The Davis County Master Gardener Association

in association with the
Utah State University Extension Service
Overview

- Plant Nutrient Requirements
- Affect of pH on Nutrient Availability
- Soil Tests
- Types of Fertilizers
- Fertilizer Application
Plant Nutrient Requirements

- Primary Macro Nutrients
  - Carbon
  - Hydrogen
  - Oxygen
  - Nitrogen
  - Phosphorus
  - Potassium

- Secondary Macro Nutrients
  - Calcium
  - Magnesium
  - Sulfur

- Micro Nutrients
  - Iron
  - Boron
  - Etc.
Nitrogen

- Contributes to top growth
- Required to support chlorophyll
- Water soluble, leaches away
- Too much suppresses flowering
Phosphorous

- Contributes to root growth
- Not mobile in the soil, needed at roots
- Contributes to flowering, fruit
Potassium

- Contributes to overall plant health
Fertilizer Labels (4-10-8)

- The three numbers represent:
  - % nitrogen (N)
  - % phosphorus (P)
  - % potassium (K)

- 4-10-8 = 4% N, 10% P, 8% K
- 16-16-16 = 16% N, 16% P, 16% K
Types of Fertilizer

- Complete vs. Incomplete
- Specialized
- Slow Release
- Organic
- Green Manures
- Combined With Pesticides
Effect of Soil pH

- Nitrogen
- Phosphorous
- Potassium and Sulfur
- Calcium
- Magnesium
- Fe, Cu, Zn, Mn, Co
- Molybdenum
- Boron
Soil Tests

- Ribbon test
- Canning jar test
- Over the counter tests
- USU soil testing
Fertilizer Application

- Quantity
- Timing
- Amount
- Methods
## How Much N to Apply

Determine the pounds of fertilizer to apply in terms of nitrogen requirements.

\[
\text{Lbs to apply} = \left(\frac{\text{Lbs N required}}{\%\text{N}}\right) \times \frac{100}{100}
\]

<table>
<thead>
<tr>
<th>Label</th>
<th>%N</th>
<th>Lbs N Required</th>
<th>Lbs To Apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 (21-0-0)</td>
<td>21</td>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td>10 (36-0-0)</td>
<td>36</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>20 (6-2-0)</td>
<td>6</td>
<td>4</td>
<td>67</td>
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</tbody>
</table>

Recommendation for Lawns: 2 lbs N/1000 sq ft/year
When to Fertilize

- Soil type – determine frequency
- Crop type
- Time of year
- During rapid growth
Application Methods

- **Broadcast**
  - Spread on surface and till or water in
  - Use calibrated rotary or drop spreader

- **Banding and Side dressing**
  - Apply to soil around plant or in furrow
  - Cover with soil

- **Foliar**
  - Spray on – quick response, chance of leaf burn
Summary