An Allele for Recessive Red Glume Color in Sorghum1

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Many sorghum varieties have either red or black glumes and corresponding reddish or blackish plant discolorations. There are variations in intensity, shade, and distribution of the colors caused by environmental and morphological and genetical modifications (1). The contrasting glume colors with the more stable modifications are useful in describing varieties, such as “intense dark red” or “black with apices of outer glumes uniformly straw-colored to reddish brown” (9, pages 70, 77).

The red plant color has been reported as a single-factor dominant to black (8); the factor pair has been designated Qq (2); and these genes have been found linked with those for brown subcoat [nucellar layer (6)], Bb, and green-striped plants, Gs gs, (7). Conversely, black glumes have been reported dominant to red (5), and Laubscher (4) found the crossover percentage with brown subcoat comparable to that previously obtained when red glumes were dominant to black. He suggested an allelomorphic series at the locus for glume color. Data tabulated at the Chillicothe, Texas, station bear on this suggestion.

MATERIALS

Part of the crosses described here were made specifically to determine crossover percentages between factors for glumes, subcoat, and green-striped. Others were made for other purposes, but the segregations for the above characters also were included in the tabulations. Since the tables showing detailed segregations in each of the individual populations are entirely too voluminous for a short paper, only the totals for individual years are shown. Varieties used as parents in the various crosses are listed below. In addition, several genetic stocks that carried the factors for green-striped and male sterile were used as parents, but the genes for glume color in these stocks were derived directly or indirectly from the named varieties or from closely related strains of Blackhull kafir and feterita.

Dominant red (QQ)

Chusan Brown kaoliang (S.P.I. 23231) Red kaoliang (F.P.I. 62428)
Brown kaoliang (F.P.I. 66384) Brown kaoliang (F.P.I. 82336)
Dwarf Java (S.P.I. 39269) Acme broomcorn (C.I. 243)
Honey sorgo (F.C. 6605)

Black (qq)

Texas Blackhull kafir (F.C. 8962) Dwarf feterita (C.I. 810)
Freed (S.P.I. 29166) Chiltex (F.C. 8917)
Ajax (F.C. 6620) Chinese (black) amber sorgo (F.C. 8728)

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