

Spotted Wilt Development in Non-Treated and Imidacloprid Treated Tobacco Plants in Multiple Georgia Plot Locations During the 2023 Production Season

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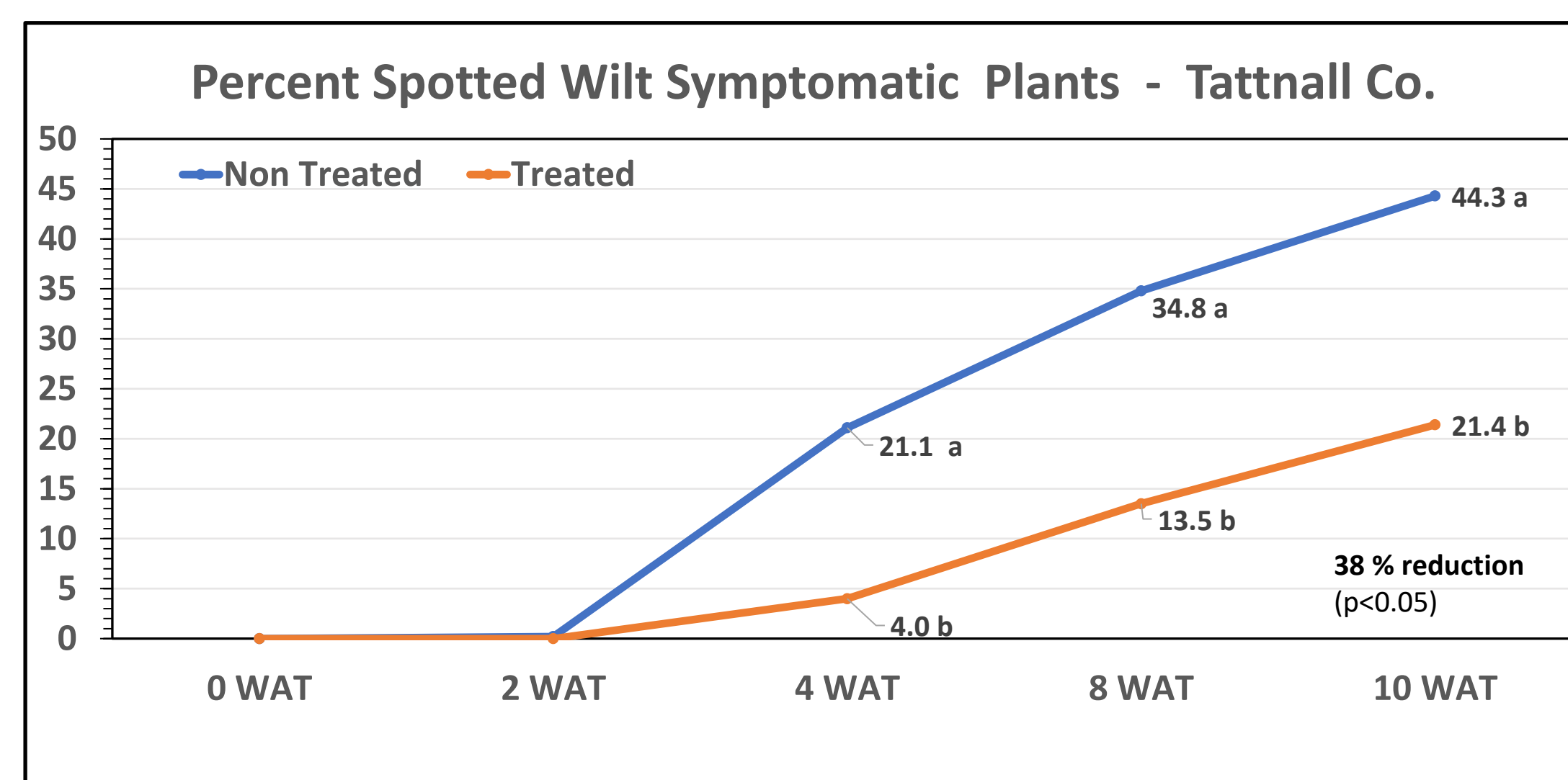
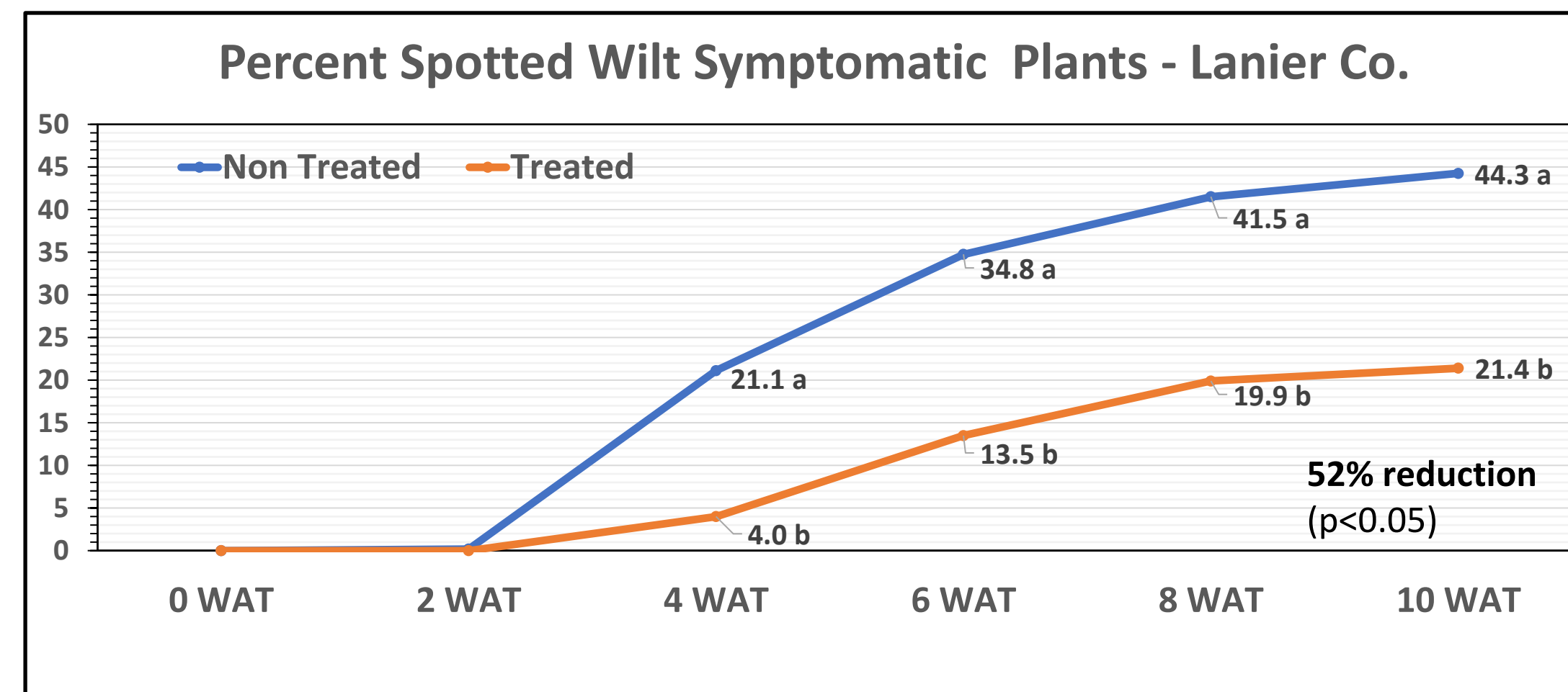
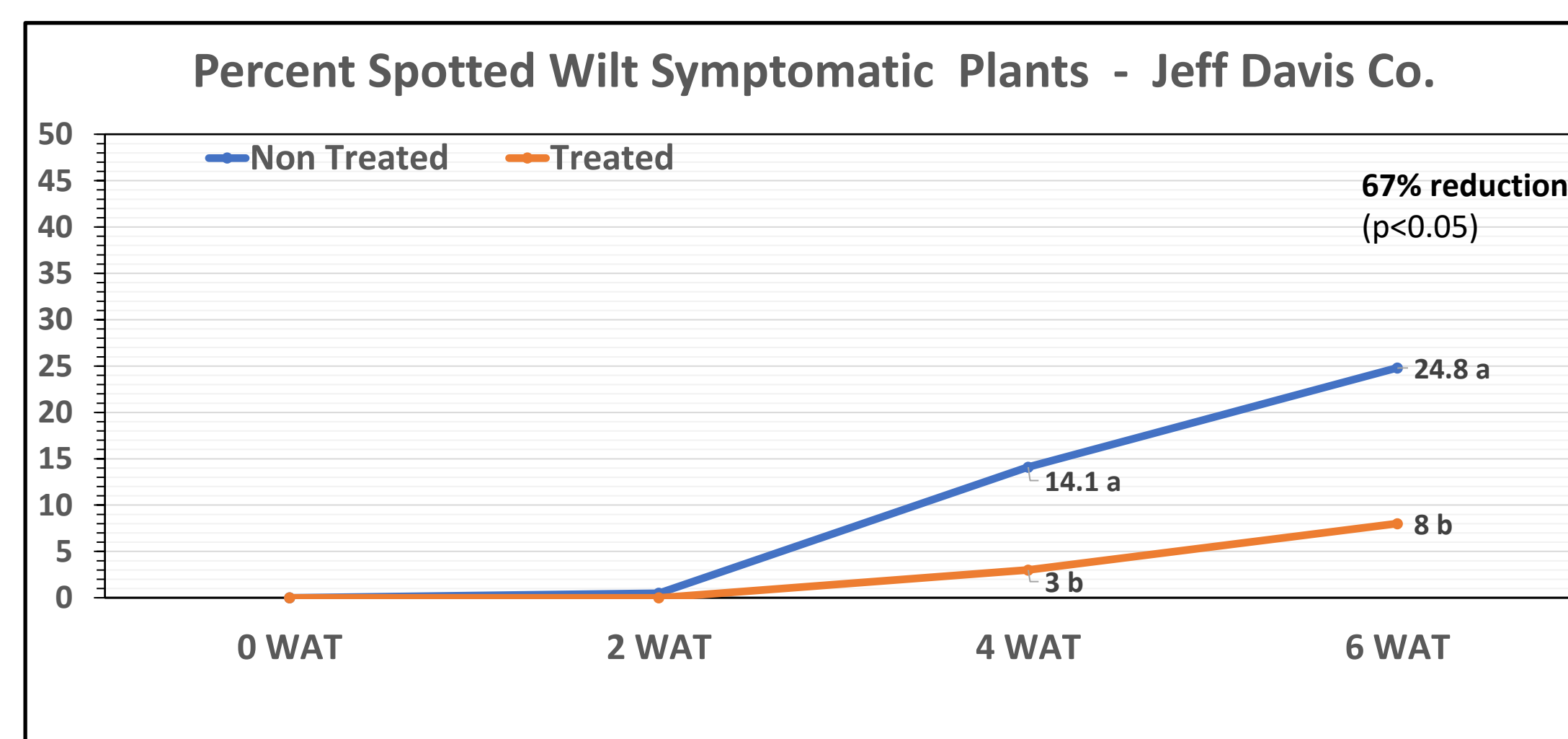
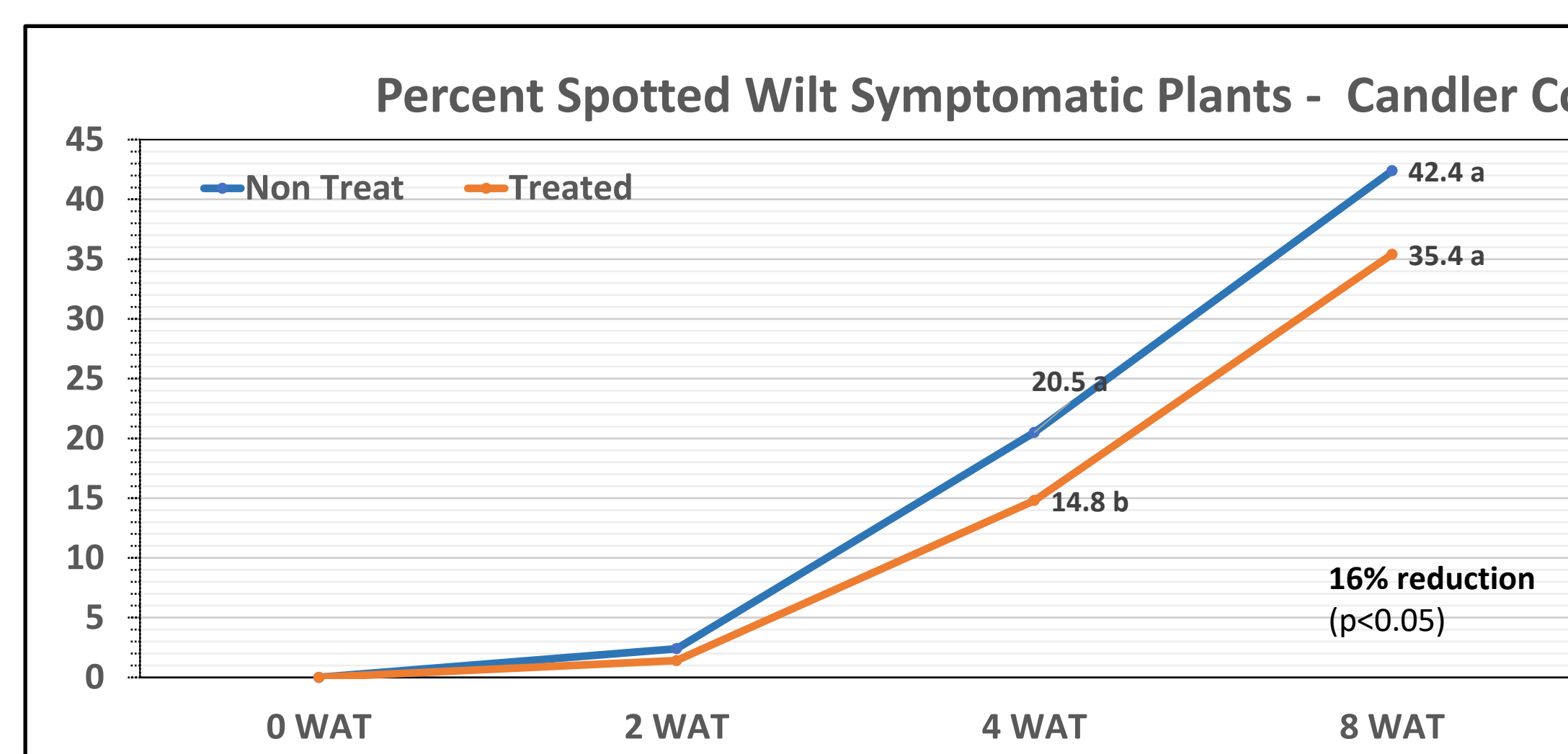
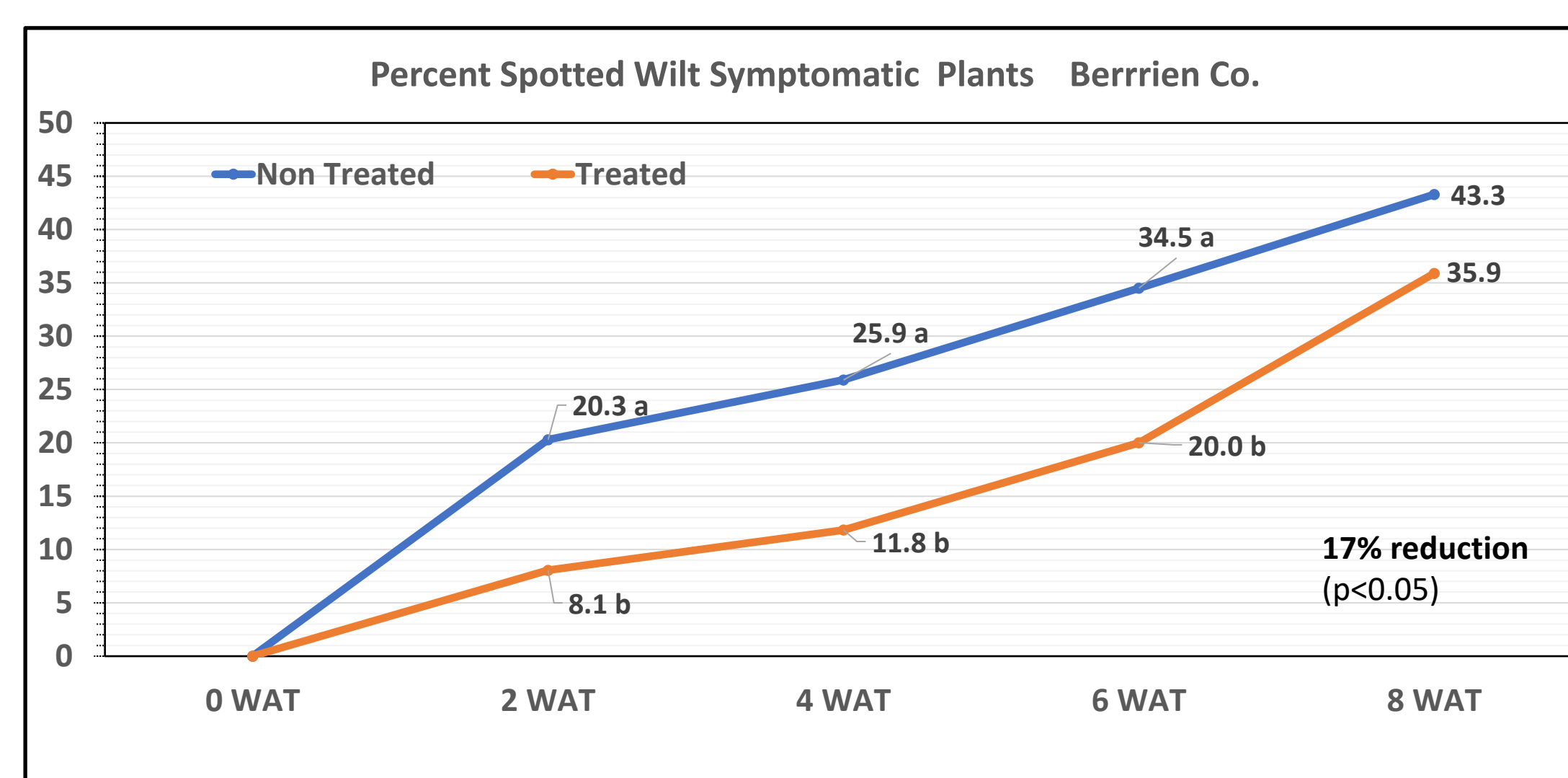
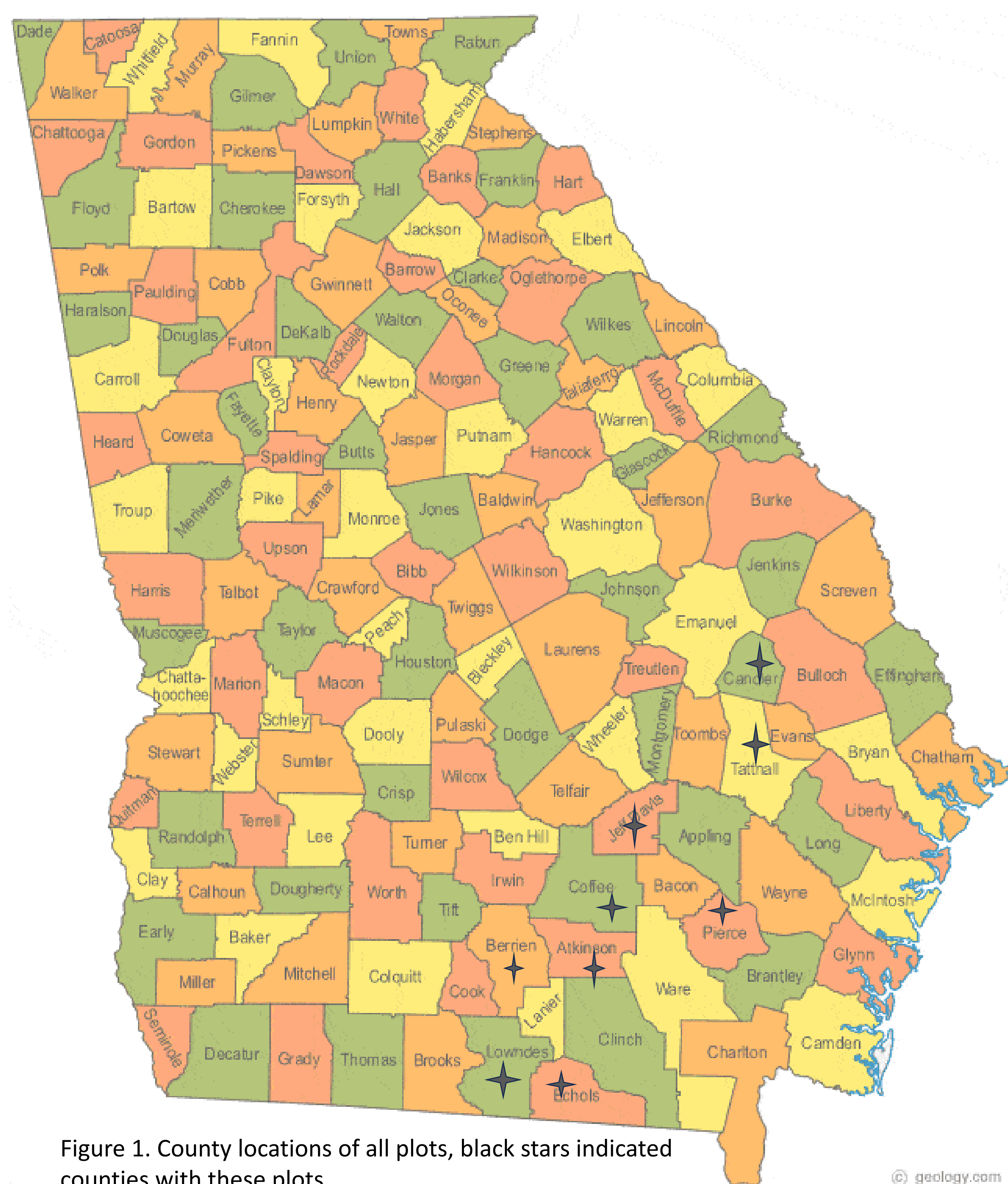
Introduction and Objectives

Tomato Spotted Wilt Virus (TSWV) *Orthospovirus tomatomaculae* is a virus that can cause severe yield loss in tobacco (Figure 2 and 3). In years where pressure is high, losses of 50% or more can occur. Spotted wilt was first documented in Georgia in the late 1980s, and has become endemic in fields across Georgia. This virus is vectored by tobacco thrips (*Frankliniella fusca*) and western flower thrips (*F. occidentalis*). Previous research conducted in Georgia by Dr. Paul Bertrand has shown that imidacloprid can lessen the incidence of spotted wilt in tobacco by approximately 30 percent as compared to non-treated plants. Extension agents working in conjunction with Dr. Moore, UGA Extension Tobacco Specialist installed on-farm research plots throughout Georgia to compare imidacloprid treated to non-treated plants to determine the current level of control from imidacloprid.

Experimental Design

Binary plots (treated and untreated) were installed in tobacco producing counties through out the state (Figure 1). These plots were replicated four times with 200 plants for each treated and non-treated plot row. Treated plants were sprayed with imidacloprid at 1 oz/1,000 plants in the greenhouse 2-4 days prior to transplanting. Non-treated plant trays were removed from the floatbed prior to spraying the imidacloprid and received no imidacloprid.

After planting, agents began mapping every plot two weeks after transplanting (2 WAT). This mapping assigned each plant a number so future collections could accurately count every plant in the plot. Each plant was evaluated every two weeks until harvest was completed. Plants that showed signs of spotted wilt were recorded for later counts. Any plant that died, from either spotted wilt or any other reason was also recorded, this insured that no plant was skipped or accidentally included as a 'hit'.



Figures 2 and 3. Photos of TSWV tobacco plants. Early infections usually lead to plant death. Photo Credit: Dr. J. Michael Moore, UGA Tobacco Specialist.

Results and Discussion

Each location showed a reduction in total spotted wilt symptomatic plants as a result of the application of imidacloprid in the greenhouse prior to transplanting. The greatest reductions occurred in Jeff Davis with a 67% reduction followed by Lanier County with a 52% reduction.

Candler and Berrien had the lowest reductions in incidence with 16% and 17% respectively, while Tattnall had a 38% reduction, still lower than the counties with the greatest incidence in Jeff Davis County (67%) and Lanier County (52%).

Tattnall County and Candler County production areas are within 5 to 10 miles of one another and the percent reduction in control of spotted wilt changes dramatically between these locations. The control in Tattnall County was 22% greater than the control in Candler when the number of spotted wilt symptomatic plants was very similar (42.3% and 44.3%).

The incidence of symptomatic plants in the non-treated plots across all locations ranged from 24.8% to 44.35% of the plants with an average of 39.8%. The incidence of symptomatic plants in imidacloprid treated plots ranged from 8% to 35.9% with an average of 24.4%.

Every location had a slightly different infection rate, due to the large and random nature of dispersal by thrips. It appears as though the higher reductions occurred in fields with lower incidence of symptomatic plants. The 2022 and the 2023 growing seasons had higher virus loads than the past several years, and spotted wilt is still a costly problem for tobacco growers in Georgia.

Based on this plotwork across the production area of Georgia imidacloprid is still efficacious against spotted wilt and continues to one of the primary control recommendations.



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