



Compost Tea and Liquid Compost Extracts

Presented by

Peter Schmidt

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So What is Compost Tea?

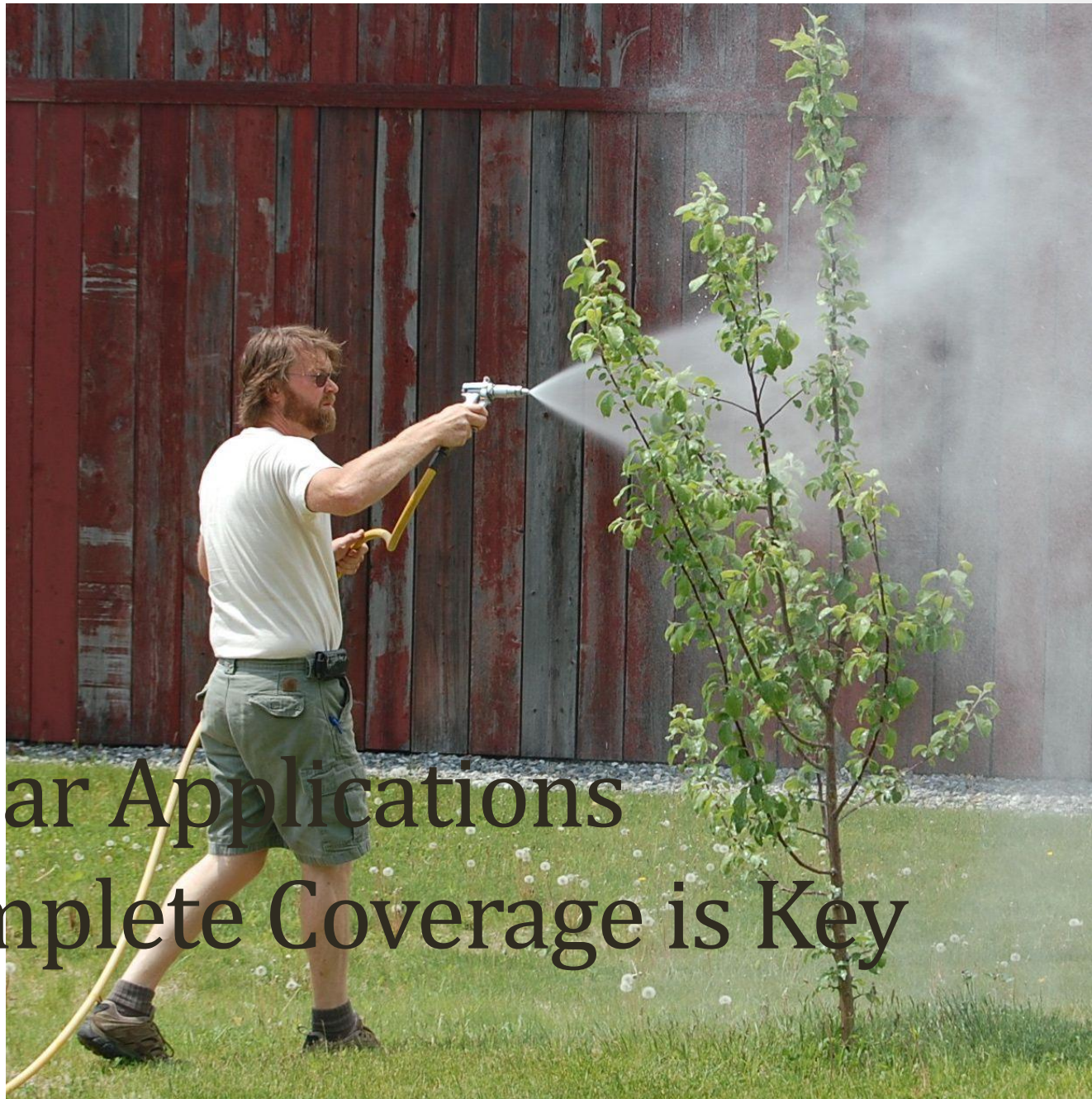
- Compost tea is made when the biology and soluble nutrients attached to specially produced compost is extracted into oxygenated water and brewed for a certain amount of time. Microbial foods are generally added to aid in the growth and reproduction of beneficial microbes.
- 100 Gallons = 1 Cubic yard of compost

Liquid Compost Extracts (LCE)



Foliar Applications
Soil Drench
Soil Injection





Foliar Applications
Complete Coverage is Key

Foliar Applications of Actively Aerated Compost Tea

- Exclusion of pathogens is the tactic
- Occupation of potential infection sites with good biology
- Diversity is essential
- Will not reliably address insect issues

Dilution and Adjuvants

- 50/50 dilution is widely accepted
- Be sure to remove chlorine
- Yucca and molasses are sometimes used as a sticker. These materials can also help to feed biology



Foliar applications must be active biology in order to adhere



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 Food
soilfoodweb.com
 631-750-1

Consulting fees may apply

Sample Number	Unique ID	Plant Aplayed	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%	Excelent 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 ta minimum of 60 to 80% coverage (sum of both bacterial and fungal coverage) can prevent disease significantly

Notes

Soil drench Applications





Spray and Flooding Nozzles



15 foot swath



Tree and Shrub Injector



Compost Tea Equipment







Vortex Compost Tea Brewer









Aeration

- When dissolved oxygen falls below six parts per million, anaerobic organisms will dominate the compost tea.
- Are these the organisms that will help our plants?
- The air we breath is 21 ppm oxygen
- Dissolved oxygen is affected by water temperature and elevation.



Extraction

- Is there sufficient water movement in the whole brewer?
- Are compressed air or recirculating pumps being used?
- Is there an extraction chamber where the compost can move freely?



Two air inputs—Ample compost movement

Effective Extraction

- Water and air movement through the compost will liberate organisms from the attaching surfaces into the water
- Active movement within the extraction chamber
- The desired organisms must be present in the compost in order for extraction to take place

Sizes of Microbes

400 micron (micrometers, or 40 mesh US measurement) openings in extraction chamber allow for larger microbes to pass through

- Bacteria are 2-5 micrometers in diameter
- Protozoa; 5-100 micrometers in diameter
- Fungi; 2-7 micrometers, but very long
- Nematodes; 10-40 micrometers in diameter, up to 1cm in length

Temperature

- You may need to brew longer at lower temperatures
- Do not exceed 78 degrees unless it does so naturally
- What is our soil or foliar temperature?
- The difference of two degrees wakes up some organisms, and puts others asleep.



Heaters

Brewing

Duration/Temperature

- Begin with water at ambient temperature whenever possible
 - 55 to 60° 32-40 hours
 - 60 to 70° 24-32 hours
 - 70 to 80° 20-24 hours
- Avoid temperatures above 78° unless caused by microbial activity during brew cycle

Microbial Foods

- If you are making compost tea, you must add foods to encourage the growth of the desired organisms.
- Different food sources select growth of specific types of biology.
- Too much food resource can cause major problems.
- What's the crop that you are going to be spraying?

Bacterial Foods

- Bacterial foods – molasses, sugars, simple amino acids, simple proteins, simple carbohydrates: 8 oz/50 gallons of water
- Fish Emulsion, yucca, fruit juice or pulp: 1-6 oz/50 gallons of water

Fungal Foods

- Fungal foods – humic acids, complex proteins, oatmeal, bran, fish hydrolysate, wide C:N ratio foods
- Humic Acid 16 oz./50 gallons water
- Kelp, Fish Hydrolysate, feather meal, seed meals, Oatmeal; 4-8 oz./50 gallons water

Think complex carbohydrates and proteins

Dilution of Compost Tea

- Widely accepted
- 1 part CT, 3 parts water
- Additional foods tank mixed at this time is widely accepted

Addition of Foods at Dilution

- Fish Hydrolysate 1 Gallon/100 H2O
- Soluble Kelp 8 oz./100Gallons H2O
- Humic Acid 1 lb./100 Gallons H2O
- Azomite 1 lb./ 100 Gallons H2O
- Amino Acid Powder 2-4 pounds per acre
- Molasses, never exceed one gallon per acre

Application Rates

- 5 Gallons of Diluted Compost Tea/1,000 square feet
- There are 43.56 1,000 square foot blocks in an acre
- This equals 217.8 gallons applied per acre
- Adjust +/- based upon soil moisture
- Adjust +/- based upon plant and soil health