

4. Effectiveness of plant resistance in reducing corn borer damage.

Nineteen single crosses among three susceptible and four resistant inbred lines were evaluated for borer resistance and for yield. Yield data were obtained for each hybrid from one sprayed and two unsprayed treatments. Data are shown by types of crosses and by inbred lines in Table 1. Leaf feeding ratings for three S x S crosses.. ten S x R crosses and six R x R crosses averaged 8.1, 4.9. and 2.5, respectively. Borer damage points per plant for the same crosses averaged 5.26, 2.46, and 1.32, respectively. The yield of the sprayed treatment exceeded those of the unsprayed treatments by an average of 12.0 bushels per acre for the S x S crosses, 5.6 bushels per acre for the S x R crosses, and 3.9 bushels per acre for the R x R crosses.

An item of interest is apparent in the data on the individual inbred lines. B14 crosses were susceptible to borer feeding as evidenced by both the leaf feeding rating and damage point counts, but the yield reduction attributable to borer damage was not as great as that in the hybrids of the other susceptible lines. On the other hand, N16 hybrids were intermediate to resistance to borer feeding; but the yield differences between the sprayed and unsprayed plots were second only to those of the 38-11 crosses. This would indicate that inbred lines may differ markedly in tolerance to first brood borer leaf feeding in addition to differing in actual leaf feeding resistance.

Table 1. Yields and European corn borer resistance ratings of 19 single cross hybrids.

Hybrids		Corn borer on unsprayed plots		Yields in Bu/A		
		Leaf feeding rating	Damage points per plant	sprayed	unsprayed	Difference
S x S	(3)	8.1	5.26	82.2	70.2	12.0
S x R	(10)	4.9	2.46	88.6	83.0	5.6
R x R	(6)	2.5	1.32	88.0	84.1	3.9
WF9 crosses	(6)	6.0	3.68	86.1	76.5	9.6
B14 crosses	(6)	6.1	3.36	87.5	82.8	4.7
38-11 crosses	(4)	6.2	3.47	84.4	73.8	10.6
R71 crosses	(5)	3.5	2.00	87.4	84.3	3.1
N16 crosses	(6)	4.8	2.61	90.9	81.0	9.9
(WF9x458-1) crosses	(5)	3.3	1.75	83.1	78.8	4.3
C.I. 31 crosses	(6)	2.7	1.02	90.9	89.6	1.3

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