POINDEXTER, STEVEN S.[1]* and JAMES F. STEWART[2], [1]Michigan State University Extension, Sugarbeet Advancement, One Tuscola Street, #100, Saginaw, MI 48607 and [2]Michigan Sugar Company, 1549 Valley Center Drive, Bay City, MI 48706. **Impact of Quadris and Proline fungicides on yields of sugarbeets with natural infection of Rhizoctonia crown rot.**

ABSTRACT

Rhizoctonia solani of sugarbeets is a significant problem in many sugarbeet producing areas of the United States. The objective of this study is to determine the effectiveness of the fungicides Quadris from Syngenta Crop Protection and Proline from Bayer Crop Science on control of Rhizoctonia solani rot. The research was conducted in fields with a known history and potential for naturally high levels of inoculums. Most current research is or has been utilizing artificial inoculation techniques.

Susceptible Rhizoctonia beet varieties were planted at each location in 2008. Two trials were conducted in large strip trials and two in small research trials. Each location provided different levels of actual Rhizoctonia infections. Significant differences occurred in infection levels between the untreated check and the Quadris and Proline treatments. Two to six leaf treatments in a 7 inch band of both Quadris and Proline helped control early season Crown Rot infections but did not eliminate mid/late season below ground Rhizoctonia infections. Most of the trials showed Quadris and Proline were both significantly better than the check for dead beet counts. Under heavy Rhizoctonia pressure Quadris appears to have better efficacy than Proline.

Objective:

1. To determine the efficacy of Quadris and Proline on control of Rhizoctonia Crown and Root Rot (R. Solani AG-2-2) under natural infections.

2. Determine economic impact of control.

Materials and Methods:

Four trial locations were identified in 2008 that had a history of Rhizoctonia. Two trials were large strip trials managed by Sugarbeet Advancement and two small traditional research trials established and managed by Michigan Sugar Company. Rhizoctonia dead or dying beet counts were taken in August, trials were replicated four times. Rhizoctonia susceptible varieties were planted in all locations. Sugarbeet Advancement trials used C-827RR and B-1634N, Michigan Sugar trials used B-1634N. Fungicide applications were made in a 7 inch band. Quadris was applied at 10.5 oz/acre, Proline 5.7 oz/acre and in combination at full rates. Applications were T-band In-furrow or foliar applied at 2-6 leaf stage.

Results and Discussion:

Research trials conducted at four locations resulted in only one trial with severe natural Rhizoctonia infections. This trial was the best indicator of efficacy between Quadris and Proline. Three other trials had relatively low levels. In general, both Quadris and Proline exhibit efficacy on Rhizoctonia Crown Rot. Under heavy Rhizoctonia pressure, season long control was not attained.

Conclusion:

At high levels of infection, Quadris appears to have better efficacy than Proline. Trials with low levels of infection indicated similar control with either fungicide. Combination of Quadris and Proline may have better efficacy than either fungicide alone. Under heavy Rhizoctonia pressure the economic net return for Quadris + Proline $222 acre, Quadris $192 acre and Proline $111 acre. In quality samples, 1 in 10 beets infected with Rhizoctonia negatively affected RWST by 14.7 lbs. per ton.

Table 1. Gratiot County – Sugarbeet Advancement

TREATMENT	RHIZ. COUNTS * 1200 Ft	% CONTROL	RWSA	TONS / ACRE	ECONOMIC NET RETURN/ ACRE
Quadris & Proline	257	56%	6585	25.02	$952
Quadris	291	50%	6277	23.83	$922
Proline	426	27%	5754	21.51	$841
Check	584	--	4802	18.53	$730
LSD (5%)	242	--	1562	5.66	--

*Dead or Dying Beets per 1200 Foot of Row.
Variety: C-RR827
*Economic return based on $40 / ton payment.

Table 2. Bay County – Sugarbeet Advancement

TREATMENT	RHIZ. COUNTS * 1175 Ft	% CONTROL	RWSA	TONS / ACRE	ECONOMIC NET RETURN/ ACRE
Proline	42	72%	8888	32.46	$1274
Quadris & Proline	57	62%	8813	31.75	$1241
Check	150	--	8295	30.17	$1216
Quadris	67	55%	8259	30.93	$1179
LSD (5%)	63		NS 763	NS 2.86	

*Dead or Dying Beets per 1175 Foot of Row.
Variety: B-1643N
*Economic return based on $40 / ton payment.

Table 3. Bay County – Michigan Sugar Company

TREATMENT		RHIZ. COUNTS* 110 Ft	RWSA	TONS/ACRE
Proline	6 Leaf	2	8898	31.6
Proline	2-4 Leaf	0.8	8697	31/7
Proline	In Furrow	0.3	8668	30.9
Quadris	6 Leaf	4	8580	31.0
Quadris	2-4 Leaf	0.3	8543	30.4
Quadris	In Furrow	1.2	8104	30.2
Check		12.6	7996	28.9
LSD (5%)		2.6	NS 1211	NS 4.5

* Dead or Dying Beets per 110 Foot of Row
Variety: B-1643N
- In furrow treatments appear to have reduced stand in this trial.

Table 4. Gratiot County – Michigan Sugar Company

TREATMENT		RHIZ. COUNTS* 110 Ft	RWSA	TONS/ACRE
Quadris	6 Leaf	1.8	4808	24.8
Quadris	2-4 Leaf	3.5	4795	25.4
Proline	2-4 Leaf	7.4	4611	24.6
Proline	In Furrow	7.5	4244	21.9
Check		12.1	4230	22.5
Proline	6 Leaf	1.7	4151	22.6
Quadris	In Furrow	8.9	4139	22.3
LSD (5%)		4.9	NS 801	NS 3.7

* Dead or Dying Beets per 110 Foot of Row
Variety: B-1643N