



## Webinar Q&A

### Drivers of microbial community composition in hydroponic leafy green production

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The webinar recording is available on the Phytobiomes Alliance YouTube channel at

<https://youtu.be/uNCAOyxN2A>

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**Q: Were all the plants at the same developmental stage when sampled? The PCoA data contain data from one sampling point across the aquaponics systems? Thank you!**

Answered live. Timestamp: 54:44

**Q: In the PCA plots from the first section, were you able to disentangle what the axes were? It seems remarkable that the two sample groups are arranged perpendicular to one another and almost in line with the axes.**

Answered live. Timestamp: 55:37

**Q: Were commercial inoculants used in any of these systems? If so, were they detected by sequencing?**

Answered live. Timestamp: 56:40

**Q: Have you looked into communities in organic vs. conventional hydroponic systems?**

Answered live. Timestamp: 57:21

**Q: Did you do any ground water checking ?**

Answered live. Timestamp: 58:00

**Q: How do you plan on studying the biofilms?**

Answered live. Timestamp: 58:15

**Q: My question is what does the final goal of knowing microbial composition? i.e in terms of commercialization**

Answered live. Timestamp: 59:35

**Q: Why are the farmers shifting to a hydroponic system if this system easily and not costly ? why use soil now and what the deffrent between them and can this technology cover the local market and rely on it**

It does require some initial investment to setup the systems. Also, it does require access to electricity. And not all crops can be grown under hydroponics, or be economically feasible. But there is definitely an increase in interest in this type of production.

**Q: I am new to microbiome data analysis. May I know what softwares or websites did you use to analyze the microbiome data after amplicon sequencing?**

For the data presented we used the available package nf-core amplicon: <https://nf-co.re/amplicon> .

Some of the figures were generated using various R packages including phyloseq <https://joey711.github.io/phyloseq/> Those two will be good to start with.

**Q: Is it possible to give us the chemical composition of the nutrient solution? Any vitamins or other organic compounds included? Thank you!**

There are several options that you can use for your nutrient solution. We purchase ours ready to mix from garden or greenhouse centers and adjust the pH and EC to meet the requirements for leafy greens

**Q: Did you do any work with well water ?**

No, we did not.

**Q: Dr James White of Rutgers talks about the Rhizophagy cycle where plant roots eat, digest, cultivate and release living bacteria (endophytes). Have you looked at that system in hydroponics yet? Either experimental or theoretical?**

We have not looked at it yet. But we should think about it.

**Q: I have a question concerning the amount of bacterial counts in EC.2.5 in pond liner and less for other EC values, is it because possibility the plant change pH around its roots and thereby limit the bioavailability of nutrients ?**

This could be an explanation. However, the pH was monitored and adjusted during the experiment, to match the standard use in industry. But potentially this type of "harsh" environment could be promoting biofilm formation. Something to look into

**Q: Did you ever have instances in your DWC experiments where media began to accumulate at the bottom of the ponds? If so what effects did this media have on driving microbial diversity?**

For the experiments described we have been cleaning our experimental systems, however we plan to do more experiments in which we allow accumulation of material in the bottom.

**Q: Would you believe microbial communities within settled media in the bottom of DWC ponds would have more of an effect on plant roots suspended in the water column versus those existing in the water column?**

I am not sure which communities will be more active. I think that communities around the roots will have the greatest impact of all three probable groups (settled in the bottom, suspended in the water column and around the roots)

