1. <u>Location of factors for corn borer reaction</u>

A borer resistant inbred line, Minn. A411 whose resistance came from the Oh7 inbred, was used in crosses with chromosomal interchange stocks from E. G. Anderson. As far as possible, the interchanges selected had breaks near the middle of each arm. The general plan was to cross susceptible interchanges with the resistant inbred line and to backcross the semisterile F_1 plants to the inbred line shoring the recessive borer reaction. Since resistance proved to be dominant, the F_1's were backcrossed to a susceptible inbred A344, a selection from the Iowa 153 inbred. Several interchange lines proved to be resistant and were not usable in this analysis of A411.

The plants were hand infested with borer egg masses. The individual plants were classified by pollen examination in the field and later each was classified (5 grades) for the degree of leaf feeding and of stalk damage. The P values for the $\chi2$ tests for independence, based on an average of 167 plants (range from 119 to 192 plants) per test, are summarized in the following table:

<div align="center">

P values for $\chi2$ test for
independence based on
total hand infested
plants:

</div>

	leaf feeding	stalk damage	Factor located in
1-9b	.20-.10	<.01**	
2-3c	.30-.20	.30-.20	
2-6c	.30-.20	.10-.05	
2-7c	.95-.50	.50-.30	
2-9b*	.30-.20	.95-.50	
3-5a	.05-.01*+	.10	
3-6 Conn	.05-.01*+	.50-.30	
3-7c	.05-.01*+	<.01**	3L
3-9c*	.05-.01*+	<.01**	3L
3-9x23-158*	<.01**	.05-.01*+	3L
4-9 D25*	<.01**	<.01**	4L
5-9a	.05-.01*+	.05-.01*+	5L
6-9x25-78*	.50-.30	.95-.50	
6-10a	.30-.20	.95-.50	
8-9x22-92*	.50-.30	.95	
9-10b*	.20-.10	.05-.01*+	

*Translocations with WF9 (susceptible) background
*+, .05-.01 = significant
**, <.01 = highly significant

The data indicate that the resistance of the A411 Inbred is due to at least one gene in the long arm of chromosome 3 and one in the long arm of 4, and probably another in the long arm of 5. (The cooperation of Dr. E. H. Rinke and F. Loeffel in the corn breeding project and Dr. F. J. Holdaway and his assistants in Entomology is acknowledged.)

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