

Determination of Moisture in feed

Moisture can be very damaging to the life of food when it is found in inappropriate amounts and places. Because of this, much effort is put into reducing the water content of dry foods in order to prolong their shelf lives. Once water content is reduced to the desired level the product can then be packaged for storage. Unfortunately, simply reducing moisture content is not always sufficient. Environmental conditions can play a role as well.

Dry matter It is extremely difficult to estimate the water requirement of grazing animals. Animals that feed on grass generally have a higher intake of water, but other factors include the moisture content of the grass, air temperature and duration of exposure to the sun. Furthermore, in semi-arid climates, some breeds of sheep are able to adapt to prevailing conditions, restricting their drinking to twice weekly, and meet their water needs by mobilizing fat reserves (Laticauda or North African breeds).

Oven drying method

In **oven drying methods**, the sample is heated under specified conditions, and the loss of weight is used to calculate the moisture content of the sample. The amount of moisture determined is highly dependent on the type of oven used, conditions within the oven, and the time and temperature of drying. Various oven methods are approved by AOAC International for determining the amount of moisture in many food products. The methods are simple, and many ovens allow for simultaneous analysis of large numbers of samples. The time required may be from a few minutes to over 24 h.

Clean, dry sample and a short glass stirring rod are preweighed into a moisture pan. Subsequently, after weighing in a sample, the sand and sample are admixed with the stirring rod left in the pan. The remainder of the procedure follows a standardized method if available; otherwise the sample is dried to constant weight. The purpose of the sand is twofold: to prevent **surface crust** from forming and to disperse the sample so evaporation of moisture is less impeded. The amount of sand used is a function of sample size. Consider 20–30 g sand/3 g sample to obtain desired distribution in the pan. Similar to the procedure, applications, and advantages of using sand, other heat-stable inert materials such as diatomaceous earth can be used in moisture determinations, especially for sticky fruits.

Calculations

Moisture and total solids contents of foods can be calculated as follows using oven drying procedures:

$$\text{Moisture\% (wt/wt)} = \frac{\text{wt H}_2\text{O in sample}}{\text{wt of wet sample}} \times 100$$

$$\text{Moisture\% (wt/wt)} = \frac{\text{wt of wet sample} - \text{wt of dry sample}}{\text{wt of wet sample}} \times 100$$

Or

$$\text{Moisture\% (wt/wt)} = \frac{\text{wt 1} - \text{wt 2}}{\text{wt 1}} \times 100$$

wt 1= weight of sample before drying

wt 2= weight of sample after drying