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VARIETAL DIFFERENCES IN THRIPS DAMAGE

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Abstract

This is a report of observed differences in thrips damage in a series of strains of cotton as contrasted with fairly constant reaction in repeated plots of a check variety. Repeatability of differences over years encouraged us to report same and to make available materials for research.

Introduction

Differential reaction to thrips attack is suggested by our observations. Seed Source's priorities do not include launching a long term resistance breeding program, but we will be pleased to hear from researchers interested in such. With most of the lines concerned likely to be released by us, **we offer seed of these lines for research purpose only, not for reselection for variety development.**

Methods

In 2000 we planted 14 cold tolerant cotton selections in 2-row plots alternated with plots of the check variety, Suregrow 125. Planting was on April 1. In-furrow treatment was with Terrachlor Super X and Disyston, the latter for thrips control. Plots were observed and given a visual rating from 1, least damage, to 5, most severe damage.

In 2001 all of the cold tolerant lines except CT-9 were advanced to a replicated trial and some were in other trials. Planting date was March 27. As in 2000, readings were taken when seedlings were about a month old.

Results

Table 1 contains scores for thrips damage. The "2000 plots" were the 14 cold tolerant lines with adjacent checks. The "2001 experiments" included 13 of the 14 lines in experiment 1C01, 1 in 1C04, and 2 in 1C05 along with checks SS 9907, X3040, and PSC 355, a commercial variety. Higher damage levels in 2001 resulted in higher scores for most lines, but CT-5 scored well both years. Next best was CT-7, with scores of 3.0 and 3.7. Figure 1 illustrates the five grades used to score thrips damage. No entry was entirely free of damage, but differences were such that the scoring system appeared to be useful.

Table 2 lists thrips damage scores for entries in four experiments. The validity of the scoring system can be evaluated in part by the levels of significance and CV's in these experiments. These are summarized below:

TEST	ENTRIES	CV	P VALUE
1	16	17.64	.026
3	16	19.06	.005
4	16	12.01	.082
5	16	12.33	.063

It is interesting that the highest CV's are associated with the best probabilities. All of the probabilities are encouraging for a previously untested scoring system, and are also encouraging for the existence of genetic differences in response to thrips attack. Summarized here are what appear to be the most promising lines:

LINE	SCORE	GENETICS
X026	2.08	DES 211
9801-3-1	2.91	PD5582
100x109	2.95	MO344 x NATA
SS 9907	3.25	DES 211
CT-5	2.50	DES 211

Based on the information in hand, we decided to make the following crosses. These crosses were made in summer 2001 and were planted in a winter generation. A recent report indicates a general failure in this planting and there will be no F2's. Also there is no remnant crossed seed.

SS 9907 x CT-5 TOLERANT x TOLERANT
SS 9907 x CT-12 TOLERANT x SUSCEPTIBLE
CT-4 x CT-8 SUSCEPTIBLE x SUSCEPTIBLE

Table 1. Two years' scores for thrips damage.

	2000 PLOTS					
	VARIETY	ADJACENT	IN 2001 EXPERIMENTS			
VARIETY	SCORE	CHECK	1C01	1C03	1C04	1C05
CT-1	2	5	4.3			
CT-2	3	4	4.7			
CT-3	3	5	5			
CT-4	5	4	4.7			
CT-5	2	4	3			
CT-6	5	4	4			
CT-7	3	4	3.7			
CT-8	4	4	4.3			
CT-9	5	4	-			
CT-10	2	5	4.3		4.4	
CT-11	2	4	4.3			4.7
CT-12	4	5	5			5
CT-13	4	4	3.7			
CT-14	4	4	4.3			
SS 9907			3			3.5
PSC 355				4	4	
X 3040			3.7	3.7		
C.V.			17.6	19.06	12.01	12.33
P VALUE			0.026	0.005	0.075	0.063

Figure 1. The grades used for thrips reaction classification and an example of each.

Table 2. Thrips damage scores for breeding lines in four yield tests in 2001.

Exp.1C01S				**Exp. 1C03S**			
No.	**Entry**	**Thrips score**	**Rank**	**No.**	**Entry**	**Thrips score**	**Rank**
1	SS 9907	3.00	B	1	X026	2.08	E
2	CT-5	3.00	B	2	9801-3-1	2.91	DE
3	X-3040	3.67	AB	3	100x109	2.95	CDE
4	CT-13	3.67	AB	4	9802-20-1-B	3.33	BCDE
5	CT-7	3.67	AB	5	X-3040	3.68	ABCD
6	CT-6	4.00	AB	6	9801-3-3	3.68	ABCD
7	CT-1	4.33	AB	7	X-3044	3.68	ABCD
8	X-3044	4.33	AB	8	X024	3.98	ABCD
9	CT-11	4.33	AB	9	X023	3.99	ABCD
10	CT-8	4.33	AB	10	PSC 355	3.99	ABCD
11	CT-14	4.33	AB	11	3044-4	3.99	ABCD
12	CT-10	4.33	AB	12	9903-78	4.33	ABCD
13	CT-4	4.67	A	13	3040-4	4.33	ABCD
14	CT-2	4.67	A	15	3044-1	4.70	AB
16	CT-12	5.00	A	16	3044-2	5.00	A
Exp. 1C04S				**Exp. 1C05S**			
1	NATA 20	3.60	B	1	SS 9907	3.51	C
2	NATA 5	3.96	AB	2	9501XHZEXP-4	3.79	BC
3	SS9815-37	3.97	AB	3	SS100x109-4	4.46	ABC
4	PSC 355	4.02	AB	4	125x9303-4	4.48	ABC
5	SS9815-3	4.33	AB	5	SS9903-90	4.48	ABC
6	SS9815-8	4.34	AB	6	125x9303-4	4.49	ABC
7	SS9901-4	4.35	AB	7	125x9303-6	4.64	ABC
8	511x195-8-3-1-4	4.67	A	8	CT-11	4.69	AB
9	SS9901-36	4.68	A	9	511x195-8-2-2-1	4.75	AB
10	511x195-8-3-3-3	4.69	A	10	9806-11-5	4.80	AB
11	55-114x109-2	4.71	A	11	9506x9501-6	4.85	AB
12	511x195-8-3-1-2	4.95	A	12	9806-11-3	4.92	AB
13	SS9815-21	4.95	A	13	9501 x HZEXP-3	5.00	A
14	9SM301-40-2	4.99	A	14	125x9303-7	5.00	A
15	511x195-8-3-1-1	5.00	A	15	9506x9501-1	5.00	A
16	55-114x109-1	5.00	A	16	CT-12	5.00	A