic poultry houses versus conventional poultry houses. We try to source from organic houses to the greatest extent possible. However, we typically need to import litter from conventional operations to supplement our fertility needs. During the composting process we are able to extract the beneficial microbes and when we start the process it transforms immediately in 3 days to an organic process. Even though the chicken litter (like all compost feedstock) does not have to be organic, there are still organic protections in place (e.g., the compost maker complies with the organic standard's



composting requirements).

Asker: Anonymous

Question: How do we determine what a “good” microbiome is for human health?

Answer: Aerobic biology is almost always good. We use microscopes to evaluate what's happening and make sure we introduce what's missing.

Asker: Anonymous

Question: Your examples focused on worker groups exposed to pesticides in their job. What do you think are the effects on the microbiome in the general public who are exposed to pesticides via contaminated food and other household studies?

Answer: I anticipate that we'll see the same effects in the general public, even though they have reduced exposure to pesticides compared to farm workers. I mentioned in previous studies, we've seen changes in farmworkers' children, including ones who do not live and work on the farm, which indicates that this indirect exposure to pesticides is also important to our microbiome.

Asker: Eric Duce

Question: I've seen recent studies that show the active ingredient of some pesticides are relatively safe. Studies show that it is the inert ingredients that cause more issues than the active ingredient. Are there studies that test the active ingredient and inert ingredients separately?

Answer: Great question! There have been studies linking health effects related to some inert/non-active ingredients in pesticides. Many of these “other” ingredients contain harmful chemicals like PFAS which I know we'll hear about later.

Asker: Anonymous

Question: What is the role of probiotics with regards to pesticide health effects?

Answer: Probiotics are a very unregulated field, so I question the efficacy of many of these products on the market. However, in general I do think they are a good mechanism to build a robust microbiome.

Asker: Anonymous

Question: What are some ways that workers or the general public can protect themselves from the toxic effects of pesticides?

Answer: Don't use synthetic pesticides in your own home and yard, don't buy seeds and plants that were grown with pesticides or from seeds that were pre-treated with pesticides and endeavor to eat foods grown without them. You can ensure you are doing all those things by buying and eating organic because synthetics are largely prohibited in organic production. If you feel you can't afford to eat all organic, at least take a look at the Environmental Working Group's Clean Fifteen and Dirty



Dozen List published annually.

Asker: Anonymous

Question: There have been increasing reports of farmers with gastrointestinal and auto-immune issues, how does the microbiome play into this trend?

Answer: GI and auto-immune conditions are closely correlated with our microbiome, so I absolutely think the microbes in our body and our surrounding environment are playing a key role in this increase.

Asker: Art Milholland

Question: How to know if your own biome is healthy?

Answer: Great question! There are direct-to-consumer companies that will “measure” your microbiome and can give you an idea of how healthy it is. But, the best way I recommend to build a robust microbiome is to have a diverse diet, diverse exposures to the natural environment/outdoors, and add proven probiotics/prebiotics to your diet (like yogurt and fermented foods).

Asker: Dana Limpert

Question: Should there be a sustainable forestry working group? These practices can be very detrimental to the soil.

Answer: One of the 20 LANDOWNER ACTIONS is preserving or creating woodlands and wetlands under existing USDA CRP and CREP programs that fund their establishment and annual maintenance. Taking out farmland for woods is not a goal of MDA, but Agro-forestry is of great interest in the State because of the carbon storage that is possible with deep-rooted perennial plants and trees. MDA is encouraging farmers to incorporate agroforestry in their Healthy Soils Competitive Fund, opening again in January. (I assume the negative practice you are thinking about is overharvesting...)

Asker: Juhl K

Question: Have there been any studies/research to see or show that these substances can be “grabbed” by the biology and stored in a more stable/safe alternative yet?

Answer: Live answered.

Asker: Anonymous

Question: How will EPA’s recent announcement that it will force manufacturer Inhance to stop fluorinating containers impact PFAS contamination in pesticides?|

Answer: Live answered.



Asker: Anonymous

Question: Is it possible that some of the variability you are seeing from PFAS testing is due to leeching from individual bottles happens differently?

Answer: (Live answered.) Yes, absolutely. There is likely a lot of variability between different bottles of the same pesticide.

Asker: Ian Hartwell

Question: If there are no known biological breakdown pathways, how do they break down, or are they being diluted beyond our ability to detect them?

Answer: Live answered.