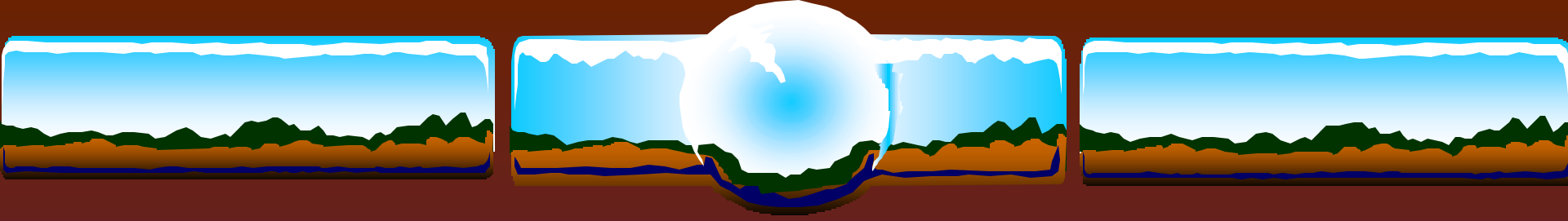

N-Viro Biosolids On-farm Research Results 1998-2000

Greg Andrews

Associate Professor-UW-Extension

Pierce County Ag.Agent

N-Viro Biosolids

- It smells, but less than before
- It looks like dirt
- It does act like a liming agent
- It does have nutrients
- It may make economic sense?

Research Sites in Pierce County

- 1998-randomized and replicated field size
- Hines Ranch-corn yield and pH
- Steve and Mary Brand Farm-pH only
- 1999-randomized and replicated
- Kevin Lindstrom Farm-very low pH, spreader applied, field scale
- WCWBF-small plots, 10x30 ft., pH and yields

The Research Questions

- 1.What are the estimated nutrient credits per ton?
- 2.What liming value does it contain per ton?
- 3.What is the economic value per ton?

Cooperators in 1998 Research

- WCWBF-Richard Mckee,Manager
- Precision Ag. Services-Brent Wink
- Hines Ranch-Dale,Lester,Dean Hines
- Steven and Mary Brand
- Pioneer Hybrids International

Hines Ranch, 1998

- Corn following corn
- Soil Type: Otterholt Silt Loam
- Applied by Precision Ag.
- Plots were random/replicated, 40 ft wide
- Nitrogen credits taken
- pH and Corn Yields

Hines Ranch, pH

Treatment	pH,planting	pH,harvest	Change
Control	6.9	7.1	.2
Control	6.9	7.0	.1
10 tons	6.8	7.5	.7
10 tons	6.9	7.5	.6
20 tons	6.9	7.8	.9
20 tons	6.9	7.6	.7

Hines Ranch, yield results 1998

Treatment	Nitrogen Applied, Lbs./Acre	Yield Average @15.5 % M
Control	140	185.4
10 tons	116	198.5
20 tons	92	212.2

Brand Location, 1998

- Corn following corn
- Wykoff Loam
- Precision Ag. applied
- No nutrient credits taken
- pH only

Brand Location, pH

Treatment	pH,planting	pH,harvest	Change
Control	6.7	7.0	.2
Control	6.7	6.7	NC
10 tons	6.6	7.1	.5
10 tons	6.7	7.2	.5
20 tons	6.7	7.4	.7
20 tons	6.5	7.4	.9

1999-2000 Research Goals

- Calibrate on-farm field equipment
- Small plot replicated trial, pH
- Small plot replicated trial, yield
- Field size replicated trial, pH

Kevin Lindstrom Site

- Very low pH site
- Many years continuous corn
- Hixton Loam
- Checked for calibration rate of end-gate spreader
- pH measured pre-plant and harvest time

Lindstrom Site, pH Change, 1999

Rate	pH, planting	pH,harvest	Change
Check	5.0	5.1	.1
6.18 t/a	5.0	5.4	.4
Check	4.8	5.0	.2
5.53 t/a	4.8	5.1	.3
Check	5.0	4.9	-.1
6.16	5.0	5.5	.5

WCWBF Site, 1999

- Corn following corn
- Small Replicated Plots 10x30 ft
- Six treatments, random, replicated 3X
- Hand applied
- Chisel plowed
- Spring 2000 soil pH tests

WCWBF, pH Changes-1999

Rate, tons/acre	pH Change, May-Oct
Control	-.16
1	-.06
2.5	-.13
5	.3
7.5	.43
10	.5

WCWBF Site, Yields, 1999

Rate	Yield, 15.5%
Control	122
1	137
2.5	143
5	167
7.5	159
10	170

Summary
N-Viro Biosolids (Credit Value)

- 43 percent of value is (Liming Value)
- 33 percent of value is (Sulfur)
- 13 percent of value is (Phosphorus)
- 6 percent of value is (Nitrogen)
- 3 percent of value is (Boron)
- 2 percent of value is (Potassium)

Summary

1. Nutrient Credits and Lime are worth $10-12 per ton. "Conservative Estimate"
2. Observed pH changes similar to aglime, roughly 1.5 tons of biosolids equivalent to 1 ton of 60-69 aglime.
3. Corn yields higher where biosolids were applied.
4. Material costs are low but transportation and spreading costs range from $3.50-$5.00 per ton.
5. Nutrient and liming value can change due to processing.