## Lime application rate

<table>
<thead>
<tr>
<th>Starting pH from test</th>
<th>Amount to add to raise or maintain pH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>pH 7</td>
</tr>
<tr>
<td>pH 6.6</td>
<td>4 T</td>
</tr>
<tr>
<td>pH 6.2</td>
<td>8.5 T</td>
</tr>
<tr>
<td>pH 5.8</td>
<td><strong>13 T</strong></td>
</tr>
</tbody>
</table>
Lime application: farm field

- Chose 2 Tons/acre, not for pH adjustment, but to get our Ca up and displace the high Mg
- [Our discussion of this and CEC will come later…]
- How much is that on our field?
- 2 Tons = 4000lb. 4000lb x 0.126 Acres = 504lb.
- How much is that per sq ft? 0.126 x 43560 sqft/acre = 5489. 504lb/5489 = 0.09lb/sq ft
- How much per 100 sq ft? 0.09 x 100 = 9lb
How much Calcium is that?

- How much Calcium is in Oyster Shell lime?
- Fortunately, we can look it up (phew!)
- CaCO₃ is 32% Ca⁺⁺
- The ‘grind’ we are buying is quite fine, so we give it 90% ‘efficiency’
- 4000lb/acre x 0.32 x 0.9 = 1152 lb/acre
- Soil test = 2900, add 1152 = 4052
- Recommended is 4000
Compost application rates

• Recommended is 2-10 Ton/acre/year
• Why? Cost and diminishing returns
• Farm field: 1 Ton (2 yd) on 0.126 acres
  = 2000 lb/5489 sq ft = .36 lb/sq ft
• x 100 sq ft = 36 lb/sq ft
How much nutrient to we get from Cranford compost?

- Analysis is 0.78% N, 0.31% P, 0.73% K, 1% Ca
- 1 Ton compost/ 0.126 Ac = 8 Ton Ac
- $16,000 \text{ lb/Ac} \times 0.0078 = 124 \text{ lb/Ac N}$
- $16,000 \text{ lb/Ac} \times 0.0031 = 49.6 \text{ lb/Ac P}$
- 117 lb/Ac K; 160 lb/ac Ca
- Be careful using compost for nitrogen budgets!
How much N do we need?

- Broccoli: 270 lb N/Ac ‘used’ + 15% losses = 310 lb/Ac
- (-) o.m. nitrogen release (from soil test or table) = 160 lb/Ac
- (-) nitrogen in soil (from soil test) = 6 lb/Ac
- (-) 124 lb/Ac from compost (careful!)
- (-) amount from cover crop (nothing yet!)
- = 20 lb N needed.
- But, compost likely only 50% of N is available
- So add back 124 x 50% = 62
- 62 + 20 = 82 lb N/Ac needed. *144 with a low N compost (non-animal waste)
Now you try with celery…

- 380 lb N/Ac used. How much N do we need to add?
How much 8-5-1 do we need for Broccoli?

- We need 82 lb N/acre
- 8 % N
- **Formula: Amount needed = Amount to add/percent of nutrient in product**
- Amount needed = 82/.08 = 1025 lb/Ac
- Amount per bed:
  - 1025 lb/43560 sq ft = .023lb/ sq ft
  - 1 bed = 55’long x 3.3’ wide = 182 sq ft
  - 182 sq ft x .023 lb.sq/ft = 4.2 lb/bed
- Half at planting, half for side-dress
Potato, celery, zucchini, onion

- Potato needs: 265 lb N/Ac
- Lettuce needs: 120
- Zucchini needs: 180
- Onion needs: 180
How much P do we need?

- Broccoli uses 75lb/Ac P (as P2O5)= 75
- (-) amount from soil test = 1
- (-) amount from compost = 49
- = 25 lb
Are we getting enough P from the 8-5-1?

- We need 75 lb P (as P2O5)
- 5% P in 8-5-1
- Amount needed for P = 25/.05 = 500lb
- We’re putting on 1025 lb for N, so we have twice enough for P
- We could’ve used a 2.5% P source
How about K?

- Soil test says we’re ok
- What is our K budget?
- Broccoli uses 247 lb/Ac
- Compost adds 117 lb
- Soil has 140 lb
- 1025 lb of 8-5-1 adds:
Now, you should be able to do rough budgets for all nutrients

• Before you get too confident:
• Nutrients are affected differently by high and low pH’s, soil texture, temperature, microbial activity, and the degree of organic matter decomposition
• Solution: The Agronomy Handbook and
• Site Specific Experience
• Rounding up or down is ok!
Micronutrients

- Soil test shows:
- What to do?
- Do another test because micronutrient deficiencies can be over-corrected
- The over-correction is not easily reversed
- We are getting some micronutrients from our compost
- Potential toxicities can be reduced by raising pH (and organic matter)