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1) Screening for cytoplasmic/maternal effects in resistance to soybean cyst nematode.

With the discovery of soybean cyst nematode (SCN) in the U.S. in 1954, the research for resistance was initiated. Ross and Brim (1957) identified several soybean plant introductions resistant to the North Carolina SCN populations. Epps and Hartwig (1972) reported PI lines resistant to race 4. Extensive screening of germplasm by Anand and Gallo (1984) and Anand, Wrather and Shumway (1985) resulted in the isolation of several additional sources of resistance to races of SCN. Caldwell, Brim and Ross (1960) and Thomas et al. (1975) studied inheritance of SCN resistance in several crosses of soybean. Presumably, all of these reported sources of resistance pertain to nucleargenic only. Therefore, we attempted to observe any of the existing cytoplasmic/maternal effects for SCN resistance. Such effects, if any, would be utilized in breeding programs to broaden the genetic/cytoplasmic base for SCN resistance.

An experiment was conducted in the greenhouse during fall of 1985. The parents, 'Essex', 'Peking', PI 90763, PI 88788 and PI 437654 were crossed in the field during summer 1985 to generate  $F_1$ s and their reciprocals. Ten  $F_1$  plants of each cross, including reciprocals, were tested for their reaction to different races of SCN. Each plant was inoculated with one thousand eggs and larvae.

The details of the greenhouse screening tests were essentially those described by Anand et al. (1985). The results are presented in Table 1.

In all cases except one, there was no significant difference between the  $F_1$ s in their reciprocal crosses for the number of cysts per plant. This indicated that there was no cytoplasmic/maternal effects for SCN resistance. In all cases except one, the  $F_1$  reaction for the cyst number was less than the susceptible parent indicating incomplete dominance for susceptibility. Since Peking and PI 88788 are resistant to race 3, the nature of resistance in the  $F_1$ s appears to show that the genes for resistance to this race are allelic.

Table 1. Number of white females (cysts) per plant against races 3, 4, and 5 of soybean cyst nematode

Cross no.	Soybean cross or line	SCN race		
		3	4	5
1	Essex x PI 88788	89	138	218
2	PI 88788 x Essex	92	122	142
3	Peking x PI 88788	2	93	117
4	PI 88788 x Peking	1	67	112
5	PI 88788 x PI 90763	--	32	119
6	PI 90763 x PI 88788	--	26	110
7	Essex x PI 437654	--	--	192
8	PI 437654 x Essex	--	--	210
9	Essex (check)	150	180	216
10	Peking (check)	0	52	8
12	PI 90763 (check)	1	89	1
13	PI 88788 (check)	6	7	159
14	PI 437654 (check)	0	0	0
	LSD (5%)	31	32	38

### References

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