

### 3. Effects of "converter" on an intermediate allele and on a variegated allele of B.

The conversion-type phenomenon reported last year considered the effects of  $B^1$  on  $B$  and  $b$  only. Two additional alleles,  $B^V$  (Singleton, Newsletter 23:5), which is  $b$ -like but mutable, and  $B^b$  (an apparent allele, not yet firmly established), which brings about strong pigment production only in the glume bar, have been tested against  $B^1$ .  $B^V$  is tractable, while  $B^b$  is not. For  $B^b$ , comparisons were made between  $+B^1+$  and  $+B+$  over  $gl\ B^b\ sk$ , selfed and crossed to  $gl\ B\ sk$ . In selfs  $B^b$  and  $B^1$  are indistinguishable, since both elicit strong glume bar color but weak husk and sheath color. The cross to  $gl\ B\ sk$  gave the following:

Markers Grade	+ +				gl sk					+ sk					gl +					Sum	
	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4	0	1	2	3		4
B <sup>1</sup> test	6	7	1						9	6			1	1	1		1	2			35
B check				3	1				1					2						3	10

The  $B^1$  class ( $++$ ) was weak (the newly-introduced  $B$  has been affected), while the  $B^b$  class ( $gl\ sk$ ) was not. In the  $B$  check, though the numbers are small, the grades were all of the intense level, as expected.

For  $B^V$ , comparisons were made between  $+B^1$  and  $+B$  over  $gl\ B^V$ , selfed and crossed to  $gl\ B$ . In this case segregation for  $Pl-pl$  was present and although the analysis was complicated because of previous inexperience with  $Pl$  in this system, the results were even more striking in  $Pl$  plants. Only the  $Pl$  individuals are presented below, for simplicity. Variegated plants in the selfs were graded according to the color level of sectors, with the following results:

Marker Grade	+							gl							Sum					
	Varieg.				Uniform			Varieg.				Uniform								
	1	2	6	7	0	1	2	5	6	7	1	2	6	7	0	1	5	6	7	
B <sup>1</sup> test	2	1			16	35	4				8	3			3					73
B check			2	0				3	6	12		4	1						2	30

Note that at least two grade levels separate intense and weak individuals in each case. The cross to  $gl\ B$  gave the following:

Marker Grade	+							gl							Sum		
	0	1	2	3	4	5	6	7	0	1	2	3	4	5		6	7
B <sup>1</sup> test			2	11	7					1	4	12	4				41
B check						1	1	12					1	0	6	2	23

It is interesting that the functionally intermediate allele  $B^b$  is like the null  $b$  in its response to  $B^1$ , while the functionally null allele (except after mutation),  $B^V$ , is affected by  $B^1$  and is thus similar to  $B$ .

-- E. H. Coe, Jr.

### 4. Effects of $c_2$

This factor is still unlinked. TB-3 tests (long arm) were negative. In combinations with intensifier, a new effect has been found: Selfs of confirmed  $c_2\ c_2$  in in segregate 3 colorless:1 dilute, while

selves of homozygous  $c_2 c_2$  in in give all dilute kernels. Acid tests, even on  $c_2 c_2 c_2$  in in in , are negative on visually colorless types. This is therefore a new example of a 13:3 interaction. Further observations on plant color show that  $c_2$  does affect this character:  $c_2 c_2$  B P1 plants have much reduced pigmentation in the husks and sheaths but intensely-pigmented auricles, glume bars, and similar tissues.

-- E. H. Coe, Jr.

5. A sector for brittle stalk-2.

In a progeny segregating for  $bk_2$ , one individual was almost perfectly split into half brittle-half normal. Almost all of the leaves were divided at or near the midrib into brittle and normal and the tassel had very nearly half brittle and half normal branches. Whatever the basis for brittleness it therefore appears to be cell-limited and, since the  $bk_2$  sector was virtually equal in size to the normal,  $bk_2$  must not affect the competitive ability (cell division and growth) of tissues carrying it to any great extent.

-- E. H. Coe, Jr.

NATIONAL INSTITUTE OF AGRICULTURAL SCIENCES  
Department of Physiology and Genetics  
Hiratsuka, Japan

1. Maize races native to the island Kiushiu situated at the southern part of Japan.

The old Japanese corn races have three centers of distribution which occupy upland areas on the mountain sides of Mt. Fuji, Shikoku and Kiushiu and which range from 300 to 1,000 m in altitude. All of the races were shown to belong to a Caribbean type of tropical flint corn. In addition, detailed studies have been carried out from morphological and cytological viewpoints. Some data obtained from the races native to two centers, Mt. Fuji and Shikoku, have already been presented in previous volumes of this News Letter MGCNL 31:105-107, 32:105-107 and 33:84-88. The present study deals with native races from the last center, Kiushiu. In autumn of two years, 1956 and 1958, a large collection of races growing in Kiushiu was made. It was obtained from 200 or more farmers at 65 places and consisted of 300 or more samples. In 1959, 62 of these samples were chosen and grown at three agricultural experiment stations, Iwate, Hiratsuka and Ehime. The same measurements or observations as those mentioned in the previous reports were carried out. Results obtained can be summarized in table 1 on the following page.

(1). For about 300 samples collected, 70 local racial names were encountered. Actually, only 43 distinct races were identified. Of these, 15 races were certainly worth noting from the breeding viewpoint (Table 1). The 43 races were grouped into 11 types (Table 1). Four types were worth considering for breeding purposes. (a) the Oodama type comprises the late races with heavy grain yield, (b) the Shinboso type is superior in grain quality to the other types, and (c) the Kanazuchi and Okuzuru types have a combination of the attributes just mentioned with the former being medium and the latter early in maturity.

(2). The racial differentiation was remarkable in the majority of 68 characters examined. Eighteen attributes were especially useful in identifying any race or type. They consisted of characters concerned with maturity, plant height, stalk diameter, number of stalk nodes, leaf size, ear height,