EVALUATION OF SOME MORPHOLOGICAL CHARACTERS
OF CORN IN RESPECT TO THEIR USE IN
FORECASTING YIELD

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THE crop estimator is confronted with the problem of predicting and estimating accurately the yields of major cereal crops such as corn. Information which might lead to the establishment of more accurate and timely estimates of yield would be of value. Consequently, the Corn-Yield-Weather Research Project, a cooperative study between the U. S. Dept. of Agriculture and the Iowa Agricultural Experiment Station, was initiated in 1938. This project had as one of its objectives an investigation of the possibility of relating certain morphological characters measured at various stages in the development of the corn plant with its ultimate yield, and certain phases of this investigation are reported here.

REVIEW OF LITERATURE

Most of the previous work has stressed the relation of ear characters and other plant measurements with the yield of the progeny from these plants. Much of this work was carried on to learn the association between the standards advanced by the various score cards for show ears and the ability of those ears meeting the requirements to produce high yields. The earlier investigators almost without exception have reported that the correlations were small and were not of much value as an index of selection (3, 4, 5).

Kiesselbach (8) and Richey (9) found that the tendency of certain strains to produce high-yielding crosses was very noticeable. In some later work Richey and Mayer (10) found that some inbred lines were much superior to others in producing high-yielding crosses. Correlation coefficients between the yielding ability and other characters of inbred variety crosses have been reported (6).

Jenkins (7) reported coefficients of correlation (a) among characters within the same generation of inbred lines, (b) between characters of the inbred parent lines and the same character in the crossbred progeny and, (c) between characters of the inbred parent lines and the yield of the crossbred progeny.

Shafer and Wiggans (12) attacked the problem of relating the characteristics of corn plants to the yield of similar plants. Working with single crosses, double crosses, and top crosses, they reported correlation coefficients of .60 to .85 between weight of total dry matter produced and the weight of the dry shelled grain. Studies of this nature are rather limited. It is this type of relationship which is of interest in this investigation.

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3Figures in parenthesis refer to "Literature Cited", p. 953.