



Virus Ratings of Corn Strains in Missouri 1968

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Corn strains were grown at the two locations and rated for virus symptoms. These locations were the Klossner Farm near Cedar Hill in Jefferson County and at the Delta Center near Portageville in Pemiscot County, Mo. At both locations a high incidence of corn virus symptoms in corn and Johnsongrass plants have been found in previous years. We have definitely identified the presence of maize dwarf mosaic virus at both locations, and we suspect the true corn stunt virus to be present at the Delta Center but we lack definite proof.

In 1968 the highest number of infected plants and the greatest injury as a result of the virus was found at the Cedar Hill location. The level of infection at the Delta Center was much lower when compared with previous years.

MATERIALS AND METHODS

Individual plots were hand-planted and consisted of one row of 20 plants. Plants were spaced 1 foot apart within plots at the Delta Center and two plants per hill spaced 40 inches apart at Cedar Hill. In experiments 4 and 5, four replications were used. Experiments 11, 12, 15, and 16 had three replications.

Planting dates at Cedar Hill and at the Delta Center were in the last week of May. Planting dates were purposely delayed to increase the chances of a higher degree of natural infection. Both nurseries were located in an area where Johnsongrass was abundant.

Each plot was rated on a scale of 1 to 9. A rating of 1 indicated no injury, and a rating of 9 indicated complete susceptibility. Data for each entry reported are the averages of the replications used for a given experiment.

Ratings for virus symptoms were made at two dates whenever possible. For

Cedar Hill these dates were Aug. 8 and Aug. 21. Dates for the Delta Center were July 31 and Aug. 21.

RESULTS

Uniform Tests of Inbred Lines

A uniform test of 12 inbred lines sponsored by the Southern Improvement Conference was conducted at Cedar Hill and the Delta Center. These inbred lines were rated at two different dates at each location.

The results for the Delta Center test are reported in Tables 1 and 2. No significant differences were found between inbred lines for virus ratings made July 31. Only the inbred line SC229 had a significantly higher rating than the other 11 for ratings made Aug. 21. The lack of statistical difference of these inbred lines with respect to virus ratings was attributed to the low level of infection and a lack of uniformity of infection as indicated by the high coefficient of variation.

Results for the same group of lines grown at Cedar Hill are reported in Tables 3 and 4. Virus ratings among inbred lines were statistically significant for both rating dates. Inbred lines Tx601, Ga209, Mo18W, Mp486 and CI90C had more resistance than the remaining seven lines. Due to a higher level of infection, the CV's were lower and the magnitude of the ratings was greater.

In a uniform test sponsored by the North Central Corn Research Committee, 10 inbred lines were grown at the Delta Center and Cedar Hill. The virus ratings for the Delta Center for two rating dates are given in Tables 5 and 6. The ratings for the last date (Aug. 21) are believed to be more meaningful and show that Mo18W, Oh7B, N6J, and B41 have more resistance than the other six lines in the test. The same test grown at Cedar Hill and reported in Tables 7 and 8 show that Oh7B and N6J have more resistance than the other eight lines in the test.

Commercial Hybrids

Commercial seed producers were given the opportunity to submit hybrids for virus ratings. Each company was requested to include some hybrids for which seed would be available for planting by farmers in 1969. Farmers who grow corn in areas where virus may be a problem have the opportunity to select resistant hybrids from tests where comparative ratings are made. Commercial seedsmen should enter a few hybrids where seed is available for larger plantings than just experimental lots.

Among the 76 hybrids tested two known susceptible hybrids, Mo1023 and Mo5xH55, were included for the purpose of comparison.

The results for the commercial hybrids tested at Cedar Hill are given in Tables 9 and 10. Among the 76 entries tested, 35 hybrids showed significantly lower ratings than the remaining 41 for the first rating date of Aug. 7. The same entries

rated 14 days later, on Aug. 21, showed 21 hybrids with significantly lower ratings. An indication of the change in virus symptoms between rating dates can be shown for two susceptible entries, Mo1023 and Mo5xH55. On Aug. 7, these two hybrids had virus ratings of 6.67 and 8.00 respectively, and on Aug. 21, the ratings were 8.00 and 8.33.

Commercial hybrids tested at the Delta Center were rated on only one date and the results are given in Table 11. Since the infection at this location was much less severe than at Cedar Hill, many more hybrids fell in the resistant class. Comparison of the ratings for the two susceptible entries, Mo1023 and Mo5xH55, showed 4.00 and 4.67 for the Delta Center and 8.00 and 8.33 for Cedar Hill. Selection of hybrids with resistance to MDM should be more meaningful if selections are made from locations where the level of the infection is more severe.

Table 1. 1968 virus ratings for 12 inbred lines in the Uniform Test sponsored by the Southern Corn Improvement Conference. Test located on the Delta Center near Portageville in Pemiscot County, Missouri. Rated July 31, 1968. Experiment V-4.

<u>Inbred Line</u>	<u>Virus Ratings</u>	<u>DMRT*</u>
B37	1.25	
Tx601	1.50	
SC229	1.75	
Ga209	2.00	
Mo18W	2.00	
SC301D	2.00	
CI90C	2.25	
Mp303	2.25	
Mo5	2.25	
Mp486	2.50	
T226	2.50	
T105	2.75	

CV 43.8%

*Duncan's Multiple Range Test--No significant difference between entries.

Table 2. 1968 virus rating for 12 inbred lines in the Uniform Test sponsored by the Southern Corn Improvement Conference. Test located on the Delta Center near Portageville in Pemiscot County, Missouri. Rated August 21. Experiment V-4.

<u>Inbred Line</u>	<u>Virus Rating</u>	<u>DMRT*</u>
B37	1.75	
Mp303	2.00	
Mp486	2.25	
SC301D	2.75	
CI90C	2.75	
T105	3.00	
Mo5	3.25	
T226	3.25	
Mo18W	3.50	
Ga209	3.50	
Tx601	3.75	
SC229	4.50	

CV 44.0%

*Duncan's Multiple Range Test--Entries with the same line in common are not considered significantly different at the 5% level.

Table 3. 1968 virus ratings for the Uniform Test of 12 inbred lines sponsored by the Southern Corn Improvement Conference. Test located near Cedar Hill in Jefferson County, Missouri. Rated August 8, 1968. Experiment V-5.

<u>Inbred Line</u>	<u>Virus Rating</u>	<u>DMRT*</u>
Mo18W	2.50	
Ga209	2.75	
Tx601	3.00	
CI90C	3.75	
T226	5.00	
Mp486	5.00	
Mp303	5.25	
SC301 D	5.50	
B37	6.00	
SC229	6.25	
Mo5	6.50	
T105	6.75	

CV 38.2%

*Duncan's Multiple Range Test--Entries connected with a solid line are not considered significantly different at the 5% level.

Table 4 1968 virus ratings for 12 inbred lines in the Uniform Test sponsored by the Southern Corn Improvement Conference. Test located near Cedar Hill in Jefferson County, Missouri. Rating August 21, 1968. Experiment V-5.

<u>Inbred Line</u>	<u>Virus Rating</u>	<u>DMRT*</u>
TX601	4.50	
Ga209	4.75	
Mo18W	5.25	
Mp486	5.75	
CI90C	6.25	
B37	7.25	
Mp303	7.75	
SC301 D	7.75	
T226	8.00	
SC229	8.25	
T105	8.50	
Mo5	8.50	

CV 20.6%

*Duncan's Multiple Range Test--Entries with the same line in common are not considered significantly different at the 5% level.

Table 5. 1968 virus ratings for 10 inbred lines in the Uniform Test sponsored by the North Central Corn Research Committee. Test located on the Delta Center near Portageville in Pemiscot County, Missouri. Rated July 31, 1968. Experiment V-16.

<u>Inbred Line</u>	<u>Virus Ratings</u>	<u>DMRT*</u>
Mol18W	1.00	
N6J	1.00	
Oh7B	1.00	
Va35	1.33	
B37	2.33	
Oh43	2.67	
B41	2.67	
Mo5	3.00	
E38-11-11-5	3.00	
H55	6.00	

CV 41.5%

*Duncan's Multiple Range Test--Entries with the same line in common are not considered significantly different at the 5% level.

Table 6. 1968 virus ratings for 10 inbred lines in the Uniform Test sponsored by the North Central Corn Research Committee. Test located on the Delta Center near Portageville in Pemiscot County, Missouri. Rated August 21. Experiment V-16.

<u>Inbred Line</u>	<u>Virus Ratings</u>	<u>DMRT*</u>
Mol18W	1.67	
Oh7B	2.33	
N6J	3.00	
B41	3.33	
Va35	3.67	
E38-11-11-5	4.33	
B37	4.33	
Oh43	5.00	
Mo5	5.67	
H55	6.33	

CV 24.4%

*Duncan's Multiple Range Test--Entries with the same line in common are not considered significantly different at the 5% level.

Table 7 1968 virus ratings for 10 inbred lines in the Uniform Test sponsored by the North Central Corn Research Committee. Test located near Cedar Hill in Jefferson County, Missouri. Rated August 8, 1968. Exp. V-15.

<u>Inbred Line</u>	<u>Virus Rating</u>	<u>DMRT *</u>
Mo18W	2.00	
Oh7B	2.00	
N6J	4.33	
Va35	4.67	
H55	5.67	
B37	7.00	
Mo5	7.67	
E38-11-11-5	8.00	
B41	8.33	
Oh43	9.00	

CV 34.5%

*Duncan's Multiple Range Test--Entries with the same line in common are not considered significantly different at the 5% level.

Table 8 1968 virus ratings for 10 inbred lines in the Uniform Test sponsored by the North Central Corn Research Committee. Test located near Cedar Hill in Jefferson County, Missouri. Rated August 21, 1968. Experiment V-15.

<u>Inbred Line</u>	<u>Virus Rating</u>	<u>DMRT*</u>
Oh7B	3.00	
N6J	4.33	
Mo18W	5.33	
Va35	6.33	
B41	7.67	
B37	8.00	
Mo5	8.33	
H55	8.67	
Oh43	8.67	
E38-11-11-5	8.67	

CV 16.8%

*Duncan's Multiple Range Test--Entries with the same line in common are not considered significantly different at the 5% level.

Table 9. 1968 virus ratings for commercial hybrids grown near Cedar Hill in Jefferson County, Missouri. Rated August 7. Exp. V-11.

Hybrid	Virus Rating	Duncan's Multiple Range Test *
Oh7BxMo14W (Exp)	1.67	
PAG Sx17	2.00	
Northrup King PX635	2.00	
PAG Exp 15723	2.00	
PAG Exp 17553	2.00	
PAG Exp 20000	2.33	
Funk Bros. 20322	2.33	
PAG 439	2.33	
Bear 6706	2.67	
DeKalb 89108	2.67	
Bear 6976	2.67	
United Hagie 7S540	2.67	
Asgrow ATC 450	2.67	
United Hagie 7S570	3.00	
DeKalb 89109	3.00	
Pioneer X5138	3.00	
Funk Bros. G4761	3.00	
DeKalb XT872	3.00	
MFA Exp 7	3.00	
Funk Bros. G4831W	3.33	
PAG Exp 18061	3.33	
Northrup King PX621	3.33	
Schenk S96W	3.33	
Pioneer 3182	3.33	
Mo881	3.67	
Princeton SX927	3.67	
Bear 8236	3.67	
Funk Bros G5757	3.67	
DeKalb XL72	3.67	
Funk Bros. G4660	4.00	
MFA TX77	4.00	
Princeton 920A	4.00	
Pioneer X5139	4.33	
Pioneer 3188	4.33	
Taylor Evans TEVR20Y	4.33	
Princeton 990B	4.67	
Asgrow A305W	4.67	
DeKalb 88534	4.67	
Bear 872A	4.67	
McCurdy 7X11E	4.67	
Pioneer 3378	5.00	
Asgrow A300B	5.00	
Iowa-Mo. SX17	5.00	
McAllister SX6584	5.00	
McCurdy HP5	5.00	
Schenk SSX75A	5.33	
MFA 2252	5.33	

Table 9 Continued

Hybrid	Virus Rating	DMRT*
United Hagie 6S540	5.33	
Funk Bros. G4384	5.33	
Mo SX7	5.33	
Northrup King PX63	5.33	
Embro X5	5.33	
United Hagie 5S70	5.33	
Schenk SSX5	5.33	
United Hagie 5S495	5.67	
DeKalb I736	5.67	
McCurdy H5-61	5.67	
Asgrow A204	5.67	
McAllister SX6883	6.00	
MFA Exp 212	6.00	
MFA TX66	6.00	
Bear 8386	6.00	
Princeton SX804	6.00	
Princeton SX836	6.33	
Bear 8323	6.33	
Mo1023	6.67	
McCurdy 3X6	6.67	
Asgrow ASX92	6.67	
United Hagie 7S555	6.67	
McCurdy 900	6.67	
Asgrow ASC91	7.00	
MFA 2222	7.00	
Princeton SX950	7.33	
McAllister SX66	7.67	
Mo5xH55	8.00	
McCurdy HP8	8.33	

CV 30.9%

*Duncan's Multiple Range Test--Entries with the same line in common are not considered significantly different at the 5% level.

Table 10. 1968 virus ratings for commercial hybrids grown near Cedar Hill in Jefferson County, Missouri. Rated August 21. Experiment V-11.

<u>Hybrid</u>	<u>Virus Ratings</u>	<u>DMRT*</u>
Oh7BxMo14W (Exp.)	1.67	
Funk Bros. 20322	2.33	
Asgrow ATC450	2.33	
PAG Exp20000	2.67	
PAG SX17	2.67	
PAG Exp17553	2.67	
Funk Bros. G4831W	3.00	
Pioneer 3182	3.00	
Pioneer X5138	3.33	
PAG 439	3.33	
Funk Bros. G5757	3.33	
Asgrow A305W	3.67	
Funk Bros G4761	3.67	
DeKalb 89108	3.67	
Bear 6976	3.67	
Funk Bros. 34660	4.00	
MFA Tx77	4.00	
Princeton SX927	4.33	
Bear 6706	4.33	
Northrup King PX635	4.33	
Princeton 920A	4.33	
United Hagie 7S570	4.33	
Pioneer X5139	4.67	
DeKalb X472	4.67	
Schenk S96W	4.67	
United Hagie 7S540	4.67	
Pioneer 3188	4.67	
DeKalb XT872	4.67	
PAG Exp.15723	5.00	
DeKalb 89109	5.00	
MoSX7 67:1739x1740	5.00	
Princeton SX804	5.00	
Bear 8236	5.00	
MFA Exp 7	5.33	
Princeton 990B	5.67	
McAllister SX6584	5.67	
DeKalb 88534	5.67	
PAG Exp.18061	5.67	
Mo881 67:1869x1870	5.67	
Taylor Evans TEVR20Y	5.67	
DeKalb I736	6.00	
Iowa-Mo SX17	6.00	
Asgrow ASX92	6.00	
Bear 872A	6.00	

Table 10 Continued

<u>Hybrid</u>	<u>Virus Rating</u>	<u>DMRT*</u>
McCurdy H5-61	6.00	
United Hagie 5S570	6.00	
Princeton 5X836	6.33	
MFA Tx66	6.33	
Pioneer 3376	6.33	
Schenk SSX75A	6.33	
MFA 2222	6.33	
Embro X5	6.33	
McCurdy 7x11E	6.33	
Asgrow A300B	6.67	
Northrup King PX621	6.67	
Bear 8323	6.67	
Funk Bros. G4384	6.67	
Asgrow A204	6.67	
MFA 2252	6.67	
Princeton SX950	6.67	
Bear 8386	7.00	
Schenk SSX5	7.00	
MFA Exp212	7.00	
Northrup King PX63	7.33	
McAllister SX6883	7.33	
McCurdy 900	7.33	
McCurdy HP5	7.33	
United Hagie 6S540	7.67	
Asgrow ASC91	7.67	
McAllister SX66	8.00	
Mo1023	8.00	
United Hagie 5S495	8.00	
McCurdy HP8	8.33	
McCurdy 3x6	8.33	
Mo5xH55 (Exp)	8.33	
United Hagie 7S555	8.67	

CV 26.6%

*Duncan's Multiple Range Test--Entries with the same line in common are not considered significantly different at the 5% level.

Table 11. 1968 virus ratings for commercial hybrids grown on the Delta Center near Portageville, Missouri in Pemiscot County. Rated August 21. Experiment V-12.

<u>Hybrid</u>	<u>Virus Ratings</u>	<u>DMRT*</u>
Oh7BxMo14W (Exp)	1.00	
Asgrow ATC450	1.33	
United Hagie 5S570	1.33	
DeKalb XL72	1.33	
Asgrow A305W	1.67	
Pioneer X5139	1.67	
PAG Exp15723	1.67	
PAG Exp17553	2.00	
Princeton SX927	2.00	
Funk Bros. G4831W	2.00	
Funk Bros. G361	2.00	
Princeton SX804	2.00	
MoSX7 67:1739x1740	2.00	
MFA Tx77	2.00	
DeKalb 89108	2.00	
United Hagie 7S570	2.33	
MFA Exp 7	2.33	
PAG SX17	2.33	
Princeton 990B	2.33	
McAllister SX6584	2.33	
Asgrow ASX92	2.33	
Funk Bros. G4660	2.33	
Princeton SX836	2.67	
Asgrow A204	2.67	
United Hagie 5S495	2.67	
Pioneer 3182	2.67	
Bear 872A	2.67	
PAG Exp 18061	2.67	
Embro X5	2.67	
Mo881 67:1869x1870	2.67	
Iowa-Mo SX17	2.67	
Northrup King PX635	2.67	
DeKalb 89109	2.67	
Pioneer 3188	2.67	
MFA 2252	2.67	
Bear 6976	2.67	
Pioneer X5138	3.00	
Bear 8236	3.00	
Princeton SX950	3.00	
DeKalb I 736	3.00	
Funk Bros. 20322	3.00	
PAG Exp 20000	3.00	
Schenk S96W	3.00	

Table 11 Continued

<u>Hybrid</u>	<u>Virus Rating</u>	<u>DMRT*</u>
DeKalb 88534	3.00	
Bear 6706	3.00	
MFA Exp 212	3.00	
Asgrow A300B	3.00	
Pioneer 3376	3.33	
Schenk SSX5	3.33	
McCurdy 7x11E	3.33	
Funk Bros. G5757	3.33	
PAG 439	3.33	
MFA 2222	3.67	
United Hagie 7S540	3.67	
Asgrow ASC91	3.67	
McCurdy 3x6	3.67	
Northrup King PX621	3.67	
McCurdy HP8	3.67	
McAllister SX66	4.00	
Mo1023 67:1863x1864	4.00	
McCurdy H5-61	4.00	
Taylor Evans TEVR20Y	4.00	
United Hagie 6S540	4.00	
MFA Tx66	4.00	
DeKalb XT872	4.00	
McCurdy 900	4.33	
McCurdy HP5	4.33	
Bear 8386	4.33	
Princeton 920A	4.67	
McAllister SX6883	4.67	
Funk Bros. G4384	4.67	
Mo5xH55 (Exp)	4.67	
Bear 8323	4.67	
United Hagie 7S555	5.00	
Northrup King PX63	5.00	
Schenk SSX75A	6.00	

CV 38.3%

*Duncan's Multiple Range Test--Entries with the same line in common are not considered significantly different at the 5% level.