THE RELATION BETWEEN THE MOISTURE CONTENT
AND THE TEST WEIGHT OF CORN

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The weight per measured bushel of shelled corn, which is called the test weight, is one measure of quality in corn. It is of little value for comparing varieties or strains of corn but is useful for comparing the same strain under different conditions. Since the test weight varies with the moisture in the grain, it is desirable that samples to be compared for test weight have the same moisture content. Accomplishing this is generally impractical. The practical alternative is to adjust the test weights of samples with different moisture contents to make them comparable. The information necessary to permit such adjustments has not been available. The work reported in this paper had as its object the obtaining of such information.

PROCEDURE

Five varieties of corn which differed widely in their characters were used. These varieties ranged from very early to very late for growing at Lafayette, Indiana. In order of earliness, these varieties were Clement White Cap Yellow Dent, Bryant Reid Yellow Dent, Krug, Purdue Reid Yellow Dent, and Johnson County White Dent. Krug was very different from the other varieties. It had little to no indentation of the crowns of the kernels, the crowns of many kernels were decidedly rounded, and the kernels contained a high proportion of vitreous starch. The other varieties had moderate to fairly rough indentation, were more nearly square at the crowns, and had less vitreous starch, though they varied considerably in these characters. Clement White Cap was most like Krug. Johnson County White was at the other extreme and it had the largest and roughest kernels.

On October 23, 1935, a sample of each variety was husked, shelled, and cleaned on a fanning mill. After cleaning there were 15 to 20 pounds of each variety. The test weight of each was determined and a moisture sample was taken. The grain was then spread in flat trays with wire mesh bottoms to a depth of about 1.5 inches. These trays were placed in a room in which the air was warm and low in humidity. The air could circulate freely through the corn. Daily moisture and test weight determinations were made until both became practically stationary.

A Boerner test weight apparatus with a quart cup was used. Five determinations of test weight were made each day after thoroughly mixing the sample by pouring from one tub to another several times. The means of five tests were used for the analysis of the results. The quantity of each sample was sufficient to permit making the five daily tests without using the same grain but once.

Till the corn was fairly dry, it sometimes stopped flowing from the hopper of the Boerner apparatus. Flow was again started by punching down through the corn once with a wire or pencil. Sometimes the flow had to be restarted several times before the hopper was empty.

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