Hydroponic Soil Medium: A Project Proposal

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Introduction

Store bought strawberries don't taste as sweet as small-farm strawberries.

Growing them in a controlled hydroponic system to increase flavor could prove a challenge due to persistent infection in the water from oomycetes.

Research Question(s)

- Why do store-bought strawberries taste so bitter?
- How could we address oomycetes in hydroponic growing systems?
- Can we combine the two problems and produce a viable, single solution?

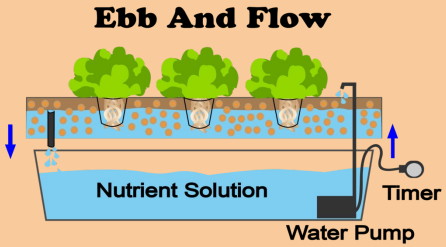
Background Information

- Store bought strawberries are not as tasty as small-farm roadside strawberries.
- Food crops have fewer micronutrients in them, which is contributing to a "hidden hunger" that affects 2 billion people globally.
- The soil we grow our food in has been depleted of most of its nutrients essential for plant growth, which has led to a reliance on artificial fertilizers and fewer micronutrients.
- Phosphite is used in turfgrass management as a soil pathogen pesticide.
- There are bacteria that can break phosphite into phosphate, which can be used by plants as a source of phosphorous

Research Proposal

My proposal would look at using soil as a medium in a hydroponics system. I am curious to find out if we can both increase soil and strawberry nutrients while simultaneously combatting the oomycete problem by introducing phosphite into the nutrient solution and utilizing microbes to control phosphite levels through metabolization into phosphate.

My research has led me to believe that this soil media will work best with ebb and flow hydroponics systems. This will allow for more nutrient and water retention for the plant to use throughout development due to the soil media base, which will make for a better tasting and healthier strawberry.



Theorized Results

Phosphite (Phi) is known in turfgrass management to help fight off oomycetes in the soil and has been shown to help stimulate strawberries natural defense system against soil pathogens. Using microbes to help digest phosphite into phosphate will help add more phosphate back into the soil, reduce phytotoxicity due to overexposure to phosphite, and create available phosphate for plants to use. Additionally, using a soil medium will allow more access to nutrients and water through the plants whole, in turn increasing the flavor profile of the store bought strawberry.

Evidence/References

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Take Home Message

We have the ability to make this world better with the technology and environmental agricultural practices we have developed. Put all life over profit, and the possibilities for making this world better for all life on this planet is achievable.