5. Transformation of sex?

The C^I inhibitor mutant was grown for seed multiplication on 19th August 1967. The seed set was poor. It is interesting to note that 29.4% of the plants (47 out of 153) showed tassel seed, which is quite unusual and could be due to photoperiodism.

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1. Inheritance of resistance to strain A of Maize Dwarf Mosaic Virus.

In Maize Genetic Coop News Letter 40, 1966, p. 121 Wernham and Mackenzie reported on monogenetic control of resistance to M.D.M.V. (Strain A) in the inbred line Pa 11. The double cross Pa 444 selfed (Pa 54 x Pa 11) (Pa 32 x Pa 33) did not reveal a recognizable ratio in that 362 seedlings were symptomless whereas 454 susceptible plants could be separated into 4 distinct groups.

In the 1967 season an F_2 population of inbred Pa 405 (resistant) x 63-604 (susceptible) was inoculated with strain A of MDMV. A population of 570 seedlings gave 426 resistant: 144 susceptible. An analysis of the data revealed the X^2 probability for a 3:1 ratio to be .90. The data support a single gene hypothesis for MDMV control in Pa 405.

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2. Further studies on the inheritance of resistance to MDMV.

Additional data in support of the single gene hypothesis for MDMV resistance in Pa 11 has been obtained. In greenhouse inoculated tests the cross Pa 11 x 153R gave all resistant plants. The F_2 segregated in a ratio of 3 resistant to 1 susceptible and the backcross to the susceptible parent, W153R, segregated in a 1:1 ratio. The data as observed:

	Resistance	Susceptible	Total
1. Pa 11 x W153R	92	1	93
2. (Pa 11 x W153R) ⊗	71	31	102
X^2 probability for 3:1 segregation is .20 - .30			
3. (Pa 11 x W153R) W153R	52	49	101
X^2 probability for 1:1 segregation is .70 - .80			

On the other hand the inbred Pa 422P appears to have two genes exhibiting complementary action for resistance to the MDM virus. When the cross Pa 422P x Pa 887P was selfed, the F_2 segregated in a ratio that appeared to fit a ratio of 9 resistant to 7 susceptible. A population of 400 seedlings gave 216 resistant and 184 susceptible. The X^2 probability for a 9:7 ratio for this is .30 - .50. Another inbred, Oh 7B, also appears to have 2 genes with complementary action for resistance. Further tests of both Pa 422P and Oh 7B are being conducted to verify the validity of these results.

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1. DNA from Black Mexican sweet corn.

We reported previously that the base ratios of DNA from young kernels of lines of Black Mexican sweet corn with and without B-chromosomes differed from those of a white inbred line. Other workers have failed to find these abnormal ratios using leaf material. Our determinations were repeated using material from young seedlings and leaves and mature husks in addition to kernels. The methods used are described in detail elsewhere.

The results are given in Table 1.

Table 1
Base composition of DNA-preparations of three lines of Zea mays

Material	% C + G
Composition in moles per cent (Average of 2 or more determinations)	
K64--commercial white dent inbred	44.0
Black Mexican Sweet Corn with no B-chromosomes: leaves	44.0
husks	45.0
seedlings	42.0
kernels (10 days after pollination) colorless	44.5
kernels (>14 days after pollination) colored	55.0
Black Mexican Sweet Corn with B-chromosomes	
leaves	46.0
husks	42.0
seedlings	43.0
kernels (10 days after pollination) colorless	46.0
kernels (>14 days after pollination) colored	70.0