Intuitive Inoculation

Dale Hendricks and Doug Clayton
2013 USBI North American Biochar Symposium
early inspirations
2007-2009
Stumbling along and building awareness
2010
It’s the compost, stupid!
Finally, some results!
Using all the ways:
- Hot
- Cold
- Vermiculture

Additions:
- dynamic accumulator teas
- molasses
- hydrolyzed fish/seaweed ferments, etc.
- and most importantly URINE
Biochar layered into piles as they are constructed from a varied and broad range of materials (what’s in season?)

• Typically heats up when first built
• Worms appear as the pile cools down

Three to four turnings over nine to twelve+ months (no hurry)

Hot chars created

Urine collected

Urine soaked char often added at turnings, if available

Teas and ferments added sporadically (what’s in season?)

Final “turning” is processing through a hammer mill (more urine/char added)

When used as seed starting medium the final product is sifted through 1/2” mesh, typically 1/4 of the final content is biochar.
Feeding the worms --------- tens of thousands of them

uh-oh  Amynthas agrestis

“crazy snake worm”
ANALYSIS REPORT FOR COMPOST

SOIL AND PLANT TISSUE TESTING LABORATORY
WEST EXPERIMENT STATION
UNIVERSITY OF MASSACHUSETTS
AMHERST, MA 01003

Lab Number: C120410-109
Bag Number: 107406

SAMPLE INFORMATION

DOUG CLAYTON
50 BULLARD ROAD
JAFFREY, NH 03452

COMPOSTING METHOD: HAND TURNED
AGE: 9 MONTHS
INTENDED USE:
COMPONENTS: MANURE, HAY, LEAVES, KITCHEN WASTE, BIOCHAR

COMPOST ANALYSIS REPORT

SAMPLE ID: BIOCHAR ONE

Moisture As Received: 45.7 %
Moist Bulk Density: 0.56 grams/cm3 (0.47 tons/yd3)
Coarse Fragments: 24.5

pH (v:v): 6.8
Soluble Salts (Elec. Cond.): 2.71 dS/M

Total Nitrogen: 1.50 % (7.7 lbs/yd3)
Nitrate-N: 757 mg/kg (0.39 lbs/yd3)
Ammonium-N: 6 mg/kg (0.00 lbs/yd3)

Organic Matter: 33.2 %
Estimated Organic Carbon: 17.9 %
Carbon/Nitrogen Ratio: 12.0

NUTRIENT RATING

<table>
<thead>
<tr>
<th>NUTRIENT LEVELS</th>
<th>PPM</th>
<th>LOW</th>
<th>MEDIUM</th>
<th>HIGH</th>
<th>VERY HIGH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus (P)</td>
<td>555</td>
<td>XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</td>
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</tr>
<tr>
<td>Potassium (K)</td>
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<tr>
<td>Calcium (Ca)</td>
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</tr>
<tr>
<td>Magnesium (Mg)</td>
<td>1380</td>
<td>XXXXXXXXX</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

EQUIVALENT BASE CATION PERCENTAGES
Ca =57.8 Mg =24.7 K =17.6

POTENTIAL ACIDITY
0.0 lbs CaCO3/yd3

EXTRACTABLE MICRONUTRIENTS

<table>
<thead>
<tr>
<th>MICRONUTRIENT</th>
<th>mg/kg</th>
<th>COMPOST RANGE</th>
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</thead>
<tbody>
<tr>
<td>Boron (B)</td>
<td>3.1</td>
<td>(0.5-20)</td>
</tr>
<tr>
<td>Manganese (Mn)</td>
<td>33.1</td>
<td>(5-200)</td>
</tr>
<tr>
<td>Zinc (Zn)</td>
<td>14.3</td>
<td>(5-50)</td>
</tr>
<tr>
<td>Copper (Cu)</td>
<td>0.4</td>
<td>(0.5-5)</td>
</tr>
<tr>
<td>Iron (Fe)</td>
<td>5.2</td>
<td>(5-200)</td>
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ANALYSIS REPORT FOR COMPOST

SOIL AND PLANT TISSUE TESTING LABORATORY
WEST EXPERIMENT STATION
UNIVERSITY OF MASSACHUSETTS
AMHERST, MA 01003

DOUG CLAYTON
50 BULLARD ROAD
JAFFREY, NH 03452

Lab Number: C120531-106
Bag Number: 109689

COMPOSTING METHOD: HAND TURNED
AGE: FINISHED
INTENDED USE: GARDEN
COMPONENTS: C120410-109 AGED/EXP
USED TO WEATHER

SAMPLE INFORMATION

COMPOST ANALYSIS REPORT

SAMPLE ID: BIOCHAR-2

Moisture As Received: 51.8 %
Moist Bulk Density: 0.55 grams/cm3 (0.46 tons/yd3)
Coarse Fragments: 10.9

pH (v:v): 7.2
Soluble Salts (Elec. Cond.): 0.93 ds/m

Total Nitrogen: 1.21 % (5.4 lbs/yd3)
Nitrate-N: 156 mg/kg (0.07 lbs/yd3)
Ammonium-N: 0 mg/kg (0.00 lbs/yd3)

Organic Matter: 35.2 %
Estimated Organic Carbon: 19.0 %
Carbon/Nitrogen Ratio: 15.8

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<tr>
<td>Potassium (K)</td>
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<tr>
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<td>XXXXXXXX</td>
<td>XXXXXXXX</td>
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<tr>
<td>Magnesium (Mg)</td>
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<td>XXXXXXXX</td>
<td>XXXXXXXX</td>
<td>XXXXXXXX</td>
<td>XXXXXXXX</td>
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EQUIVALENT BASE CATION PERCENTAGES

Ca = 63.4 %  Mg = 25.7 %  K = 11.1

POTENTIAL ACIDITY

0.0 lbs CaCO3/yd3

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Preparing a pepper bed with 1” of biochar compost cut into the top 6”
Thank you for your interest
and thanks to all who have inspired our biochar endeavors