

Indigenous races of maize (C) A special study was made of the reliability of characters for use in the description of races, following the principle established by Brieger (1952), that only those quantitative characters should be used which can be measured easily and which permit statistical analysis of data. In order to obtain information about phenotypical variability and to identify the characters with strong heritability, several plantings were made successively and the data compared by analysis.

On the whole one may say, that characters with too much phenotypic variability (between successive plantings) or with coefficients of variation above 21% are not satisfactory for analytical purposes, and preference should be given to those with less than 16%.

Plant characters:- Height of plant and of ear, number of nodes above and below the ear, and time to flowering are characters with coefficients of variation of the size desired. Care must be taken, however, that comparisons are based only upon material grown under identical conditions, since these characters are phenotypically variables. The "internode pattern" of Anderson and Cutter should be considered only as a qualitative descriptive character, since a statistical analysis is not feasible, and, furthermore, the pattern is subject to phenotypical variation of some extent.

Tassel characters:- The characters measured include length of internode below first tassel branch, of branched portion of tassel and of unbranched tip and also of the total number of primary branches. All show on the whole only a tolerable variability from 10 to 21%. The number of branches of higher order is still more variable, and thus a qualitative indication of little, medium or heavy branching is sufficient. The condensation index of Anderson was not used, since the amount of labor is out of proportion to the eventual use as a descriptive character.

Ear characters:- Most of the characters used by Mangelsdorf, Wellhausen and Brieger, and their co-workers, were tested and found rather constant and thus of considerable value for distinguishing races. Total ear and cob diameter have a coefficient of variation below 10%. Length of ear, number of rows, rachis diameter between 10 to 20%, and diameter of the soft medulla have 10 to 35%. Measurements of the three dimensions of kernels are little variable. The number of husks, on the other hand, has only a tolerable variability and the length of shank is a highly variable character.

The use of ear diagrams, which has become very widespread recently, is quite justified as a demonstration of characters with a small amount of variability.

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