Soil Management for Healthy Lawns and Environments

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CHESAPEAKE BAY RECORD DEAD ZONE
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Milligrams of Oxygen per liter of water:

10 HEALTHY
7.5 GOOD
5.0 FAIR
2.5 POOR
0 DEAD

Source: Chesapeake Bay Program
When there are excessive loads of nitrogen and phosphorus in the water, algae can "bloom" to harmful levels, changing water color, and eventually stripping dissolved oxygen from the water when they die, fall to the bottom, and decay. This dissolved oxygen is critical to the health of Chesapeake critters and waters.

Where do excessive nutrients come from?

- **Wastewater treatment plants** release treated water—often still containing large amounts of nutrients—into streams and rivers, which eventually flow into the Chesapeake Bay.
- **Runoff** from farmland, urban and suburban areas empty into our streams and rivers carry nutrients from fertilizers, septic systems, boat discharges, and animal manure.
- **Air pollution** from our cars, factories, gas-powered tools, etc. contribute nearly 30 percent of the total nitrogen load to the Bay's waterways.

What can we do about them?

- Drive less, walk/bike more!
- Don't over-fertilize your lawn (or don't fertilize at all!).
- Grow oysters.
- Buy local food.
- Turn off the water when you brush your teeth!
- [Get more ideas here.](#)
Creating Healthy Lawns and Ecosystems by:

- Applying less pesticides and nutrients
- Build healthier soils
- Select the right grass species mixes
- Create optimal growing conditions for grass growth. Avoid plant stress
  - Appropriate fertility and moisture
  - Mowing at correct height
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Area (in)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>HfB</td>
<td>Hartland very fine sandy loam, 2 to 8 percent slopes</td>
<td>0.7</td>
<td>0.1%</td>
</tr>
<tr>
<td>HfC2</td>
<td>Hartland very fine sandy loam, 8 to 15 percent slopes, eroded</td>
<td>36.4</td>
<td>5.9%</td>
</tr>
<tr>
<td>HfD2</td>
<td>Hartland very fine sandy loam, 15 to 25 percent slopes, eroded</td>
<td>29.8</td>
<td>4.9%</td>
</tr>
<tr>
<td>HrC</td>
<td>Lyman-Tunbridge complex, 8 to 15 percent slopes, rocky</td>
<td>107.5</td>
<td>17.5%</td>
</tr>
<tr>
<td>HsB</td>
<td>Lyman-Abram complex, 0 to 8 percent</td>
<td>3.1</td>
<td>0.5%</td>
</tr>
</tbody>
</table>
Clay
• Poor drainage
• High water holding capacity
• Nutrients can bind to soil
• Hard to till
• Organic Matter Helps!

Sand
• Good drainage
• Low water holding capacity
• Nutrients leach easily
• Easy to till
• OM Helps!
The arrangement of soil separates into soil aggregates

- **Aggregates**
  - Particles of soil stuck together with humic acid

- **Sizes**
  - From size of pea down to a few grains of sand
Soil Structure is affected by:

- Compaction
- Moisture Content
- Organic Matter

Which influence the Arrangement, Shape, and Size of aggregates.
Organic Matter Sources

- Compost
- Chop and drop grass clipping
- Mulched leaves

**Remember that all of these will add nutrients.**
Appropriate Nutrient Management and Fertilization

pH Scale

Acid

Basic (Sweet)

Logarithmic Scale

Best Range for Most Crops
pH affects the availability of different nutrients:

The wider the bar, the more readily available that nutrient is to plant uptake.
## Soil Testing

### Soil Test Report

**Soil Test Report For:**

**JASON LILLEY**

**75 CLEARWATER DR**

**FALMOUTH ME 04105**

### Soil Test Summary & Interpretation

| Nutrient | Level Found | Optimum
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Soil pH</td>
<td>5.9</td>
<td>6.0-7.0</td>
</tr>
<tr>
<td>Organic Matter</td>
<td>3.9</td>
<td>3.0-4.0</td>
</tr>
</tbody>
</table>

### Major Nutrients

| Nutrient | Level Found | Optimum
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus (lb/a)</td>
<td>2.1</td>
<td>1.0-1.5</td>
</tr>
<tr>
<td>Potassium (lb/a)</td>
<td>1.6</td>
<td>1.0-1.5</td>
</tr>
<tr>
<td>Calcium</td>
<td>39.5</td>
<td>30-40</td>
</tr>
<tr>
<td>Magnesium (lb/a)</td>
<td>15.8</td>
<td>10-15</td>
</tr>
<tr>
<td>Sulfur (ppm)</td>
<td>17</td>
<td>10-20</td>
</tr>
</tbody>
</table>

### Micronutrients

| Nutrient | Level Found | Optimum
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Boron (ppm)</td>
<td>0.1</td>
<td>0.05-0.2</td>
</tr>
<tr>
<td>Copper (ppm)</td>
<td>0.05</td>
<td>0.05-0.1</td>
</tr>
<tr>
<td>Iron (ppm)</td>
<td>5.7</td>
<td>2-5</td>
</tr>
<tr>
<td>Manganese (ppm)</td>
<td>2.0</td>
<td>1-3</td>
</tr>
<tr>
<td>Zinc (ppm)</td>
<td>0.7</td>
<td>0.5-1</td>
</tr>
</tbody>
</table>

### Recommended Additions for Organic Growing - Crop Code # 392

To raise soil pH to 6.5, apply 70 pounds of lime per 1000 sq. ft.

**Magnesium Level is Sufficient. Use a Calcitic (low magnesium) lime.**

To meet major nutrient requirements, apply (on each 1000 sq. ft.):

- Nitrogen (2.5 lb) - from 20 lb blood meal or 35 lb soybean or 25 lb fishmeal.
- Phosphorus (4.5 lb) - from 25 lb bone meal/bone char or 150 lb rock phosphate.
- Potassium (7.5 lb) - from 94 lb dry wood ash or 9 lb potassium sulfate.

**Note:** not all sources of potassium sulfate approved for organic certification.

Wood ash acts as a liming material. Reduce lime amount by 1.5 lb for each 1 lb used.

15 bushel cow or horse manure or 7-8 bushel poultry, sheep, goat, or rabbit manure/1000 sq. ft. can substitute for 1/4-1/3 recommended nutrients (apply in fall). Broadcast lime uniformly, in spring or fall, and till in 6-7 in.

Fertilizer may be broadcast in spring, but is best banded 2-3 in. below & beside rows.

Till in manure, compost, or leaves each year to build and maintain soil organic matter. This will improve the nutrient and water holding capacity of your soil.

### Numerical Results

<table>
<thead>
<tr>
<th>pH 5.9</th>
<th>5.99</th>
<th>6.0-7.0</th>
<th>N/A</th>
<th>20-40</th>
<th>see % Saturation levels</th>
</tr>
</thead>
</table>

### Additional Results or Comments

Lead assay: normal background levels.
• To sustain productivity, maintain environmental quality, and promote lawn health

- Keep the soil uncompacted and porous
- Work to increase OM levels and encourage soil life
- Maintain optimal moisture and fertility for grass growth
- Plant grass species for specific soil and site types
Natural Lawn Care Requires a Holistic Approach

1. Test soil and amend fertility based on test results
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Questions?

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