

Sugarbeet Lime Demonstration Project 2008 - 2011

- *Grower Interest in beet lime for “P” content*
- *Wanted to know the long term affect of lime on “P” soil test level and other soil properties*
- *Research shows benefits from Lime for disease reduction, increasing pH of acid soils and maybe from “P” and other nutrients*
- *Many areas use beet lime (Europe, U.S.)*
- *Demonstration project started fall 2008*

AGVISE Laboratories Sugarbeet Lime Project

- *Long term site for monitoring (10-20 years)*
- *Beet lime collected and blended to insure even application of “P”*
- *Uniform tillage of the material into the topsoil*

Site east of the Northwood lab in grassy area

Heavy poorly drained soil



10.19.2008

Beet Lime Site Initial Soil Properties

| Site ID | Rate of Lime Applied | Soil pH | Olsen P soil test | Soluble Salt | CCE (Carbonate) |
|----------------|---------------------------------|--------------------|------------------------------|-------------------------|----------------------------|
| | | | ppm | mmhos/cm (1:1) | % |
| 1 | 1 ton | 7.8 | 4 ppm | 1.5 | 3.0 |
| 2 | 2 ton | 7.9 | 4 ppm | 1.9 | 5.3 |
| 3 | 3 ton | 7.9 | 4 ppm | 1.9 | 4.0 |
| 4 | 4 ton | 7.8 | 8 ppm | 1.0 | 1.1 |
| 5 | 5 ton | 7.8 | 5 ppm | 1.7 | 1.8 |
| 6 | 6 ton | 8.0 | 4 ppm | 2.6 | 2.7 |

Soil Samples Collected Every Fall

Beet Lime is Plentiful



10.13.2008

Beet Lime - Nasty to Handle!



Drop spreader used to
“chew up” the lime for
Uniform application

Beet lime applied 10-19-08



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Beet lime applied was 0.45% P or 20 lb/a P_2O_5 /ton

Treatments (based on dry weight)

1 ton = 20 lb/a P_2O_5

2 ton = 40 lb/a P_2O_5

3 ton = 60 lb/a P_2O_5

4 ton = 80 lb/a P_2O_5

5 ton = 100 lb/a P_2O_5

6 ton = 120 lb/a P_2O_5

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Beet lime tilled in 10-19-08



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Grass was be established on each site
Soil properties and nutrients will be tested each year



Beet Lime Demo Project

Soil pH Changes? (No!)

| Site ID | Rate of Lime Applied | Soil pH Initial | Soil pH | Soil pH | Soil pH |
|----------------|-----------------------------|------------------------|----------------|----------------|----------------|
| | | 9-08 | 10-09 | 08-10 | 11-11 |
| 1 | 1 ton | 7.8 | 7.7 | 7.9 | 7.8 |
| 2 | 2 ton | 7.9 | 7.9 | 8.1 | 7.9 |
| 3 | 3 ton | 7.9 | 7.9 | 8.1 | 7.9 |
| 4 | 4 ton | 7.8 | 7.8 | 7.9 | 7.7 |
| 5 | 5 ton | 7.8 | 7.8 | 8.0 | 7.9 |
| 6 | 6 ton | 8.0 | 7.9 | 8.2 | 8.0 |

Beet Lime Demo Project Soil Phosphorus changes

| Site ID | Rate of Lime Applied | Soil P Initial | Soil P | Soil P | Soil P |
|----------------|-----------------------------|-----------------------|---------------|---------------|---------------|
| | | 9-08 | 10-09 | 08-10 | 11-11 |
| | | ppm | ppm | ppm | ppm |
| 1 | 1 ton | 4 | 8 | 5 | 5 |
| 2 | 2 ton | 4 | 7 | 6 | 5 |
| 3 | 3 ton | 4 | 11 | 6 | 5 |
| 4 | 4 ton | 8 | 16 | 10 | 14 |
| 5 | 5 ton | 5 | 12 | 10 | 7 |
| 6 | 6 ton | 4 | 10 | 8 | 8 |

Beet Lime contains about 20 lb/ton P₂O₅

Beet Lime Demo Project

Soil Soluble Salt Changes? (NO)

| Site ID | Rate of Lime Applied | Soluble Salt Initial | Soluble Salt | Soluble salt | Soluble Salt |
|----------------|-----------------------------|-----------------------------|---------------------|---------------------|---------------------|
| | | 9-08 | 10-09 | 08-10 | 11-11 |
| | | mmhos/cm | mmhos/cm | mmhos/cm | mmhos/cm |
| 1 | 1 ton | 1.5 | 1.2 | 1.8 | 1.7 |
| 2 | 2 ton | 1.9 | 2.1 | 2.3 | 2.5 |
| 3 | 3 ton | 1.9 | 2.0 | 2.6 | 2.5 |
| 4 | 4 ton | 1.0 | 1.3 | 1.4 | 1.2 |
| 5 | 5 ton | 1.7 | 2.2 | 2.3 | 2.3 |
| 6 | 6 ton | 2.6 | 2.1 | 2.7 | 2.9 |

1:1 routine salt test method

Questions

