

Fast Composting of High Value Biochar



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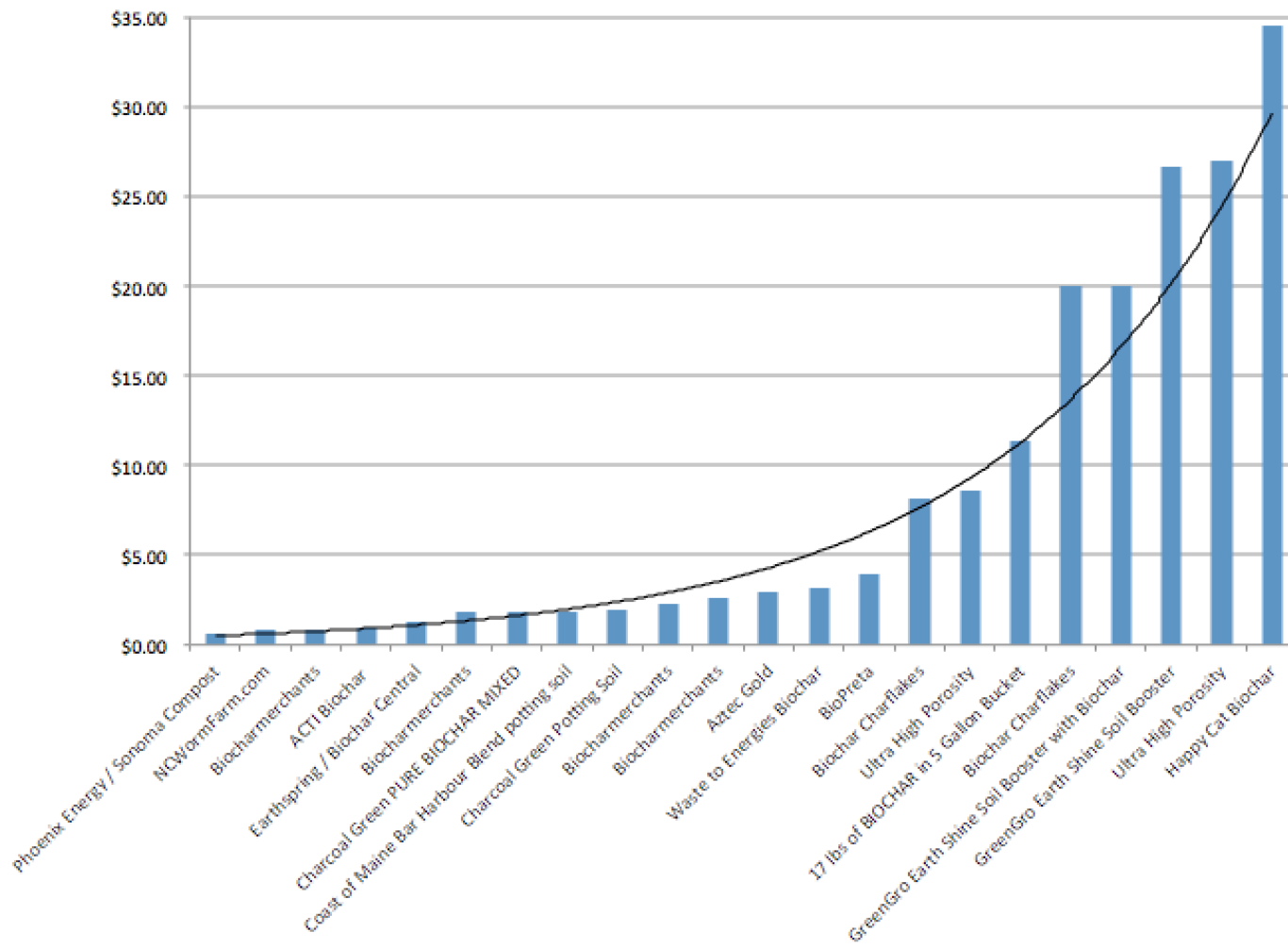
A decorative scrollwork border in white on a black background, framing the central text. The border features intricate floral and vine patterns at the top, bottom, and sides.

ROADMAP

-
- ❖ Biochar Economics
 - ❖ Basics of Biochar Production
 - ❖ Composting Biochar the Faster Way

BIOCHAR ECONOMICS

Price Per Pound



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



Photo: Pacific Biochar

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

THE FIFTH TREATMENT

Acidulation!

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



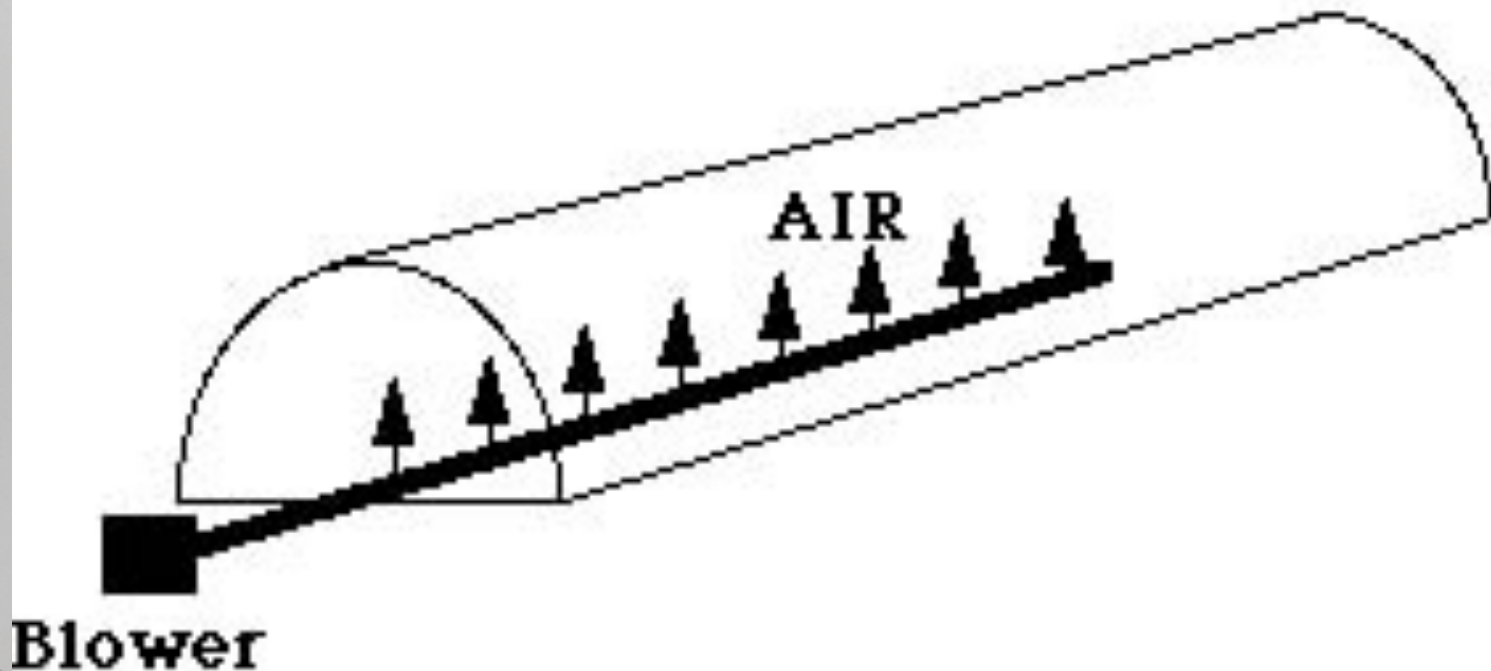
Photo: Kelpie Wilson, Backyard Biochar

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



FAST BIOCHAR COMPOSTING



Photo: Celebrity Dirt Soil Amendments

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





Photo: O2Compost



Photo: O2Compost

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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)