

2007 Soybean Promotion Board Progress Report

TITLE: Control of seedling disease by fungicide seed treatment and cultivar selection and effect of plant population and seed treatment fungicide on stand and yield.

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OBJECTIVES:

1. To determine the effectiveness of current fungicide seed treatments on soybean stand establishment and yield.
2. To identify cultivar resistance to *Pythium* spp. in adapted cultivars and determine the effectiveness of this resistance on stand establishment and yield.
3. To determine the effect of planting on beds and seeding rate on seedling disease and yield.
4. To evaluate the economic feasibility of a combination of the above treatment alternatives

RESULTS: Fungicide Seed Treatments: Fungicide seed treatments significantly improved stand at Keiser in the May and June plantings and at Hope in the April and June plantings. In the May planting at Keiser, the broad spectrum seed treatments of Trilex and ApronMaxx+Dynasty+Cruiser were the most effective. Allegiance (specific for *Pythium* spp.) was also effective. In the June planting at Keiser there were significantly greater stands with the broad spectrum seed treatment Stilletto than the control. At Hope in the April planting, stands were significantly greater than the control with ApronMaxx+Dynasty+Cruiser, ApronMaxx, Stilletto+Gaucho, and Stilletto. Significant increases in stand occurred with the ApronMaxx and the PCNB+Vitavax seed treatments at Hope in the June planting. While not intended, yields were taken at Stuttgart and significant increases in yield were found in the June planting. Yield increases of 10 to 16 bu/A over the control were found ApronMaxx+Dynasty, ApronMaxx, Trilex, and Maxim. Even though there were significant differences in yield, there were no significant differences in stand for this site.

Cultivar Comparison: The eight cultivars were planted with and without the *Pythium* specific seed treatment, Allegiance. Allegiance improved stands and yields compared to the control at Keiser in May. There were interactions between cultivars and fungicide at Keiser in May with stands, but not yield, and at Stuttgart and Hope in April. There was not a consistent interaction of cultivar reaction to *Pythium* spp. and fungicide.

Population Density: The cultivar Hornbeck 4924 was planted at three planting densities (90, 135, and 180seed/A) with and without the broad spectrum seed treatment, ApronMaxx+Dynasty. Stands were significantly affected by seeding rate at most locations and planting dates. Fungicides significantly increased stands in the June planting at Keiser and the April plantings at Stuttgart and Hope and yields were increased in the May planting at Stuttgart. There was no interaction between planting density and seed treatment.

Phytophthora Resistance: Isolines with different *Phytophthora* resistance genes were planted at Keiser and Rohwer by us and at four other locations by Hornbeck Seed Company. Significant increases in yield over the control (the cultivar Bedford with no resistance genes) occurred only at Keiser this year. The genes that were effective were *Rps4*, *Rps3a*, and *Rps1-c*. In 2006 at Keiser, *Rps3a* and *Rps3b* were effective.