PLANT CHARACTERS AND YIELD IN GRAIN SORGHUMS

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Very few studies of the plant characters responsible for the yields of grain sorghums have been made. Growers differ in opinion regarding the relative productiveness of thin stands with large heads and thick stands with small heads.

Some correlations are presented here with the hope of throwing light on the interrelationships between yields and several important plant characters of grain sorghums.

Three sets of data have been used. The first is the measurements of the size of heads and stalks per acre in fields of milo and kafir in southwestern Kansas and northwestern Oklahoma in 1926. These data were obtained in connection with determinations of the losses in harvesting with headers and combines. The fields represented a wide range of crop development under similar environmental conditions and the yield differences were the result chiefly of soil moisture supply, stand of plants, weed control, and cultural methods.

Another set of data was obtained from the plats in the spacing experiments with grain sorghums at the U. S. Dry-Land Field Station, Woodward, Okla. These experiments were conducted during the period from 1917 to 1926, which included favorable, unfavorable, and average seasons. The variability in crop growth and yields from year to year was due chiefly to differences in soil moisture, while the plat yields in a given season were affected principally by soil variations and differences in stand and tillering. Diseases and insects apparently had little effect upon the yields. The results from the plats at Woodward are not a true random sample because several years' data are thrown together. However, they are uniform as to variety, fairly uniform as to soil and cultural conditions, and include a much wider range of variability in plant development than is possible within a given season. The combined data are representative of crop conditions and plant development which are likely to be encountered in the western grain-sorghum region where the moisture supply is the chief factor determining yields.

The relation of the plumpness and weight of seeds to the weight per bushel was determined from samples grown in environmental experiments at Amarillo, Texas, Chico, Calif., and Rosslyn, Va., during the years 1914 to 1919, inclusive.

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