

Breeding for sugars in the corn stalk after maturation of the grain.

Breeding work suggested to us by Dr. D. F. Jones in 1950 was continued during 1955. Partial reports have been published in the Maize News Letters of 1952, 1953, and 1955.

In 1951 Dr. Jones sent us seven inbred lines and five hybrids, and in 1954 eleven more hybrids. From 1951 to 1955 American and indigenous inbreds were selected for high refractometrical readings of stalk juice after the grain was mature (i.e., with less than 30% moisture). The same material was selected for greenness of leaves and stiffness of stalks. Pure inbreds were not affected by this selection. Heterozygous lines were, on the contrary, deeply affected. American and indigenous inbred lines were combined in 3-way crosses and single crosses to test general and specific combining ability for these characters. The three combinations: "American" x "American," "American" x "indigenous" and "indigenous" x "indigenous" were tested. The number of hybrids tested in 1955 was 304.

The 1955 results show the possibility of obtaining hybrids with very high refractometrical stalk juice readings which remain green when the grain has matured (having 25% moisture content). These hybrids should also show a very high yield and the grain should contain a large amount of protein.