Brittle endosperm-2 and brittle endosperm-1.

Counts of F2 kernels from brittle-2 times sugary 1 showed 545 normal kernels to 542 mutant kernels (sum of sugary and brittle) suggesting that *bt_2* is near sugary in the proximal portion of the short arm of chromosome 4. Chemical analyses of mature brittle-2 and normal endosperms are shown in the accompanying table.

Carbohydrate analyses for ontogenetic series of brittle-1 and brittle-2 compared are shown in the second table. The homozygous mutant was from selfed plants, the control in each case was from a normal line of fairly similar background pollinated by the respective mutant. The brittle-1 and brittle-2 are in general quite similar with respect to their effects on reducing sugar sucrose and water-soluble polysaccharides. Reducing sugars were higher in both mutant types than in their respective normal counterparts from 33 days on. Sucrose was very much higher in both from 21 days on. Water-soluble polysaccharides, however, were very little different in the mutants than in the normals. Preliminary starch determinations in these samples indicate that brittle-1 and brittle-2 store much less starch at all sampling dates than do the normal. Previous work has shown that sugary-1 also accumulates much less starch than normal. But sugary has large amounts of water-soluble polysaccharide whereas brittle-1 and brittle-2 accumulate much greater quantities of sucrose at mid- and late development than have been found for sugary.

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Table 1. Chemical constituents of brittle-2 and normal endosperms from three F2 segregating ears.

	Percentage by weight	
	bt_2	Bt_2
Fat	7.3	1.5
Protein	17.0	15.2
Reducing sugars	7.7	.7
Sucrose	4.1	.05
Water-soluble polysaccharide	.4	.7
Starch	33.4	54.0

Table 2. Carbohydrate content of developing endosperms of *Bt_1* versus *bt_1* and *Bt_2* versus *bt_2*.

	Carbohydrate content mg. per endosperm					
	Reducing sugars		Sucrose		Water-sol. polysac.	
Days after pollination	Bt_1	bt_1	Bt_1	bt_1	Bt_1	bt_1
14	2.8	2.6	3.4	3.9	.2	.3

21	3.6	3.2	4.8	8.9	.7	.7
25	3.6	4.4	4.4	18.1	.7	1.7
33	.9	4.0	.3	26.0	.8	1.9
39	.3	3.3	.2	21.2	1.3	1.6
46	.3	2.1	.6	4.4	7.3	2.2
	Bt_2	bt_2	Bt_2	bt_2	Bt_2	bt_2
14	4.3	3.5	1.8	2.1	.2	.2
21	3.2	5.3	2.0	18.2	.4	.5
25	4.6	4.4	4.7	24.0	.9	.7
33	3.7	4.6	6.4	26.4	1.8	.9
39	1.0	4.5	.1	25.2	1.4	1.2
46	.6	5.0	.1	14.7	2.5	1.2

*Probably an abnormally high value.