NOTES

SAMPLING EAR CORN FOR MOISTURE DETERMINATION

Corn yield trials require an adequate method of moisture determination if comparative yield and maturity values are to be accurately measured. Generally, moisture content of corn is determined by one of two methods, viz., (1) from a sample of whole ears, or (2) from a sample of grain gouged from whole ears. Each of these methods has limitations. When tests involve large numbers of varieties, if method (1) is used, the amount of corn to be handled and the amount of space and time for drying become prohibitive; when method (2) is used, if the grain is of high moisture content, it is difficult with the general facilities at hand to make all moisture determinations before spoilage of the sample occurs.

Because hybrid corns being tested in different parts of Michigan vary from 25% to 60% in moisture content at harvest time and because of the limitations of the methods for determining moisture content now in general use, it became imperative that a new method be evolved for determining the moisture content of ear corn if Michigan trials were to be improved in accuracy. The requirements to be met by the new method were that the samples on which determinations were to be based should be (1) quickly and easily obtained, (2) representative of both grain and cob, (3) relatively small, (4) of such a character that they could be kept for 2 to 3 days under ordinary conditions without spoilage, and (5) easy to dry when placed in an oven.

In an attempt to develop a method to fulfill these requirements, a locally constructed device shown in Fig. 1 was used to remove a cross section from the ear of corn. It consists of a board base, 1 foot X 3 feet X 2 inches, in the center of which are bolted two pairs of mower section knives in such a position that a section 1 inch in width is sliced from the ear. The lever action handle is fixed to the frame so that pressure can be put on the ear that is placed crosswise of the knives, slicing out a section that drops through an opening in the board base. A removable funnel is fastened to the under side of the board base, guiding the sections into a paper bag. Three-pound paper bags punched with ½-inch holes were used as containers for drying the sections in a hot air drier. The punched bag container allows free circulation of air which hastens drying considerably.

The routine use in sampling and testing our corn field plots for moisture is as follows: (1) A sample is taken from each plot harvested; (2) the sample is obtained by sectioning every third ear; (3) the sample is weighed immediately; (4) a large hot air oven is used to dry the samples; (5) a few samples are check-weighted at intervals until a constant weight is reached, usually 6 to 7 days; (6) all samples are reweighed as soon as a constant moisture is reached; and (7) the moisture content of several oven-dry samples (composite) is determined by the Brown-Duvel tester.

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