Table 1. The amylose and phosphate content of starch preparations from seeds of various genotypes.

	% Amylose	% Phosphate
+/+ (W64A x 182E)	25	0.007
wx-C/wx-C	0	0.006
du-6902/du-6902	33	0.010
du-6901/du-6901	31	0.012
ae-6901/ae-6901	49	0.019
ae-6902/ae-6902[a]	36	0.022
ae-6902/ae-6902[a]	32	0.022
de*-Kg/de*-Kg	22	0.006
de*-X-91/de*-X-91	25	0.003
de*-Ki/de*-Ki	19	0.006
su2-R/su2-R	36	0.009
cp/cp	27	0.005
o5/o5[b]	23	0.008
o5/o5[b]	22	0.009
su-R/su-R	24	0.017

[a]Separate isolations of starch from the same plant.

[b]Separate isolations of starch from two sib plants.

Oliver E. Nelson, Jr.

Sucrose synthetase in Sh and sh endosperms — A survey of starch biosynthesis enzymes from developing endosperms of Sh Sh and sh sh genotypes (chromosome #9) revealed that one enzyme, sucrose synthetase (sucrose-UDP glucosyltransferase), was considerably reduced in the latter but not in the former (Table 1). The possible influence of genetic background on the enzyme activity, if any, was considered minimal because both genotypes were in a W22 inbred background. Three additional sh sh mutants of independent and spontaneous origin have also shown reductions of similar magnitudes in sucrose synthetase activity in the endosperm. No such differences were observed in the embryos of 22-day-old kernels of normal and mutant genotypes. Although the enzyme assays reported here were made in the direction of sucrose synthesis (Tsai et al., Plant Phys. 46:299, 1970), assays in the direction of sucrose breakdown revealed similar differences between these two genotypes.

Table 1. Sucrose synthetase activity in developing endosperms and embryos.

Genotype	Stage	µmoles sucrose synthesized per mg protein per minute	Percent activity
Endosperm			
Sh Sh Sh(W22)	22-day	450	100.0
sh sh sh(W22)	22-day	50	11.0
Sh Sh Sh	31-day*	386	100.0
sh sh sh(sh #7205)	31-day*	44	11.4
sh sh sh(sh #7107)	31-day*	36	9.3
sh sh sh(sh #7321)	31-day*	46	11.9
Embryo			
Sh Sh	22-day	35	11.4**
sh sh	22 day	34	11.1**

*Obtained from greenhouse plants.
**Percent of Sh Sh Sh endosperm activity (307 µmoles sucrose per mg protein per min.)

The Sh locus is known to specify a protein designated as Sh protein in the developing endosperms (Schwartz, Genetics 45:1419, 1960; Chourey and Schwartz, Mutation Research 12:151, 1971). This protein is completely absent in sh sh genotypes, and its role in developing endosperms is not known. In order to test if sucrose synthetase activity is associated with Sh protein, attempts were made to visualize this enzyme on gels by zymogram techniques; such attempts have not been successful. However, Sh protein can be easily visualized after gel electrophoresis by using a protein stain and can be readily eluted from unstained starch gels. Sh protein eluates obtained from starch gels showed a single protein band on acrylamide gels which exhibited the same migration rate as the Sh protein band. This same preparation of Sh protein when assayed for sucrose synthetase activity gave a positive reaction. Eluates from all other areas of the gels showed no sucrose synthetase activity. These observations suggest that the Sh protein alone is associated with sucrose synthetase activity. Experiments are in progress to identify zones of sucrose synthetase activity in gels from sh sh endosperms.

Prem S. Chourey