

POINDEXTER, STEVEN S.* and THOMAS J. WENZEL, Michigan State University Extension, One Tuscola St., #100, Saginaw, MI 48607. **Application strategies utilizing Quadris® flowable fungicide for control of Rhizoctonia solani root rot on sugarbeets with natural infection.**

ABSTRACT

Rhizoctonia solani infections on sugarbeets are a significant problem in the Great Lakes growing region. This disease impacts sucrose yield by reducing tonnage and quality. The objective of this study was to determine the efficacy and economic impact of different application strategies for controlling Rhizoctonia rot utilizing Quadris® Flowable Fungicide from Syngenta Crop Protection. The control applications included: In furrow T-band, In furrow T-band plus a 6-8 leaf low rate application, 2-4 leaf normal rate, 6-8 leaf normal rate, 2-4 and 6-8 leaf low rate application twice. In furrow Quadris was also evaluated for its impact on emergence. Quadris was also compared to Proline® 480 SC (Bayer CropScience) at the 6-8 leaf foliar application stage.

Research was conducted as strip trials in grower fields with a known high disease history. Trials were randomized complete blocks that were replicated four times. Infections occurred under natural field conditions and were not artificially inoculated. A susceptible Rhizoctonia variety was planted at five locations in 2009 and 2010. Control evaluation was done by taking counts of dead or dying beets per 1200 foot of row in the middle of August. Infection levels were low to moderate at all locations with the check having between 150-250 dead beets. Emergence data was taken from the five trials plus ten additional locations in 2009/10. The in furrow T-band applications were done with grower's equipment spraying a 2.75–5.5 inch band between the disk openers and the press wheels. Rates were from 4 to 7.5 ounces per acre depending on band width. The foliar applications were applied in a 7 inch band. The low rate and normal rate foliar applications were 0.4 & 0.6 ounces per 1000 foot of row, respectively. Proline plus NIS was applied in a 7 inch band at 5.7 ounces per acre.

One trial had relatively poor emergence and had a 40 beet per 100 foot of row population reduction due to the in furrow Quadris. The data for the other four trials was combined and averaged for reporting. For the four trials that were combined, the in furrow emergence versus the check was 191 to 192 beets per 100 foot of row. The average for 15 locations comparing in furrow Quadris to a check was 168 to 175 beets. This included the trial that had a 40 beet reduction. In furrow Quadris applications can significantly reduce emergence under poor emergence conditions with typical reductions around five percent.

Comparing the results of the four combined trials, all Quadris treatments had significantly better dead beet counts, tonnage, percent sugar, and recoverable sugar per acre than the check. The best treatments for dead beet counts were as follows: In furrow plus a 6-8 leaf low rate, 6-8 leaf normal rate, 2-4 and 6-8 leaf low rate twice, In furrow alone, and 2-4 leaf normal rate. The control was 82%, 82%, 78%, 72%, and 48% respectively. The 2-4 leaf normal rate treatment was significantly worse than the other treatments, but the other treatments were not significantly different from each other. The best tonnage treatments trended to be treatments with an in furrow application even though the in furrow alone did not appear to be as good as other treatments for dead beet counts. The tonnage order was as follows: In furrow plus a 6-8 leaf low rate, In furrow alone, 6-8 leaf normal rate, 2-4 and 6-8 leaf low rate twice, 2-4 leaf normal rate, and check. The tons per acre were 29.2, 28.7, 28.3, 27.6, 26.9 and 24.7,

respectively, with the 2-4 leaf being significantly worse than the top two treatments. Percent sugar followed the same order as the tonnage with all treatments being significantly better than the check and averaging approximately half a percentage point higher.

The trial that was not combined due to emergence issues generally showed similar results as the combined trials for dead beet counts. Due to the reduced emergence, tons per acre for the in furrow treatments were generally reduced about 1 ton per acre compared to foliar treatments with similar control.

Quadris at the 6-8 leaf stage gave significantly better control and tonnage than Proline, but Proline was better than the check. Results from three trials showed Quadris had an average control of 84% compared to 40% for Proline.

Quadris applications with moderate infection levels improved profitability ranging from \$94-\$209 per acre.