Michigan Prospects for Using the Illinois N Soil Test

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What is the INST?

- A new soil N test that measures a fraction of organic N
  - Amino sugar-N fraction

- Can differentiate non-responsive fields in Illinois
  - Larger INST value = smaller response to N

- Can be taken spring preplant (or fall?)
Laboratory Methods

- INST is not as straightforward as written
  - Procedure is not a foolproof recipe
  - There is definitely an art to this method

- Student makes a roadtrip to Illinois
  - Learned the art
  - Ran the INST on a MI soil – now a std soil
  - Need to modify the lab & equipment set up
Is your lab as windy as the open prairie?
1 water, 1 std soil, 10 samples or 9 samples + glucosamine

2\textsuperscript{nd} plate duplicate of 1\textsuperscript{st} plate

- Sample rerun if dups. differ by > 10 ppm
Field Methods

- **Corn**
  - Various N rates applied in replicated plots or strips
    - Included plots with no N applied
  - 2002 – 3 locations, 2003 – 9 locations
  - Soil samples 0-1’ preplant
  - Yield measured

- **Sugar Beet**
  - N rates (0 – 200 lb N/a) applied to small plots
  - 5 locations each in 2002 & 2003
  - Soil samples 0-1’ preplant
  - Yield and quality measured
% response = \frac{(\text{plateau yield} - \text{yield})}{\text{yield}} \times 100

- Corn – economic return
- Sugar beet – recoverable white sugar per acre
CORN

Saginaw

YONR = 131

EONR = 90

Return ($/a)

N Applied (lb N/a)
Results
OM = 0.0125*INST + 0.8307

$R^2 = 0.625$
OM v. Response to N

Organic Matter (%) vs. Response to N Fertilizer (%)

Corn

Sugar Beet

2002
2003
Laboratory Comparison

Sample Number

INST (ppm)

Private

Univ. of Illinois

0 5 10 15 20 25 30 35 40

0 50 100 150 200 250 300 350 400 450 500

Sample Number

INST (ppm)
Laboratory Comparison

- 40% are < 10% different
- 25% are > 20% different
Conclusions

- Preliminary data does not look promising
  - Corn – need to find non-responsive locations
  - Sugar beet – investigate relationship between INST and OM

- Concerned about threshold range and interlaboratory variability

- Will continue research in 2004