



Virus Ratings of Corn
Strains in Missouri
1969

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Virus Ratings of Corn Strains in Missouri 1969

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As in previous years, corn strains were grown and rated for virus symptoms at the Klossner Farm near Cedar Hill in Jefferson County and on the Delta Center near Portageville in Pemiscot County. A high incidence of corn virus symptoms had been found on corn and Johnsongrass plants at both locations.

In 1969, nearly 100 percent of the corn plants at the Cedar Hill location were infected with the virus. Severity of the disease was enhanced by a heavy, dense stand of Johnsongrass. Extremely wet weather after planting prevented cultivation and favored the abundant growth of Johnsongrass. Lack of moisture in late July and August intensified stress conditions that were not favorable for corn growth.

At the Delta Center the level of virus infection was lower with the most susceptible strains showing only a moderate degree of virus symptoms.

MATERIALS AND METHODS

Individual plots were hand-planted and consisted of one row of 20 plants spaced one foot apart within plots at the Delta Center and two plants per hill spaced 40 inches apart at Cedar Hill.

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

Each plot was rated on a scale of one (indicating no injury) to nine (indicating complete susceptibility.) Data for each entry reported are the averages of the replications used for a given experiment.

RESULTS

Commercial Hybrids

The virus ratings for the commercial hybrids are given in Table 1 (Cedar Hill) and Table 2 (Delta Center). Virus ratings among the hybrids at Cedar Hill ranged from 5.48 to 8.39 and at the Delta Center from 1.66 to 6.33. The coefficient of variation at Cedar Hill, with a high level of infection, was 8.3 percent and 32.1 percent at the Delta Center. The higher coefficient of variation at the Delta Center was attributed to the low level of infection. The correlation coefficient of virus ratings between the two locations was a positive .42 and highly significant.

Comparison of the levels of infection for two single crosses, with different levels of tolerance, grown at the two locations for the years 1967, 1968, and 1969 are as follows:

<u>Single Cross</u>	<u>Cedar Hill</u>			Mean	<u>Delta Center</u>			Mean
	1967	1968	1969		1967	1968	1969	
Mo5 x H55	5.08	8.00	8.20	7.09	3.80	4.67	6.33	4.93
Mo14W x Oh7B	1.55	1.67	5.81	3.01	1.35	1.00	2.66	1.67

Virus ratings for both crosses at each location appear to have increased slightly over the three-year period.

Uniform Test of Inbred Lines

Virus ratings for eight inbreds in the Uniform Test sponsored by the North Central Corn Research Committee are given in Tables 3 and 4. The Uniform Test sponsored by the Southern Corn Improvement Conference involved 12 lines and the virus ratings are presented in Tables 5 and 6.

The coefficients of variations were lowest for the Cedar Hill location and highest for the Delta Center. These results show a definite association between the coefficients of variations and the level of virus infection.

The high virus ratings at the Cedar Hill location for inbred lines with a previously known high level of tolerance suggest that

each strain is infected with the virus and the symptoms are expressed in direct proportion to the environmental stress the plants endure during the growing season.

Table 1. 1969 virus ratings for commercial hybrids grown on the Klossner Farm near Cedar Hill in Jefferson County, Missouri. Rated August 13, 1969. Experiment V-5.

Hybrid	Virus Rating	DMRT*
Funk Bros 23413	5.48	
Pioneer 3182	5.73	
Oh7B X Mo14W	5.81	
Princeton 875M	6.12	
Funk Bros G4761	6.24	
McCurdy 68-100	6.43	
McCurdy 68-103	6.59	
Funk Bros 23441W	6.86	
McCurdy 68-102	6.87	
MFA TX77	6.91	
Northrup King PX621	6.93	
McCurdy 68-101	6.98	
AKC 66	7.00	
Pioneer X5138	7.00	
Northrup King P635	7.01	
Mo881	7.01	
NC+77SX	7.02	
McAllister SX6837	7.18	
Mo Pipe 14	7.24	
Iowa-Mo SX18	7.26	
Pioneer X5139	7.29	
McAllister SX6827	7.36	
Excel E1022A	7.37	
Stull 720SX	7.38	
McCurdy 68-104	7.44	
Schenk S96W	7.45	
NC+83DC	7.47	
Excel E903W	7.50	
Northrup King PX63	7.58	
Bear X872	7.61	
Schenk SS88	7.62	
Excel E8244	7.71	
McAllister SX6861	7.72	
Bear X672	7.75	
Iowa-Mo SX25	7.78	
Pioneer 3188	7.79	
Asgrow IXL9	7.80	
Stull 800WSX	7.87	
Iowa-Mo 325	7.95	
Excel E7633	8.01	
Schenk SSX75	8.02	
Excel E944	8.03	
Holden Exp 035	8.05	
MoSX7	8.14	
McAllister MX6301	8.18	
H55 X Mo5	8.20	
MC+60SC	8.21	
Excel E71X	8.24	
Stull 707SX	8.39	

CV 8.3%

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

Table 2. 1969 virus ratings for commercial hybrids grown at the Delta Center near Portageville, Missouri in Pemiscot County, Rated August 5, 1969. Exp. V-6.

<u>Hybrid</u>	<u>Virus Rating</u>	<u>DMRT*</u>
Holden Exp 035	1.66	
Funk Bros 23413	1.66	
Pioneer 3182	2.00	
Excel 1022A	2.00	
MFA TX77	2.00	
AKC 66	2.33	
Iowa-Mo SX18	2.33	
McCurdy 68-104	2.66	
Oh7B X Mo14W	2.66	
McCurdy 68-101	2.66	
Excel E8244	2.66	
Iowa-Mo 325	2.66	
MoSX7	2.66	
McAllister SX6827	2.66	
Northrup King PX635	2.66	
McCurdy 68-103	2.66	
Pioneer 3188	3.00	
Funk Bros G4761	3.00	
Northrup King PX621	3.00	
Asgrow IXL9	3.00	
Excel E71X	3.00	
Iowa-Mo SX25	3.33	
Excel E903W	3.33	
Schenk SSX75	3.33	
Funk Bros 23441W	3.33	
McAllister SX6861	3.33	
Pioneer X 5138	3.33	
Princeton 875M	3.33	
Stull 707SX	3.66	
McAllister SX6837	3.66	
McCurdy 68-100	3.66	
Mo881	3.66	
Bear X672	3.66	
NC+83DC	3.66	
Pioneer X5139	3.66	
Mo Pipe 14	3.66	
Excel E944	3.66	
McCurdy 68-102	4.00	
Schenk S96W	4.00	
Northrup King PX63	4.00	
Excel E7633	4.00	
NC+77SX	4.00	
Bear X872	4.00	
McAllister MX6301	4.33	
Stull 720SX	4.33	
Stull 800WSX	5.00	
Schenk SS88	5.00	
NC+60SC	5.33	
H55 X Mo5	6.33	

CV 32.1%

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

Table 3. 1969 virus ratings for 7* inbred lines in the Uniform Test sponsored by the North Central Corn Research Committee. Test located on the Klossner Farm near Cedar Hill in Jefferson County, Missouri. Rated August 5, 1969. Experiment V-7.

<u>Inbred Line</u>	<u>Virus Rating</u>	<u>DMRT**</u>
Oh7B	5.25	I
Mo18W	6.32	I
N64	6.93	I
E38-11-11-5	7.55	I
Va35	7.93	I
Mo5	8.10	I
B37	8.23	I

CV 6.95%

*Eight inbreds were planted, but H55 failed to grow.

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

Table 4. 1969 virus ratings for 8 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 5, 1969. Experiment V-8.

<u>Inbred Line</u>	<u>Virus Rating</u>	<u>DMRT*</u>
Oh7B	2.50	I
B37	2.50	I
Mo18W	3.00	I
Mo5	3.50	I
N64	3.50	I
Va35	3.50	I
E38-11-11-5	4.00	I
H55	8.00	I

CV 15.48%

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

Table 5. 1969 virus ratings for 11* inbred lines in the Uniform Test sponsored by the Southern Corn Improvement Conference. Testing site on the Klossner Farm near Cedar Hill in Jefferson County, Missouri. Rated August 13, 1969. Experiment V-9.

<u>Inbred Line</u>	<u>Virus Rating</u>	<u>DMRT**</u>
T232	5.85	I
Tx601	7.01	
Mo18W	7.04	
SC333	7.33	
GA209	7.36	
Mp490	7.86	
SC358	8.00	
SC229	8.20	
A17	8.25	
CI90C	8.25	
T105	8.33	

CV 6.77%

* Twelve lines were planted, but Mp486 was eliminated due to a poor stand.

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

Table 6. 1969 virus rating for 12 inbred lines in the Uniform Test sponsored by the Southern Corn Improvement Conference. Testing site located on the Delta Center near Portageville in Pemiscot County, Missouri. Rated August 5. Experiment V-10.

<u>Inbred Line</u>	<u>Virus Rating</u>	<u>DMRT*</u>
T232	1.75	
SC333	2.50	
Mo18W	2.50	
Tx601	2.75	
Ga209	3.50	
T105	3.75	
Mp490	4.75	
CI90C	5.00	
SC229	5.75	
Mp486	6.00	
SC358	6.00	
A17	6.75	

CV 25.5%

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