Inheritance of Height in Sorghum

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Sorghum varieties range in height from 2 to 15 feet. Tall varieties predominate in much of the world where sorghum is grown and are usually preferred for forage because fodder yields are almost directly proportional to plant height. Except in the United States and Australia, dwarfness is not considered generally advantageous even in grain varieties because the stalks usually are needed for fodder or for building purposes. However, dwarf varieties of kafir, durra, hegari, kaoliang, and broomcorn have come to America from Africa, Asia, or Europe. Several mutations to dwarfness have occurred in this country since sorghums were introduced, and fully 95% of the sorghum grain produced in the United States now is grown on short-stalked varieties that are harvested with a combine. These short varieties, except for Double Dwarf milo 38, resulted from combining dwarfness from more than one source.

This paper reports on the inheritance of height in sorghum, and lists the genetic factors for height among varieties grown in the United States, or that have been used as parents to produce new varieties. A knowledge of the height factors carried by varieties is now of added importance because of the possibility of hybrid sorghum production and of the consequent breeding work necessary to obtain parental lines that will produce dwarf hybrids suitable for harvesting.

REVIEW OF LITERATURE

The sorghum varieties grown in the United States to 1936 are described in a bulletin by Vinall, et al. (11). Two mutations to dwarfness occurred in the milo variety at the turn of the century, and farmers originated the Dwarf and Double Dwarf varieties of Yellow milo. Two dwarf varieties of broomcorn having different factors for dwarfness originated in this country in the same way. The Hegari variety that is still widely grown was dwarf in height when introduced from the Egyptian Sudan. Blackhull kafir was a dwarf variety recognized as a variety after being introduced from Africa.

Karper (5) reported two genes for dwarfness in milo. Sieglinger (10) reported a similar condition in broomcorn. Karper (5) reported the simple inheritance of a height gene in kafir that is unstable. According to Martin (6), Ayyangar reported dwarfness in shallu and durra that was caused by single genes. Laubscher (7) studied sorghum populations that were segregating for height and maturity, and concluded from F2 data that height inheritance was complex.

Ayyangar, et al. (1) reported a case of dwarfness that was linked with early maturity but there is every likelihood that in this case there was segregation only for number of internodes, and not for a gene that influences

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2 Agronomist and Superintendent, Texas Substation No. 12 and Agronomist, Texas Agr. Exp. Sta., respectively.