

# COMPOST TEA MICROBIOLOGICAL INTERPRETIVE GUIDE

**What is compost tea?** Compost tea is typically made as an aqueous aerobic extraction of compost and contains both the soluble nutrients from the compost and the extracted portion of the microorganisms from the compost. Many times compost tea also contains nutrient supplements to help the microorganisms to grow after they are extracted.

**Why is compost tea used?** Compost tea is used as a nutrient component for the plant and a microbial inoculant. Some compost teas contain organisms that specifically assist in activities such as stimulating plant growth and suppressing plant disease. Other compost teas may provide a general microbial population that serves to out-compete some plant pathogens for nutrients and other resources rather than to specifically inhibit the growth of a pathogen.

**How is compost tea applied?** Compost tea is used both as a soil drench and as a foliar spray. It may be used full strength, although it is often diluted prior to use.

**How does microbiological quality impact compost tea?** Since most compost tea users are depending on compost tea to serve as a microbiological inoculant of either soil or foliage, the concentration and variety of microorganisms present have a very significant impact on the compost tea performance.

## Microbial Concentrations

FUNCTIONAL GROUP	INTERPRETATION OF COMPOST TEA BIOASSAY
Heterotrophic Bacteria (Aerobic)	<ul style="list-style-type: none"> <li>➤ &gt;10 million (<math>10^7</math>) Colony Forming Units/milliliter (CFU/ml)</li> <li>➤ Insufficient numbers of these organisms may leave the tea without enough microbial coverage for good foliar pathogen suppression.</li> </ul>
Anaerobic Bacteria	<ul style="list-style-type: none"> <li>➤ Ratio of Aerobes to Anaerobes in the compost tea should be at least 5:1 or greater</li> <li>➤ Too many anaerobes in the tea are an indication of insufficient aeration, too much nutrient supplement, or a combination of both.</li> </ul>
Fungi (filamentous)	<ul style="list-style-type: none"> <li>➤ &gt;1000 (<math>10^3</math>) CFU/ml</li> <li>➤ These organisms, while important, prefer to grow on a solid surface in their filamentous form and not in a turbulent liquid medium. Therefore, concentrations of filamentous fungi are usually significantly lower than would be expected from the starting compost. Yeasts, which are non-filamentous fungi, grow readily in compost tea.</li> </ul>
Actinomycetes	<ul style="list-style-type: none"> <li>➤ &gt;100 (<math>10^2</math>) CFU/ml</li> <li>➤ Actinomycetes, an important part of compost, do not extract and grow well in most compost teas.</li> </ul>
Pseudomonads	<ul style="list-style-type: none"> <li>➤ &gt;1 million (<math>10^6</math>) CFU/ml</li> <li>➤ Pseudomonads are important in nutrient cycling, plant growth promotion (rhizosphere), and the biological control of plant pathogens. They extract and grow well in compost tea.</li> </ul>
Nitrogen-Fixing Bacteria	<ul style="list-style-type: none"> <li>➤ &gt;100,000 (<math>10^5</math>) CFU/ml</li> <li>➤ Populations of these free-living nitrogen-fixing bacteria will increase as the available nitrogen in the compost tea decreases.</li> </ul>

For additional information concerning these and other functional groups, visit the web site at [www.bbclabs.com](http://www.bbclabs.com)

# COMPOST TEA MICROBIOLOGICAL INTERPRETIVE GUIDE (continued)

## Species Richness Diversity in Compost Tea

What is species richness diversity (SRD)? Species richness is a measurement of diversity that indicates the number of different types of microorganisms present in a sample.

This analysis results in an index number that characterizes the microbial complexity of the compost tea based on the analysis of six functional groups of microorganisms.

Why is microbial diversity important in compost tea? A high species richness diversity in compost tea provides a greater chance that particular microorganisms needed for specific tasks, such as disease suppression, will be present. Additionally, a high microbial diversity also increases the pool of microorganisms available to meet the particular environmental conditions encountered after compost tea application. This results in a greater probability that organisms appropriate for survival under application conditions will thrive.

## SPECIES RICHNESS DIVERSITY INDEX - COMPOST TEA

Classification	Species Richness Diversity Index
High Diversity	>8
Moderate Diversity	4.5 - 8
Low Diversity	<4.5

## Pathogen Inhibition Assays for Compost Tea

**Why test your compost tea in a pathogen inhibition assay?** Compost tea can be screened for microorganisms that can actively inhibit the growth of specific plant pathogens in a pathogen inhibition assay. This analysis is helpful in developing and identifying compost teas that have potential for disease suppression in a particular application. These assays are available for many plant pathogens in the BBC Laboratories culture collection as well as isolates from client locations.

For additional information concerning these and other analyses, visit the web site at [www.bbclabs.com](http://www.bbclabs.com)