Getting Full Value From Plant Analysis
Purpose of plant analysis

• Confirm nutrient deficiencies
• Confirm response to nutrient additions
• Evaluate nutrients for which there is no soil test (e.g. Cu, Fe)
Sampling Method

- Sample appropriate plant part
- Sample normal and abnormal areas separately
- Include supporting info on submittal form
- Wipe off soil with clean cloth, do not wash
- Package in paper bag
- Include soil sample
Suggested Plant Part to Sample

• Corn
  – Earleaf at silking
• Soybean
  – First fully developed trifoliate at flowering
• Alfalfa
  – Top 6” at late bud
• See sheet between p. 154-155 of A3588
Limitations of Plant Analysis

• Interpretation
  – Drought, insect/disease, hybrid, growth stage
• Interaction with other nutrients
• Effect of soil pH
• Sample handling
• May be too late to correct in current year
Sufficiency Level

Figure 12-7. Relationship between nutrient supply, corn yield and nutrient concentration in ear leaf tissue.

Source: Adapted from Brown, 1970.
DRIS

• Diagnosis and Recommendation Integrated System
• Uses ratios of nutrients in plant tissues to create an index
• 0 is considered optimum, - is deficient, + is surplus
• less than -25 is considered deficient; greater than 100 is excessive
PLANT ANALYSIS REPORT

Client:
Soil & Forage Analysis Lab
8396 Yellowstone Dr.
Marshfield, WI 54449

Account: 555901

Lab Information
Lab Number: 72345
Date received: 7/22/2002
Date processed: 1/2/2007
County: Dane

Sample Information
Sample ID: T
Field: T
Crop: Field corn
Growth Stage: Tassel to silk
Plant Part: Ear leaf
Appearance: Normal
Soil Submitted: Yes

Plant Results

<table>
<thead>
<tr>
<th>Element</th>
<th>Low</th>
<th>Sufficient</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>0.00</td>
<td>0.60</td>
<td>1.00</td>
</tr>
<tr>
<td>P</td>
<td>0.10</td>
<td>1.00</td>
<td>1.90</td>
</tr>
<tr>
<td>K</td>
<td>0.15</td>
<td>0.50</td>
<td>1.00</td>
</tr>
<tr>
<td>Ca</td>
<td>0.12</td>
<td>0.60</td>
<td>1.00</td>
</tr>
<tr>
<td>Mg</td>
<td>0.00</td>
<td>0.10</td>
<td>0.50</td>
</tr>
<tr>
<td>S</td>
<td>0.10</td>
<td>0.50</td>
<td>2.00</td>
</tr>
<tr>
<td>Zn</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
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</tr>
<tr>
<td>Cu</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Soil Results

pH: 5.8, target pH = 6.0
OM: 3.0%

<table>
<thead>
<tr>
<th>Element</th>
<th>Optimum</th>
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<tbody>
<tr>
<td>P</td>
<td>10.1</td>
</tr>
<tr>
<td>K</td>
<td>30.1</td>
</tr>
</tbody>
</table>

Note: L = Low, VL = Very Low, H = High, VH = Very High, E = Excessive

SUFFICIENCY RANGES

Key:
- Plant result
- Soil result
- Soil pH target

High
Sufficient
Low
## Yield Response Interpretation Systems

<table>
<thead>
<tr>
<th>System</th>
<th>Almost Certain</th>
<th>Possible</th>
<th>Remote</th>
<th>Unlikely</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRIS</td>
<td>Element Index</td>
<td>P N -38 -37</td>
<td>S -8</td>
<td>K Zn 32 51</td>
</tr>
<tr>
<td>PASS</td>
<td>Element Index</td>
<td>N P S -59 -56 -21</td>
<td>Ca Mg -22 -17</td>
<td>K Cu Mn B Zn -7 -6 -5 -4 7</td>
</tr>
</tbody>
</table>

**PASS INI:** N: -48 P: -42 Ca: -22 S: -19 Mg: -17 K: -7 Cu: -8 Mn: -5 B: -4 Zn: -7 Fe: 18

**PASS DNI:** P: -14 N: -13 S: -2 Zn: 13 K: 16

*Note: DRIS = Diagnosis and Recommendation Integrated System, PASS = Pest Analysis with Standardized Scores, INI = Independent Nutrient Index, DNI = Dependent Nutrient Index.*

**Common Response Elements are in BOLD and Rare Response Elements are NOT.** DRIS yield response categories are computed as follows: "Almost Certain" - Index < -20, "Possible" -20 < Index < -15, "Unlikely" - Index > 25, "Remote" - any Index not in any other category.

**PASS yield response categories are computed as follows:** "Almost Certain" - common response elements with INI < -10, "Possible" - common response elements with INI -10 and rare response elements with INI < -10, "Unlikely" - any element with INI > 10, "Remote" - any element not in any other category.
Summary

• Not quite CSI level
• Need lots of evidence
  – Plant symptoms
  – Root growth patterns
  – Weather influence
  – Field history and management
  – Soil test results