

COMMUNICATION TO THE EDITOR

The FHI-Method for Moisture Determination in Cereals and Feedstuffs

TO THE EDITOR:

Generally, when a sample is analyzed for moisture content, it is the moisture content at the time of sampling that is desired. When conventional moisture determination techniques are utilized, there is always a risk of change in the moisture content of the sample due to absorption or liberation of moisture prior to weighing and most commonly during the grinding. At this step the sample will exchange moisture with the surrounding atmosphere no matter what kind of grinding mill is used; the gain or loss of moisture is a function of the ambient water vapor pressure.

In the FHI-method this problem is solved by weighing the moist sample before grinding. This is possible by using a special laboratory grinder, shown in Fig. 1, consisting of

- 1) A Braun motor, type MX32Z.
- 2) A special grinding device.
- 3) A number of steel cups with plastic lids.

The moist sample is subdivided to about 12 g and weighed in a tared steel cup with lid to a precision of ± 5 mg. If the moisture content is expected to be higher



Fig. 1. Laboratory grinder used in the FHI-method. (Manufactured by Holm & Halby, Egegårdsvej 5, 2610 Rødovre, Copenhagen, Denmark.)

than about 18% , the sample is predried in the steel cup without lid at 130°C for about 15 min. The sample can then be ground while it is still hot.

The grinding is achieved by placing the grinding device upon the steel cup, turning upside-down, fastening the cup by a spring clip, and mounting it on the Braun motor. The sample is ground at the highest speed for 30 sec. After tapping the steel cup to move the main part of the sample down into the cup, it is dismantled over a sheet (30 × 30 cm) of dark paper. The remaining sample is removed from the grinding device to the paper by means of a small brush and transferred quantitatively to the steel cup. Moisture evaporation during these operations will not influence the result of the moisture determination.

The steel cup without lid is placed in a drying cabinet with forced air circulation at 130°C for 2 hr. After drying, the lid is placed on the steel cup which is cooled for 1–2 hr in the laboratory. It is unnecessary to use a desiccator (proved by repeated experiments).

The dry sample is weighed and the moisture content calculated by the following equation:

$$M \% = \frac{W - D}{W - T} \times 100, \text{ where}$$

M % = per cent moisture in the sample

W = weight of moist sample plus tare

D = weight of dry sample plus tare

T = tare

The final calculation is the same regardless if predrying is used or not.

The FHI-method has resulted in far less variation between laboratories than other methods used, particularly for moist samples; this method is quick and labor-saving compared to ordinary procedures.

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