

## **RHIZOCTONIA SOLANI; CONTROL MEASURES IN MICHIGAN**

Lee A Hubbell<sup>1\*</sup>, James F. Stewart<sup>1</sup>, Brian J. Groulx<sup>1</sup>, Gregory M. Clark<sup>2</sup>,  
<sup>1</sup>Michigan Sugar Company, Agricultural Research Center, 1459 S. Valley Center Drive,  
Bay City, MI 48706 and <sup>2</sup>Michigan Sugar Company, 2600 S. Euclid Avenue,  
Bay City, MI 48706.

### **Introduction:**

Rhizoctonia solani root and crown rot is a serious problem in the Michigan Sugar Company growing area. Company Agronomists would recommend the use of a susceptible variety and no fungicide on only 1.1% of the acres. Only these few acres would be considered to have no Rhizoctonia. Their recommendation for the use of a tolerant variety increased from 50% of the acres for 2011 to 69% for 2013. Their recommendation for the use of a tolerant variety and two Quadris (Azoxystrobin) applications increased from 15% to 36% for the same two year period. There are two reasons for these changes; disease pressure is increasing and there is now one variety being sold that has good production and Rhizoctonia tolerance. We started testing Quadris for Rhizoctonia control in 1999. Trials have confirmed that Quadris is the most effective product to control Rhizoctonia in our growing area. We continue trials to find the most effective foliar application time and the best rate and band width for T-band application at planting. There is tolerance to Rhizoctonia in some varieties available but there is a large difference in tolerance levels. There are a few varieties with a good level of tolerance but most are poor.

### **Methods:**

The trial in 2012 had two foliar application timings, a 4 leaf and an 8 leaf. T-band application widths of 1, 2, 3.5 and 7 inches and numerous rates of each width were tested. Two varieties were included, one susceptible and one with moderate tolerance to Rhizoctonia. The trial location had natural Rhizoctonia infection and high pressure. In most previous trials we inoculated Rhizoctonia but were unable to get good disease pressure. The previous crop was soybeans that are a host for both strains AG 2-2 IV and 2-2 IIIB. This trial was planted April 11 in 22 inch rows and a seed spacing of 4.1 inches. Numerous ratings were taken of stand counts, dead beets and vigor. The trial was harvested November 3.

### **Results:**

The trial had very high natural Rhizoctonia pressure. All treatments (Table 1) were significantly better than the untreated check in tons/acre and sugar/acre. In dead beet counts, all treatments were significantly better than the untreated check except the 3.6 fl. oz./acre rate in the 1 inch band. The trend indicated higher Quadris rates, in each band width, provided better control of Rhizoctonia and higher sugar/acre. One trial in 2011 had a similar trend in less dead beets with higher rates of Quadris but emergence was decreased slightly by the higher rates. Foliar application, the 8 leaf timing was better than an application at a 4 leaf beet size. The 7 inch T-band treatments and the two application treatments produced the best sugar/acre.

**Table 1** Rhizoctonia Control Trial 2012

Trt	Rate fl oz/ Acre	App Time	Band Width Inch	Vigor Rate **0-10	Dead Beets B/100'	Early Stand B/100'	RSA	RST	T/A
Quadris	14.3	*IF	7	7.5	26	189	11029	308.9	35.6
Quadris	19	IF	7	8.0	23	187	10773	310.2	34.6
Quadris	7.1	IF	3.5	7.7	20	188	10699	306.2	34.6
Quadris	14.3	8 lf	7						
Quadris	7.1	IF	3.5	7.5	29	188	10425	317.4	32.8
Quadris	14.3	4 lf	7						
Quadris	7.1	IF	2	7.1	33	187	10377	308.1	33.4
Quadris	7.1	IF	1	7.2	29	183	10119	306.6	32.8
Quadris	14.3	8 lf	7	7.2	39	189	9970	307.3	32.1
Quadris	4.8	IF	2	7.3	27	186	9902	301.1	32.8
Quadris	9.5	IF	3.5	7.0	28	184	9724	302.1	31.7
Quadris	7.1	IF	3.5	7.2	40	185	9631	303.5	31.5
Quadris	14.3	4 lf	7	7.1	37	187	9370	299.6	31.0
Quadris	4.8	IF	1	7.1	27	183	9316	305.9	30.4
Quadris	3.6	IF	2	6.6	42	187	9146	295.4	30.7
Quadris	3.6	IF	1	6.9	46	189	9066	299.8	29.8
Untreated				5.6	71	184	6715	281.8	23.3
Average				7.1	34	186	9751	304	31.8
LSD 5%				0.6	27.8	5.0	1810	25.0	4.5
CV %				5.2	66.3	2.1	8.7	4.1	6.3

\* IF; is a T-band infurrow application at planting.

\*\* Vigor Rate; evaluates the above ground plant, higher number is better.

### **Recommendations:**

Our foliar recommendation will continue to be using a 7 inch band at the rates in Table 2. For one application, apply at the 6-8 leaf beet size and for two foliar applications apply at 2-4 leaf and 6-8 leaf beet size.

**Table 2** Foliar Quadris Rates

Quadris Rates (fl. oz./acre) at different Row Spacings				
30" Rows	28" Rows	24" Rows	22" Rows	20" Rows
10.5	11.2	13.1	14.3	15.8

Previously we had recommended decreasing the T-band Quadris rate proportionally with a narrower band. As an example in 22 inch rows; use 14.3 fl. oz./acre in a 7 inch band and 7.15 fl. oz./acre in a 3.5 inch band. After trials in 2011 and 2012 our recommendation for fields with high disease pressure will be to not use less than 3/4 the 7 inch rate (Table 3). We do not

recommend less than a 3 inch T-band even if narrower bands have provided good control in limited trials.

Our best recommendation for reducing Rhizoctonia is a two treatment program of a T-band application at planting followed by a 6-8 leaf foliar treatment. Second best is two foliar applications, a 2-4 leaf and a 6-8 leaf application. For a one application treatment, a T-band treatment at planting is slightly better than a 6-8 leaf foliar application.

Table 3 T-band Quadris Rates

	Quadris Rates (fl. oz/acre) at different Row Spacings				
T-band Width	30" Rows	28" Rows	24" Rows	22" Rows	20" Rows
7 inch	10.5	11.2	13.1	14.3	15.8
6 inch	9.0	9.6	11.3	12.3	13.5
5 inch	7.9	8.4	9.8	10.7	11.9
4 inch	7.9	8.4	9.8	10.7	11.9
3.5 inch	7.9	8.4	9.8	10.7	11.9