

## Foliar Applications of Compost Tea

By Peter Schmidt of [Compostwerks LLC](#)

There has been a lot of discussion over the years regarding foliar applications of compost tea and for good reason. Let's begin by laying some ground work about plant physiology and how it supports foliar biota and nutrition.

Plant nutrients are not only absorbed by the root system, they are also fixed from the atmosphere as well as through rain water. Compost tea contains an abundance of micronutrients which are absorbed through the foliar surface of your plants. Similar to our own skin, foliar surfaces readily absorb and transpire gasses, water and other compounds. In the case of plants, these nutrients are absorbed through leaf organs called *stomata*.

Our skin exudes compounds which feed beneficial microbes which out compete human pathogens and disease. The foliage of plants performs similar functions which help to *exclude* plant diseases. These plant 'exudates' nourish beneficial microbes which maintain the balance between pathogens and beneficial microbes. In the perfect scenario, these exudates create a beneficial microbial biomass which greatly out number pathogens.

As a side note, it's very interesting that plants can invest 30 to 40 percent of their energy into producing exudates, both through the foliage and root systems. Exudates are made up of different compounds such as sugars, starches, proteins and carbohydrates. When exuded through foliage or roots, they feed beneficial microbes which are needed by the plant at that particular time. If a plant needs Nitrogen for example, it will exude sugars. These sugars are needed as a protein source for bacterial growth and activity. Protozoa activity will naturally follow bacterial growth. These protozoa will consume great numbers of bacteria and cycle the Nitrogen contained within the bacteria in a plant soluble form (Nitrate).

So how does this all relate to foliar applications of Compost Tea? Let's ask ourselves why we would go through all that trouble.

### Methodology

The goal is to coat the entire plant with beneficial biology which will *occupy potential infestation sites*. Foliar surfaces must be inoculated with the beneficial biology contained in properly made actively aerated compost tea in order to gain an advantage over pathogens. Property coated with the right biology, the pathogen is much less likely to complete its life cycle and cause infection.

In order for the biology to adhere to the foliage, the microbes in the compost tea must be active. We suggest a brew cycle of 24 hours in order to achieve this level of activity. You may choose an adjuvant such as molasses or yucca to help the biology adhere to the foliage. These adjuvants would be added to the spray tank right before you spray. Try 8-12 ounces per 100 gallons of diluted compost tea. You may experiment with how much adjuvant to use in different situations. Plants with waxy/glaucous or

hydrophobic foliage may require higher levels of adjuvants. Never use chemical 'spreader stickers' as their use may damage the biology and lead to poor results.

## Compost Tea Quality

For brevity's sake, we won't delve much into making high quality compost tea. Biological diversity is essential with foliar applications. Suffice to say the quality of compost that you use to make your compost tea will make a big difference in the foliar effects of application. It's no secret that we're big believers in Soil Foodweb methodology and testing. Without this valuable data we are simply guessing.

There are several examples of brewing quality compost by clicking here;

<http://www.compostwerks.com/Our-Compost.html>

## Application Rates

Many people in the industry dilute their compost tea 1 : 1 (50/50) in dechlorinated water although it may be applied undiluted. We have observed excellent results at the 1 : 1 ratio. Saturate the foliage, twigs, trunks and even the ground surrounding your plants to the point of run off. Without complete coverage, plant surfaces will lack the protective layer of microbes necessary to occupy infection sites.



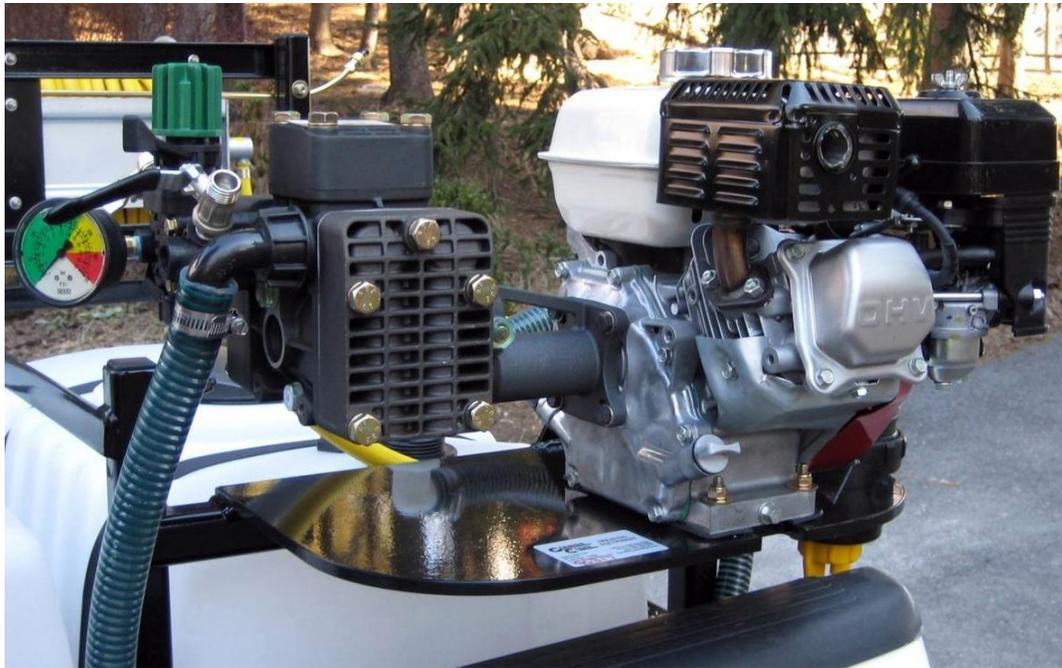
**The author applying foliar Compost Tea in an Apple Orchard**

Applications are made during periods of anticipated disease pressures. In the case of apple trees, the earlier part of the season is where we see the heavy Cedar-Apple Rust and Apple Scab infections. We

tend to treat right before and immediately following periods of wet, cool weather. In an orchard situation, we may apply compost tea as many as 9-12 times per season.

## **Application Equipment**

This is an important consideration since an off the shelf hydraulic sprayer may destroy the biology in your compost tea. Piston pumps, roller pumps and some centrifugal pumps produce too much pressure and burst cell walls of the microbes. Mechanical parts can cause physical damage by slicing and dicing.



**Udor Kappa 25/GR Diaphragm Pump coupled to Honda 5.5 HP motor. Suitable for turf small trees and shrubs**

Our experience has taught us the diaphragm pumps do the least harm to the microbes in compost tea. Kappa series diaphragm pumps made by a company called Udor are well suited for applying compost tea. There are two pumps made by Hypro (the D-30 and D-50) which are also well suited and reliable.



Compostwerks V-100/CT Compost Tea Sprayer in utility vehicle. Udor Kappa 43/GR Diaphragm Pump

The working pressure should not exceed 150 pounds per square inch. Ideally, the pressure should be set as low as possible for the job at hand.

### **Quantifying the Results**

Aside from visual observations of the effects of pathogens on the foliage, how do we know if we're attaining sufficient coverage of compost tea on the foliage? When you observe infections it's too late to reverse the condition although you may be able to stop the infection from spreading further.

[The Soil Foodweb New York](#) offers excellent Leaf Organism bio assays that will tell you exactly what kind of coverage you are attaining with your foliar applications of compost tea. It may be the best \$30.00 you spend when getting yourself set up to perform foliar applications.



# Leaf Organism Analysis

**Report prepared for:**

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**Report Sent:**

Sample#: 03-008143  
Unique ID: Apple Orchard  
Plant: Apple  
Invoice Number: 0  
Sample Received: 5/14/2009

For interpretation of this report please

Local Advisor: or regional  
Soil Foodweb  
[soilfoodweb.com](http://soilfoodweb.com)  
631-750-1111  
*Consulting fees may apply*

Sample Number	Unique ID	Plant Analyzed	Percent Leaf Surface Covered By:				Total Coverage	Comments
			Bacteria	St. Dev.	Fungi	St. Dev.		
03-008143	Apple Orchard	Apple	53	20.6	30	23.1	83%	Excellent Coverage

St. Dev means standard deviation of the separate measurements made per the three to five leaves sent in the sample

We have found that a minimum of 60 to 80% coverage (sum of both bacterial and fungal coverage) can prevent disease significantly

**Notes**

A Leaf Organism Analysis from the Soil Foodweb

That's not to say that you have to perform a Leaf Organism bio assay each time you do foliar applications. Your ability to achieve repeatable results is all about management practices. Nuances such as compost tea brewer and sprayer cleanliness, sourcing the right compost, having the right pump and spray gun on your sprayer, microbial foods added during the brewing process and brewing duration have a big impact on results. A breakdown at any point in your management practices can mean the difference between excellent and poor coverage.

## Conclusions

There is no better way to inoculate leaf surfaces than foliar applications of compost tea. There are limitations to the disease suppression qualities of this method and little insect protection can be realized from these applications. Be realistic in your expectations and how you convey these expectations to your customers.

Compost tea is NOT a bio pesticide and will not kill anything. It's a tool in the tool box. The tactic is pathogen exclusion, supplying nutrients to your plants.