## EFFICACY OF NINE FUNGICIDES FOR CONTROL OF HARDLOCK

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## **Abstract Only**

Over the past few years, there has been an increasing interest in applying foliar fungicides to reduce hardlock in the southeastern U.S. This test was initiated in 2004 and repeated in 2005 to determine any possible effects of foliar fungicide applications on cotton growth and development, especially leaf area and the incidence of "hard lock" in the coastal plain of South Carolina. Stoneville 5599 BR was planted on 7 May 2004 and 12 May 2005 at the Edisto R.E.C. near Blackville, SC. Each year identical agronomic practices were used for crop production including a strict insect management program. In 2004 plots consisted of 4 rows, 45-ft long on 38-inch centers and plots were 50-ft long in 2005. Each treatment was put out in 4 randomized complete blocks. Treatments consisted of two sprays approximately 14 days apart: 1) Topsin M 70 WSB (0.75 lbs/acre); 2) Topsin M 4.5 F (1.17 lbs/acre); 3) Thiophanate Methyl 85 WDG (0.62 lbs/acre); 4) Bravo Ultrex (1.40 lbs/acre); 5) Headline (9 oz/acre); 6) Quadris F (13 oz/acre); 7) Stratego 2.08 F (7 oz/acre); 8) Folicur 3.6 F (7.2 oz/acre); 9) Tilt 3.6 EC (3 oz/acre); avd 10) Untreated check. The first spray was initiated at early bloom: the 8th of July 2004 and the 28th of July 2005. The second sprays were applied on 22 July 2004 and 12 August 2005. Fungicides were applied with a backpack sprayer with 4 TEE JET TXVS 10 hollow cone tips on 20-inch centers spraying 20 g.p.a. at 60 p.s.i. while walking 3 mph. Plant growth data was collected on August 3<sup>rd</sup> and September 9<sup>th</sup> in 2004 and on August 25<sup>th</sup> and September 27<sup>th</sup> in 2005. The center two rows of each plot were harvested with a modified 2 row picker on 1 October 2004 and 24 October 2005. In both years modified plant mapping at harvest was conducted to evaluate the incidence of hardlock. Insect damage and seed rot were rated by cutting 10 bolls per plot. Bolls were rated once in 2004 and twice in 2005. Bolls were cut transversely into thirds and visually inspected for damage. Data was analyzed over years and combined years presented when there was no significant ( $P \le 0.05$ ) year effect. Plant stand was 4.4 and 3.0 plants/row ft. in 2004 and 2005, respectively. In 2004 the foliar fungicides did not alter plant growth, yield or incidence of hardlock. Plant height ranged from 109 to 117 cm but was not affected by fungicide applications. The number of main stem nodes per plant and the position of the first fruiting branch also were not affected by fungicide applications. However, more main stem nodes were present in 2005 (20.2) than 2004 (12.1) and the first fruiting branch was located higher on the main stem in 2005(8.7) than 2004(4.5). Leaf area indices were not affected by fungicide applications but did vary between years. In 2004 for observations 1 and 2 leaf area indices were (2.49 and 1.57) compared to (2.76 and 1.26) in 2005. Yield was unaffected by fungicide applications in 2004 ranging from 1,038 to 1,231 lbs of lint/acre and in 2005 it ranged from 1,129 to 1,303 lbs of lint/acre. Topsin M 70 WSB treated bolls had a higher % lint (42.1%) than any treatment except the TM 85 WDG (41.6%) treatment which in turn was greater than the Tilt 3.6 EC treatment (40.5%). In 2004 there were no effects of fungicides on insect damage or seed rot in the July 31<sup>st</sup> rating. In 2004 fungicide treatments did not affect the percentage of rotten bolls (0.2 to 1.7%), green bolls (Category 1) (0.0 to 1.3%), healthy bolls (Category 2) (53.7 to 64.3%), bolls with less than half of the locules hardlocked (Category 3) (14.3 to 21.7%), or bolls with more than half of the locules hardlocked (Categrory 4) (14.1 to 29.0%). In 2005 fungicides applications did not have a significant effect on either yield (1,129 to 1,303 lbs of lint/acre) or % lint (42.8 to 44.0). Fungicide treatments did not affect the percentage of rotten bolls (1.8 to 6.6%), green bolls (Category 1) (3.8 to 9.5%), healthy bolls (Category 2) (57.9 to 65.7%), bolls with less than half of the locules hardlocked (Category 3) (10.3 to 15.9%), or bolls with more than half of the locules hardlocked (Category 4) (11.3 to 16.6%). In the Aug 25<sup>th</sup> rating the check (10.9%), Quadris F (9.18%) and Stratego 2.08 F (4.60%) treatments had a significantly lower percentage of insect damage than the Bravo Ultrex treatment (25.4%). Fungicide applications did not have a significant effect on percentage of locules with seed rot (0.00 to 3.64%) on Aug 25<sup>th</sup>. Fungicide applications did not have a significant effect on

percentage of locules with seed rot (0.00 to 4.78%) or insect damage (2.19 to 11.7%) Sept. 27<sup>th</sup>. There are currently no fungicides labeled for use in South Carolina on cotton.