Fast Composting of High Value Biochar

John Bonitz
Celebrity Dirt
Silk Hope, N.C.
john.bonitz@gmail.com
ROADMAP

❖ Biochar Economics
❖ Basics of Biochar Production
❖ Composting Biochar the Faster Way
BIOCHAR ECONOMICS
WHAT IS BIOCHAR?

❖ Biochar is a ready-to-use product that will provide immediate benefits to soils and crops.
❖ Therefore, CHARCOAL is not Biochar!
❖ Charcoal must be improved, inoculated, enriched.
❖ This means adding nutrients (to prevent leaching), and microbiology (to prevent ecological disruptions).
PRETREATMENT OF BIOCHAR

The Four M’s:

❖ Moisten (saturate with water to fill pores and overcome char’s natural hydrophobic tendency)
❖ Micronize (grind, pulverize it to create more surface area)
❖ “Mineralize” (add nutrients, micronutrients, and trace elements)
❖ Microbial Inoculation (populate the surface area with diverse beneficial microorganisms, both flora and fauna)

❖ From David Yarrow’s factsheet “Biochar Use In Soils.”

http://www.dyarrow.org/BiocharInSoil
MOISTEN

- Fresh char is bone dry & sterile.
- Hydrophobic due to tar residues & non-polar surfaces.
- Too much moisture?
MICRONIZE

- Crush, grind & screen to maximize surface area
- Diverse sizes: rice grains to dust
- Feedstocks determine particle size (weedy vs woody)
“MINERALIZE”

- Char has huge ion & electron adsorptivity
- Major Cations (Ca, Mg, K) & Anions (N, P, S)
- Highly efficient delivery of nutrients to roots
- Don’t forget micronutrients & trace elements
MICROBIAL INOCULATION

❖ Encourage colonization by microbes
❖ Simplest way: Blend with active compost
❖ Biodynamic preps, EM, Mycorrhizae, Trichoderma, SCD BioAg, etc.

Photo: Pacific Biochar
THE FIFTH TREATMENT

Acidulation!

- Bokashi, Pickling
- Animal Digestion
- EM, LAB, etc.
- Enhances Cation Exchange Capacity

Photo: Kelpie Wilson, Backyard Biochar
Faster Biochar Composting

- Forced Air (or Aerated) Static Pile
- Uses blower, controller, pipes, solid bin walls, careful mixing, temp monitoring
- Weeks versus Months
FAST BIOCHAR COMPOSTING

AERATED STATIC PILE

Blower
FAST BIOCHAR COMPOSTING

Photo: Celebrity Dirt Soil Amendments
FAST BIOCHAR COMPOSTING

❖ 50 foot long structured pile on aeration tubes.
❖ Approximately 50 cubic yards.
❖ Goat Manure-Bedding plus Woodchips and Biochar

Photo: Celebrity Dirt Soil Amendments
FAST BIOCHAR COMPOSTING

Photo: O2Compost
AERATED STATIC PILE COMPOSTING OF BIOCHAR

❖ Faster decomposition, Faster cash flow!
❖ Tighter physical control of material handling
  (less loss of costly biochar input)
❖ Tighter process controls (oxygen input for heating or cooling effect)
❖ Smaller footprint (space and energy)