

3. S₁ - selection of inbred lines in the variety Mexico 5.

Fifty first stage inbred lines were developed from the variety Rocamex 520-C (Mexico 5) and topcrossed to the source variety for a determination of their combining ability. Twelve of these lines were selected for further work on basis of the yielding performance of their topcrosses. The range of variation in yields was limited for two trials with a low average yield level (1000-1300 lb/acre). It averaged 1551 lb/acre for the higher yielding trials, although a tendency was observed that the range decreased with increasing yield level.

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4. Quantitative and qualitative tests of four maize varieties.

Two experiments were conducted in 1959 with four maize varieties. One experiment was performed in an attempt to find, according to the traditional method of food extraction, the proportion of food material in the grains. The other experiment was conducted to determine taste preferences for the four maize varieties. Processing and cooking of "Eko" and "Akamu" were done by students of a local girls' secondary school. Lagos White gave the highest proportion of food material. EAFRO 231 came second, Mexico 5 third and Sicaragua last. The results obtained from two types of food prepared were invariably similar. Lagos White was significantly superior in taste both in "Eko" and "Akamu" to other varieties, followed by EAFRO 231 and Sicaragua. A large proportion of food material was lost through hand grinding and it was presumed that 26-37% of food could be saved by the use of a milling machine.

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5. Early and late testing for combining ability of inbreds developed from the maize variety Mexico 5.

The performances in yield trials of S₁ and S₄ topcrosses of inbred lines of maize derived from the variety Mexico 5 were compared. The better combining S₁ - lines did not necessarily give rise to good combining S₄ lines. Comparisons of S₄ - topcrosses originating from the same S₁ - line showed that remarkable differences (up to six times the standard error of a mean) existed between those derivatives. It is suggested that an early test for combining ability in this variety is not the best procedure to derive desirable and good combining inbred lines.

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