Compost & Biochar

Cheng et al. (2006)

P-CEC 90% increase in soil

Incubated BC at 30 and 70C for 4 months

Found the biochar increased in CEC by 538% in the 70C treatment
Compost & Biochar

Cheng et. al

Thermophilic Composting

Soil Environments
Compost & Biochar

Physical
- Surface Area
- Rate of water loss

Chemical
- CEC
- Extractable Nutrients
- PH
- EC

Biological
- Microbial Abundance
- Microbial Diversity
- Plant performance
- Root growth
- Disease Suppression
Perlite (P)
• 3yd³ of greens
• 3yd³ of chips
• 3yd³ of manure
• 3yd³ of perlite

Biochar (VB)
• 3yd³ of greens
• 3yd³ of chips
• 3yd³ of manure
• 3yd³ of biochar

Perlite (C)
• 4yd³ of greens
• 4yd³ of chips
• 4yd³ of manure

Longwood Gardens®
Percent oxygen of treatment piles over time

- Compost
- Compost with Biochar
- Compost with Perlite
- Turn Dates

Days after mixing

Oxygen (%)
Temperature of treatment piles over time

- Compost
- Compost with Biochar
- Compost with Perlite
- Turn Dates

Days after mixing

Temperature (°F)
Particle Size Distribution

- **Biochar**
- **Perlite**

Mesh Size vs. Particle Size Distribution
Fatty Acid Methyl Ester Extraction

Gas Chromatography-Mass Spectrometry

![Graph of Fatty Acid Methyl Ester Extraction]
General Trends

Gram Negative
- Day 9 & 14 – VB had great concentration of
- Day 26 – Distribution more even

Gram Positive
- Day 9 & 14 – VB great concentration
- Day 26 – more clustering in CB

Fungi
- Day 9 & 14 – CB, P, C had greatest concentration
- Day 26 – Fungi are more present in C
Compost Inoculation vs Thermophilic Composting

- Much more microbial abundance in thermophilic compost
Split Root Study

Original image

Detected roots