

1997 Cottonseed Variety and Treatment Evaluation

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Abstract

Three upland cotton varieties (Deltapine 5415, Stoneville 474, and SureGrow 125) were subjected to three seed treatments (non or control, standard commercial triple treated, and standard commercial plus Prevail added to the hopper box at 1 lb product/100 lb cottonseed) to determine seed germination and vigor in a Mohave Valley field prone to Rhizoctonia infection of cotton seedlings.

Introduction

Earliness and maximum cotton lint yields are highly dependent on establishment of a uniform and vigorous stand. Earliness allows cotton to complete its primary fruiting cycle prior to August, substantially reducing heat stress related yield losses. Cotton producers can avoid significant yield losses and costly replanting caused by seedling diseases with currently available seed treatment options. Some growers add additional fungicide treatments in furrow, or to cottonseed in the hopperbox at planting, if the field has a history of *Rhizoctonia* and other seedling diseases.

Cool weather is the most important factor influencing seedling vigor and stand establishment. An early planting date is essential for earliness and to realize maximum yield potential. An optimum early planting date takes into account soil temperature, weather conditions, and variety. Optimum soil temperatures for planting are 65° F at 8 a.m. with a favorable 5 day forecast (no cool fronts or storms). When planted into cool soil, large seeded Stoneville and SureGrow type cotton varieties seem to have higher emergence rates and seedling vigor, compared to small seeded Deltapine type cotton varieties.

Materials and Methods

A field experiment was conducted during 1997 in Mohave Valley (located in southwestern Mohave County) to determine the effectiveness of cottonseed fungicide treatments applied to three upland cotton varieties for optimum stand establishment in a field with a history of *Rhizoctonia* seedling disease. Seed treatments consisted of an untreated control (naked seed), commercially triple treated cottonseed, and commercial cottonseed treatments plus Prevail hopper box applied at a rate of 1 lb product/100 lbs cottonseed. The three upland cotton varieties were Deltapine 5415, Stoneville 474, and SureGrow 125. Individual plots were two rows wide by the length of the irrigation run (800 feet) and were replicated three times. Cotton was planted wet April 9. Plant emergence was measured by counting cotton plants in three 1/1000 acre portions of row within each plot. Emergence was measured 35 days after planting. Five plants were sampled from each of the 3 subplots within each plot on 49 days after planting to determine the location of the first fruiting branch.

Results and Discussion

Weather conditions for the April 9 Mohave Valley planting were generally favorable for germination and emergence of cotton seedlings. Of the three upland cotton varieties examined in this study, Deltapine 5415 had the smallest seed (5,800 seeds/lb), followed by SureGrow 125 (4,800 seeds/lb) and Stoneville 474 (4,700 seeds/lb). Both the SureGrow 125 and Stoneville 474 had relatively large seed size, and Deltapine 5415 had small seed size. All three varieties given standard commercial fungicide treatments had similar emergence rates ranging from 51.5 to 65.4% (Table 1). Given the standard seed treatment, seedling emergence of SureGrow 125 was superior to Stoneville 474, but equal to Deltapine 5415. Even untreated SureGrow 125 cottonseed had percent emergence ratings that were superior to Stoneville 474 and Deltapine 5415. The Prevail hopper box fungicide treatment increased percent emergence of the Deltapine 5415 cotton variety, only.

Location of the first fruiting branch node was primarily influenced by plant population and variety. Deltapine 5415 had a tendency to set the first fruiting branch one node higher than SureGrow 125 and Stoneville 474. Increasing plant population increased the location of the first fruiting branch node. Cotton plant populations ranging from 40,000 to 50,000 cotton plants per acre resulted in the lowest fruit set or optimum location of the first fruiting branch.

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Table 1. Effects of variety and cottonseed treatment on percent emergence and the location of the first fruiting branch of three upland cotton varieties.

Variety	Fungicide Treatment	Percent Emergence	1 st Fruiting Branch Node
Deltapine 5415	None	28.3 d	5.3 cd
Deltapine 5415	Standard	56.8 bc	6.2 ab
Deltapine 5415	Standard + Prevail	68.0 a	6.5 a
Stoneville 474	None	25.0 d	5.2 cd
Stoneville 474	Standard	51.5 c	5.7 bc
Stoneville 474	Standard + Prevail	59.2 abc	6.0 ab
SureGrow 125	None	65.1 a	5.3 cd
SureGrow 125	Standard	65.4 ab	5.3 cd
SureGrow 125	Standard + Prevail	64 ab	5.3 cd

Means within columns followed by the same letter are not significantly different at the 0.05 level of probability according to the least significant difference test.