Efficacy of fungicides for controlling *Rhizoctonia solani* on sugarbeet

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Introduction

- Prevalence of root diseases is increasing in Minnesota and Eastern North Dakota

Rhizoctonia & Aphanomyces listed as worst production problem in sugarbeet.

Year	% of responses
2007	18
2008	24
2009	30
2010	53

Introduction

Percent of reported acres damaged by Rhizoctonia.

Year	Acres Reported	Percent Damaged
2007	115,397	10 %
2008	111,609	9 %
2009	93,849	11 %
2010	138,288	21 %

- Learning how to control Rhizoctonia is very important

Methods

- Hickson, ND
  - Inoculated May 20, 2010
    - AG 2-2 IIIB
    - 32 lbs/A barley inoculum
  - Planted to stand May 20, 2010
    - Susceptible Rhizoctonia Variety
    - **NO** 10-34-0 at planting
  - POST treatments applied in 7” band
    - 4002 E Flat Fan nozzle; 17 Gal/A
  - Stand Counts
  - Harvested October 4, 2010

Results – Exp. 1

Treatment	Rate fl oz/A	Application Date	October 4 Stand Count no./100’	October 4 Extractable Sucrose Lb/A
1. Quadris	14.3	June 2	112	7553
2. Quadris	14.3	June 23	126	8261
3. Quadris	14.3	June 2 & 23	134	9362
4. Inoc. Check	-	-	70	4325
LSD (0.05)			22	1849

Results – Exp 2

Treatment	Rate fl oz/A	Application Date	October 4 Stand Count no./100’	October 4 Ext. Sucrose Lb/A
1. Inoc. Check	-	-	84	4300
2. Quadris	9.2	June 2	90	5024
3. Proline + NIS	5.7 + 0.13% v/v	June 2	84	5291
4. Proline + NIS	5.7 + 0.13% v/v	June 2 & 23	100	5818
5. Proline + PMax + AMS + NIS	5.7 + 7 + **	June 2 & 23	116	6326
6. Quadris + PMax + AMS + NIS	9.2 + 7 + **	June 2 & 23	118	6950
LSD (0.05)			NS*	1255

** AMS rate = 14 lb/100 gal; NIS rate = 0.25% v/v

Results – Exp 3

Treatment	Rate fl oz/A	Application Date*	June 9 Stand no./100’	July 9 Stand no./100’	Oct. 4 Stand no./100’
1. Inoc. Check	-	-	154	112	26
2. Quadris	9.2	June 2	146	126	60
3. Headline	6	May 20	182	146	48
4. Quadris	9.2	May 20	188	166	80
5. Experimental	38	May 20	172	196	88
LSD (0.05)			24	28	19

* June 2 =Applied in 17 Gal / A; May 20 = Applied in 23 Gal / A

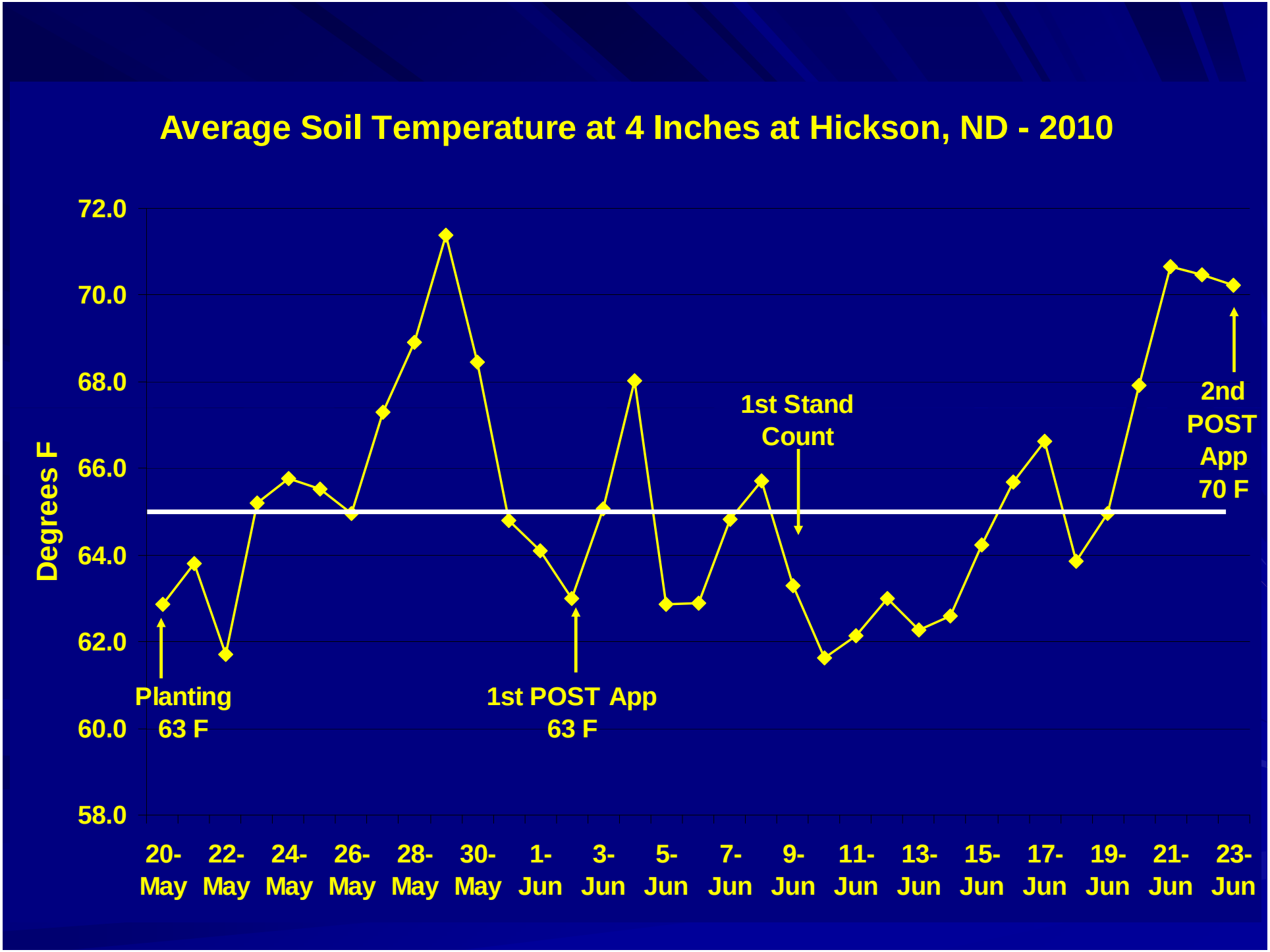
Inoculated Check

Quadris
In-Furrow

Headline In-Furrow

Summary

- Exp 3
  - Quadris or Headline applied in-furrow improved sugarbeet stand 20 & 50 days after planting compared to check
    - Did **NOT** apply with starter fertilizer
    - Experimental product gave greater stand compared to all other treatments at 50 DAP
  - All treatments gave greater stand compared to check at harvest
    - No treatment, whether in-furrow or POST was able to provide season long control


Average Soil Temperature at 4 Inches at Hickson, ND - 2010
Degrees F
72.0
70.0
68.0
66.0
64.0
62.0
60.0
58.0
Planting
63 F
1st POST App
63 F
1st Stand
Count
2nd
POST
App
70 F
20-
May
22-
May
24-
May
26-
May
28-
May
30-
May
1-
Jun
3-
Jun
5-
Jun
7-
Jun
9-
Jun
11-
Jun
13-
Jun
15-
Jun
17-
Jun
19-
Jun
21-
Jun
23-
Jun

Conclusions

- In-furrow application of Headline @ 6 fl oz or Quadris @ 9.2 fl oz protected sugarbeet for 20+ days
  - Were NOT applied with 10-34-0
- Single applications of Quadris
  - Exp 1 – 14.3 fl oz increased yield
  - Exp 2 – 9.2 fl oz did NOT increase yield
- Two applications always gave better protection than one application

Conclusions

- Tank mix of Powermax with Quadris or Proline tended to improve protection
  - Not significant, but a 2 year trend
- Soil temperature prior to application is important

Future Research

- In-furrow applications
  - Chemistries and rates
  - Addition of 10-34-0
- In-furrow followed by POST application(s)
  - Chemistries, rates, timings
- Seed treatments & experimental fungicides

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Questions?