these two hybrid plants appears to be high. Pollinating 167 ovules of these two hybrid plants with pollen from the maize parent resulted in no seed. This would indicate female sterility for these two hybrid plants.

A number of species of Tripsacum have been hybridized with maize by different workers (Mangelsdorf, Farquharson, Galinat). It is interesting to speculate which species was involved in the tripartite hypothesis of Mangelsdorf and Reeves.

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1. Additional sources of chlorotic lesion resistance to Helminthosporium turcicum Pass.

A dominant gene resistance to northern corn leaf blight caused by H. turcicum and expressed in the form of chlorotic lesions supporting limited fungus reproduction was reported from our laboratory in the 1963 M.G.C.N.L.

This past year data have been obtained from other corn selections showing this type of resistance. In addition, field data were obtained for F_2 populations involving W37A shown to have a single dominant gene for resistance on the basis of greenhouse seedling tests in our previous report. Two sweet corn inbreds EES647 and EES650, the dent corn inbred W37A, and the pop corn inbred 35 (a white rice type and distinctly different in plant and ear type from Ladyfinger popcorn) were crossed with inbreds expressing susceptible-type lesions. These hybrids were advanced to the F_2 generation. With the Pop 35 hybrids, backcross populations were also tested.

The following data obtained from inoculated field plots or from inoculated seedling tests in the greenhouse indicate that resistance is due to a single dominant gene in each of the 4 sources. The data further suggest that homozygous plants can be distinguished from heterozygous plants.

The parental resistant inbreds, F_1 hybrids, and susceptible inbreds gave highly resistant, resistant, and susceptible reactions, respectively, in these tests.

Segregations for Lesion Type to H. turcicum in the Field

Cross	Observed number			P values	
	Highly Res.	Res.	Susc.	1:2:1	3:1
W37A x H52. F_2	24	50	26	0.95-0.98	0.80-0.90
W37A x 187-2 F_2	16	58	25	0.05-0.10	0.95-0.98
B14 x EES647 F_2	15	53	24	0.10-0.20	0.80-0.90
187-2 x EES647 F_2	14	48	29	0.05-0.10	0.10-0.20
B14 x EES650 F_2	24	49	25	0.98-0.99	0.90-0.95
187-2 x EES650 F_2	20	48	21	0.70-0.80	0.70-0.80

Segregations for Lesion Type to H. turcicum in Corn Seedlings

Cross	Observed number			Expected ratio	P value
	Highly Res.	Res.	Susc.		
R168 x Pop 35 F_2	21	54	16	1:2:1	0.10-0.20
W153R x Pop 35 F_2	24	41	28	1:2:1	0.30-0.50
B14 x Pop 35 F_2	13	51	17	1:2:1	0.05-0.10
(B14 x Pop 35) B14	0	34	31	0:1:1	0.70-0.80
B14 (B14 x Pop 35)	0	42	56	0:1:1	0.10-0.20
(B14 x Pop 35) Pop 35	49	46	0	1:1:0	0.70-0.80
(R168 x Pop 35) Pop 35	55	55	0	1:1:0	> 0.99
(W153R x Pop 35) Pop 35	45	48	0	1:1:0	0.70-0.80

In addition to the selections reported, other corn types have been located which express chlorotic lesions when infected by H. turcicum. Inheritance studies of these are underway as well as tests to determine if the genes present in any of the selections can be distinguished from the gene Ht.

A. L. Hooker

2. Additional gene loci for resistance to Puccinia sorghi.

Rust resistant inbreds 178 and 191 were crossed to the rust susceptible inbreds B14 and R168. The single crosses were advanced to the F_2 generation and backcrossed to the susceptible inbred. The following seedling data indicate that each line has a single dominant gene for resistance to culture 901aba P. sorghi.

Cross	F_2 generation			Backcross generation		
	R	S	P value (3:1)	R	S	P value (1:1)
178 x B14	81	13	0.01-0.02	57	55	0.80-0.90
178 x R168	89	35	0.30-0.50	55	65	0.20-0.30
191 x B14	83	25	0.50-0.70	71	78	0.50-0.70
191 x R168	92	36	0.30-0.50	75	75	> 0.99