

**EFFECT OF TERRACLOR SUPER X AND  
DI-SYSTON ON COTTON SEEDLING DISEASE  
AND THIRIPS ON DELTA AND  
PINELAND 5409 COTTON**

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**Abstract**

A test was conducted to examine the effects of Terraclor Super X and Di-Syston for the control of cotton seedling disease and early season thrips. Treatments consisted of Terraclor Super X EC, a formulated combination of Terraclor Super X and Di-Syston EC and Terraclor Super X EC tank mixed with Di-Syston 8EC. Plots consisted of four rows with two of the four rows inoculated with *Pythium* spp. and *Rhizoctonia solani* infested oat seed. At 7 days after planting all inoculated plots contained significantly fewer plants compared to the naturally infested plots. However, by 14 through 42 days after planting there were no significant differences in stand between any treatment and the control. At 14 and 21 days after planting the Terraclor Super X and control plots contained significantly more thrips per plant compared to the Terraclor Super X/Di-Syston formulation treatments. There were no significant differences in plant height at harvest between any of the treatments. Seed cotton yields ranged from a high of 2070.3 to 1374.5 lb/acre for the naturally infested Terraclor Super X/Di-Syston (64 oz/acre) and the inoculated Terraclor Super X/Di-Syston (88 oz/acre) respectively.

**Materials and Methods**

A cotton seedling disease test was conducted on the Northeast Louisiana University Layton farm in Monroe, Louisiana to determine the effects of Terraclor Super X in combination with Di-Syston to control the fungi involved in the cotton seedling disease complex. The test was located in a field that is naturally infested with *Rhizoctonia solani*, *Thielaviopsis basicola*, *Fusarium* spp. and *Pythium* spp. Treatments consisted of Terraclor Super X applied at 64oz/acre of formulated product, a combination of Terraclor Super X with Di-Syston applied at 64 and 88 oz/acre, and Terraclor Super X EC tank mixed with Di-Syston 8EC applied at 64 plus 16oz/acre. Each treatment was applied as an in-furrow spray in the seed furrow at planting.

The experimental design was a randomized complete block design with five replications. Plots consisted of four rows, forty feet in length with a forty inch row spacing. Two of the four row plots were inoculated with oat seed infested with *Pythium* spp. and *Rhizoctonia solani* while the remaining two rows were left naturally infested. Replications were separated by a 20 foot border. Each row was planted with 200 DPL 5409 cotton seed on April 24, 1996. Cotton seeds were commercially treated with Captan and Vitavax plus Apron by the manufactures. All plots were monitored weekly for six weeks to determine the percent of pre and post emergence seedling loss due to damping-off of the cotton seedlings. Cotton plant growth and yield was determined at harvest by plant mapping. Plant height, nodes per plant, boll number and boll weights were recorded at harvest. Plots were hand harvested on September 25, 1996.

**Results and Discussion**

Cotton seedlings emerged by seven days after planting. At seven days seedling stand ranged from 76.6 to 115.2 seedlings per forty feet of row in the inoculated control treatment and the naturally infested Terraclor Super X/Di-Syston EC (88oz/acre) treatment respectively (Table 1). All inoculated plots had significantly fewer cotton seedlings than the naturally infested plots. Cotton stand ranged from 145.6 to 167.8 seedlings per forty feet of row at 14 days after planting in the naturally infested Terraclor Super X/Di-Syston EC (64 and 88oz/acre) treatments respectively. At 21 days after planting, there were no significant differences between cotton stand in any fungicide treatments and the controls. However, by 28 days after planting the naturally infested Terraclor Super X/Di-Syston (88oz/acre) treatment had a greater stand than the naturally infested and inoculated Terraclor Super X/Di-Syston (64oz/acre) treatments. The final stand count at 42 days after planting found there were no significant differences between any treatments. Stand ranged from a low of 143 seedlings in the inoculated Terraclor Super X (64oz/area) to a high of 155 seedlings in the naturally infested Terraclor Super X/Di-Syston (88oz/area).

Plant height at harvest ranged from 182.8 to 165.5 cm, however, there were no significant difference between treatments (Table 2). The number of nodes per plant ranged from a high of 26.2 to a low of 20.4 per plant. Plants growing in the naturally infested Terraclor Super X/Di-Syston (88oz/acre) and Terraclor Super X+Di-Syston tank mixed (64 + 16oz/acre) had significantly fewer nodes per plant.

Cotton seed yield ranged from 2070.3 lb/acre to 1374.5 lb/acre in the naturally infested Terraclor Super X (64oz/acre) and inoculated Terraclor Super X/Di-Syston (88oz/acre) treatments, respectively (Table 2). The naturally infested and inoculated control plots produced 1673.1 and 1604.6 lb of seed cotton per acre. Cotton lint yields ranged from 508.5 to 766.0 lb/acre from the

inoculated Terraclor Super X/Di-Syston (88oz/acre) and naturally infested Terraclor Super X/Di-Syston (64oz/acre) treatments, respectively. There was a 152.4 increase in cotton lint from the inoculated Terraclor Super X/Di-Syston (64oz/acre) treatment compared to the inoculated control. Correspondingly there was a 180.4 lb/acre increase in lint cotton from the naturally infested Terraclor Super X/Di-Syston (64oz/acre) and the naturally infested control respectively.

### **Economic Analysis**

An economic analysis of all fungicide treatments indicated a positive net return above the direct costs of materials using the assumption of current input prices and the product price of \$0.75 lb of cotton (Table 3).

Yield data indicates an average lint yield across all treatments of 674.2 lb/acre representing a 100.6 increase over the averaged naturally infested and inoculated controls. The value of this additional yield using a market price of \$0.75 is \$75.45 per acre. Using the commercial materials (Terraclor Super X and Di-Syston) the average cost per acre using the recommended rates is \$18.49 per acre. Comparing the additional cost to the additional revenue a \$56.99 per acre return to fungicide use is realized. Therefore there is sufficient additional revenue generated to cover the extra cost.

In comparing the direct cost of the fungicide used, costs varied from a high of \$22.48 per acre (Terraclor Super X + Di-Syston at 64 + 16oz/acre) to a low of \$14.50 per acre (Terraclor Super X alone). Material costs for the Terraclor Super X/Di-Syston formulated materials has not been determined. In comparing the additional revenue and cost of the different materials the Terraclor Super X treatment yielded the greatest net return per acre (\$75.24 = 89.74 - 14.50). Gross returns for the Terraclor Super X and Terraclor Super X + Di-Syston tank mix were close at \$89.74 and \$88.40, respectively. However, due to the differences in cost the net returns associated with Terraclor Super X + Di-Syston tank mix was \$7.98 per acre higher (\$22.48 - \$14.50). However, the benefit of the insecticide activity would have to be considered.

The Terraclor Super X/ Di-Syston formulated compounds have not been released commercially thus we are unable to compare the net returns of these two compound treatments. Yield data indicated the Terraclor Super X/ Di-Syston formulated compound (64oz/acre) averaged over the naturally infested and inoculated treatments increased yield by 166.4 lb/acre over the control. This Terraclor Super X/Di-Syston formulation combination appears to be highly competitive to the Terraclor Super X and the Terraclor Super X + Di-Syston tank mix.

### **Disclaimer**

The interpretation of data presented may change with additional experimentation. Information is not to be construed as a recommendation for use or as an endorsement of a specific product by Northeast Louisiana University.

Table 1. Effect of Terraclor Super X and Di-Syston combinations on DPL 5409 cotton stand from 7 to 42 days after planting.

Fungicide/ Rate/Acre	7 DAP	14 DAP	21 DAP	28 DAP	42 DAP
<b>Inoculated</b>					
Control	76	157	158	154	146
TSX	86	147	155	140	143
64oz/a					
TSX-DI	83	147	155	149	145
64oz/a					
TSX-DI	88	147	153	147	142
88oz/a					
TSX+DI	85	146	156	149	154
64+16oz/a					
<b>Naturally Infested</b>					
Control	112	155	153	153	147
TSX	106	161	153	149	149
64oz/a					
TSX-DI	104	145	140	141	145
64oz/a					
TSX-DI	115	167	157	157	154
88oz/a					
TSX+DI	88	157	153	154	151
64+16oz/a					
FLSD	24	15	20	16	14
(0.05)					

All data based on the means of 5 replications. Means compared using Fisher's least significant difference test.

Table 2. Effect of Terraclor Super X and Di-Syston on growth and yield of DPL 5409 cotton.

Fungicide/ Rate/Acre	Plant Height (cm)	Nodes/ Plant	Seed Cotton lb/A	Lint Cotton lb/A
<b>Inoculated</b>				
Control	179.3	23.5	1604	561.6
TSX-	177.4	23.8	1682	672.9
64oz/a				
TSX-DI	169.2	24.6	1830	714.0
64oz/a				
TSX-DI	167.8	25.0	1374	508.5
88oz/a				
TSX+DI	177.2	22.4	1515	636.5
64+16oz/a				
<b>Naturally Infested</b>				
Control	175.5	25.2	1673	585.6
TSX	165.5	26.0	1877	713.6
64oz/a				
TSX-DI	167.4	26.2	2070	766.0
64oz/a				
TSX-DI	184.0	20.4	1515	636.5
88oz/a				
TSX+DI	166.3	20.4	1962	745.7
64+16oz/a				
FLSD	9.7	4.1	618	
(0.05)				

All data based on the means of 5 replications. Means compared using Fisher's least significant difference test.

Table 3. Economic analysis of Terraclor Super X and Di-Syston for seedling disease control of cotton.

Fungicide/ Rate/Acre	Cost Acre	Yield vs Control	Gross Value \$0.75 lb	Net Value \$
TSX 64oz/a	14.50	119.6	89.74	75.24
TSX-DI 64oz/a	ND	166.4	ND	ND
TSX-DI 88oz/a	ND	-1.1	ND	ND
TSX+DI 64+16oz/a	22.48	117.5	88.40	65.65

All data averaged for naturally infested and inoculated plots thus data is based on the means of 10 replications. Means compared using Fisher's least significant difference test.