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LIMITATIONS — EXPECTATIONS

## UNDERSTANDING COMPOST TEA

Realism and optimism must be “in sync” when evaluating anticipated benefits from applying compost tea, whose performance depends on its preparation, compost quality, microbiology, storage and application methods.

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COMPOST TEA describes many different preparations made using compost as a starting material and producing a liquid extract or in some cases a “liquid version” of the original compost. There are many home-designed pieces of equipment and some commercially available equipment made to produce compost tea. New ideas abound on how to fabricate the better tea-maker and different designs are tried each year with efforts to improve efficiency and decrease costs.

Additionally, there are probably as many recipes for compost tea as there are for chili in Texas, with more ideas on improvements and a focus on its use for more specific applications. For instance, when making compost tea to combat plant pathogens, the trend is to have as much microbial diversity as possible. When making a tea to supplement plant nutrients, many producers are fortifying the tea with supplements either during production or as a postproduction addition.

Optimism about compost tea is high, but understanding its limitations and having realistic expectations are necessary. With all of the variations in compost tea production, there are some applicable basic guidelines independent of recipe or equipment differences.

QUALITY — FROM MATURITY TO MICROORGANISM CONTENT

Compost tea is a readily available form of compost that will impact the plant more quickly than compost mixed into the soil. Compost quality issues, including maturity and microorganism content, become very important for making effective compost tea. The transformation of compost into compost tea cannot improve on the original quality of the compost.

A good compost has the potential to make a good compost tea if made properly; a poor compost will always make a poor compost tea. Many imperfections in the starting compost such as high salt concentrations, high levels of anaerobic microorganisms and the presence of pathogens may actually be amplified in the final compost tea. It is critical, therefore, to use only the highest quality compost available. Save the lesser quality compost for soil applications and use only the best for compost tea production.

## MICROBIAL NUMBERS AND DIVERSITY

Compost that is rich in microbial numbers and diversity can result in compost tea with these same qualities. Even so, the typical representation of microorganisms in compost tea differs from the original compost. Some types of microorganisms like to live attached to particulate matter and a compost tea made using a fine mesh strainer popular for tea destined for drip irrigation, doesn't let a sufficient amount of particulate matter through to support these microorganisms. The beneficial fungi and actinomycetes prominent in a good compost may be poorly represented in the compost tea simply due to the necessity of straining out the material to which they would attach due to the demands of the irrigation system equipment. Keep in mind that compost tea microbiology is most impacted by oxygen availability, nutrient availability and the initial microbiology of the compost used to make the tea.

Compost tea is analyzed for the same microbiological parameters as compost. This includes beneficial microorganisms including aerobic and anaerobic bacteria, fungi, actinomycetes, pseudomonads and nitrogen fixing bacteria, as well as pathogens such as *E. coli* and *Salmonella*. Keep in mind that compost tea microbiology is most influenced by oxygen availability, nutrient availability, and the initial microbiology of the compost used to make the tea.

## STORAGE AND APPLICATION METHODS

Unlike wine, compost tea does not typically improve with time. For best results, it should be used as soon as possible and should be stored in a shaded area with agitation and ventilation to the tank. Long storage times will negatively impact the diversity of microorganisms as well as the nutrients carried by the tea for plant use.

Compost teas are applied either to the soil or to the plant foliage. Those applied to the soil will move into the root zone and affect the rhizosphere of the plant. Nutrients carried in the tea will be used by the plant as well as the microorganisms in the soil. The microbes in the compost tea may have a lot of competition with other soil microorganisms, but have the opportunity to become a part of the soil and rhizosphere microbial ecology.

Alternatively, compost teas applied to the plant foliage will immediately impact the plant and there is very little room for forgiveness from the plant if a tea with toxic qualities is used. A good quality compost will provide beneficial microorganisms and nutrients to the surface of the plant to assist the plant in disease suppression and nutrient availability. A poor quality compost tea may be supplying the plant surface with unwanted components

such as salts and problem microorganisms. Compost tea destined for foliar applications in particular should only be made with the highest quality of compost to avoid problems such as salt burn and the distribution of pathogens in critical areas of the plant.

Compost tea like compost itself has the potential to be a powerful tool for agriculture. In addition to being a stand alone product, growers are discovering its potential to be an efficient carrier for other agricultural components. Our understanding of the science behind this complex product continues to grow and help us to understand some of its possibilities and limitations.

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