The results emphasize the necessity for having all alleles in a common genetic background if recombination frequencies are to be meaningful. We're meeting this requirement as rapidly as possible.

Oliver Nelson

2. A test for intermediacy of Wx recombinants.

It had been suspected that some Wx alleles arising in crosses between wx^{90} and wx^{C} or wx^{Coe} were not fully functional. In fact, in the large-scale conventional test of recombination between wx^{90} and wx^{Coe} where Wx kernels were detected by staining, a few Wx kernels were tentatively identified as intermediates because of their weak-staining propensities.

In 1961, 59 viable Wx recombinants from the 1960 test of Bz wx^{90} V / bz wx^{Coe} v were crossed by and onto bz wx^{Coe} v in order to verify their genotypes. The kernels resulting from these crosses were then available to test for amylose percentage.

In the past several months, 20 Wx alleles arising by recombination have been tested for their ability to support amylose synthesis. Only recombinants carrying one or both of the recessive outside markers from the cross Bz wx^{90} V / bz wx^{Coe} v were used in order to be certain that no Wx contaminants were tested. Starch was isolated from the stocks to be tested by the method of Shuman (Report #4 to the Corn Industries Research Foundation, Inc.). Such starch isolates had less than 1% protein as measured by Lowry's assay using the Folin phenol reagent. Protein (gluten) would be the most likely contaminant of any starch sample. The amylose percentage of the starch isolates was measured by the "Blue Value" method given by Ulmann and Augustat (Z. Anal. Chem. 162:337-344, 1958). The "blue value" read in the assay was converted to amylose percentage by reference to an amylose calibration curve constructed from mixtures in varying proportions of 3X recrystallized amylose and amylopectin. Such a standard curve was run with every group of assays.

The results of the assays are given in Table 2. Note that the kernels being tested were either Wx/Wx/wx (Wx recombinant x the bz wx^{Coe} v tester, 15492) or Wx/wx/wx (bz wx^{Coe} v tester x recombinant). The duplicate values given for each cross are assays on different days from the same starch isolate.

Reference to Table 2 shows no definite indication that any of the recombinants can be considered significantly less effective than the check in supporting amylose synthesis. The three recombinants where the reciprocal crosses were analyzed were originally thought to be intermediates because of their weak-staining properties. Even with these recombinants, effectiveness in supporting amylose synthesis cannot be considered less than normal.

It is interesting to observe that our results confirm the observation of Sprague, Brimhall, and Hixon and Sager that the Wx dosage effect on amylose percentage is not linear. However, we derive quite a different dose effect curve. Considering all isolates from Wx/Wx/wx kernels, the mean amylose percentage is 19.8. For all isolates from Wx/wx/wx kernels, the mean amylose percentage is 13.1. Both these values are well below those given by Sprague et al. and Sager.

It is difficult to account for the discrepancy. The assay used here was colorimetric while that used by Sprague et al was potentiometric. Yet approximately the same values were obtained for Wx/Wx/Wx isolates. The differences between percentages observed for the lower dosages are large to be attributed to background effect and are most readily ascribable to techniques of measurement.

Table 2. Amylose percentages in starch isolated from the listed stocks.

Source	Genotype	% Amylose
Check	Wx/Wx/Wx	27.5, 26.0
"	Wx/Wx/wx	20.5, 21.5
"	Wx/wx/wx	12.5, 12.5
15424G x 15492	Wx/Wx/wx	18.5, 25.5
15492 x 15424G	Wx/wx/wx	13.0, 11.5
15425E x 15492	Wx/Wx/wx	17.5, 18.5
15492 x 15425E	Wx/wx/wx	14.0, 14.5
15427G x 15492	Wx/Wx/wx	18.5, 20.0
15492 x 15427G	Wx/wx/wx	13.5, 13.5
15422G x 15492	Wx/Wx/wx	22.0, 18.5
15422B x "	"	19.5, 20.0
15422D x "	"	21.0, 19.0
15422E x "	"	20.0, 20.0
15422H x "	"	18.0, 17.0
15423A x "	"	18.0, 24.0
15422F x "	"	19.5, 20.0
15423G x "	"	18.5, 19.0
15422C x "	"	19.5, 20.5
15424A x "	"	20.0, 20.5
15423B x "	"	23.0, 20.0
15424B x "	"	24.0, 20.5
15424C x "	"	19.0, 18.5
15424D x "	"	19.5, 20.0
15424H x "	"	19.5, 19.0
15424F x "	"	17.5, 20.0
15425A x "	"	17.5, 20.0

Oliver Nelson

3. The allele wx^{m-1} recombines with wx^{C}.

The recombinational pattern of wx mutants which apparently contain the requisite information for Wx activity but are inhibited in action by a controlling element such as Ds would be most interesting to geneticists. We have been endeavoring to make such tests for several years.