

2. Retention of sugars after harvesting.

Previous studies on the carbohydrates of normal, sugary, shrunken-2 and sugary-shrunken-2 kernels suggest that the shrunken-2 factor blocks starch synthesis in endosperms at an earlier biochemical step than that associated with the su factor. In particular, it was noted that sh₂ endosperms have a dextrin content whereas sugary endosperms have long been known to accumulate excessive amounts of water soluble polysaccharides. If, as supposed, the sh₂ gene represents a partial block prior to the formation of dextrans it would be anticipated that endosperms carrying this factor would show a greater retention of sugars after harvesting than sugary endosperms in which sugars may be changed readily to dextrans.

Preliminary studies on sugar holding capacity have been carried out with kernels on ears of self pollinated plants of three genotypes: susu ShSh (F₁ of a well known sweet corn variety), SuSu sh₂sh₂, and the double recessive susu sh₂sh₂. The results must be considered as suggestive only since the material studied was not related and is subject to background differences due to modifiers.

Ears of the several types were harvested at 18 days after pollination. Each was cut lengthwise into quarters and these were held for varying periods at room temperature under conditions to prevent loss of moisture, after which they were placed in dry ice and removed to the freezer. Analysis of dry kernel weights indicated that loss of weight during the first 16 hour period was negligible. Analyses of total sugars expressed as percent of dry kernel weight are given in the table below.

Genotype	Hours after harvesting				Percent loss of sugars over 48 hour period
	0	16	24	48	
susu ShSh (1)	21.9	14.5	12.3	8.4	62
susu ShSh (2)	25.1	18.2	15.4	7.9	69
ShSh	38.5	35.1	33.6	30.9	20
susu shsh	43.8	40.7	----	39.5	10

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