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Moisture content for grain safe storage

粮食安全储存水分

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1 Scope

This document sets the moisture content for grain safe storage and describes the test methods.

This document applies to the determination of the safe storage moisture value of wheat, paddy rice, maize and soybean by grain storage enterprises with suitable storage facilities.

3 Terms and definitions

The terms and definitions given in GB/T 29890-2013 and the following apply to this document.

3.1 conventional technique of grain storage. A storage method in which, under natural climatic conditions, the stored grain is given general technical handling and routine management such as cleaning and sanitation, natural ventilation, trenching and turning of the grain surface, and regular monitoring of the condition of the grain.

3.2 the highest average temperature of grain mass. Where the average temperature of a grain bulk is calculated layer by layer, the highest of the layer average temperatures. Note: calculating the average temperature by layer means that the temperature sensors are placed as required by 5.2.7.1 of GB/T 26882.1-2011, the temperature of the bulk is counted by layer in the horizontal direction, and the figure for each layer is the average of the readings of all the working sensors in that layer.

3.3 controlled temperature storage. A storage method in which, with suitable storage facilities and equipment, the stored grain is kept under artificial temperature control, sealing and insulation and similar measures, the condition of the grain is monitored regularly, and the average temperature of the whole bulk and the layer average temperatures are held within a set temperature range. Note: mechanical ventilation, grain chilling, air-conditioned temperature control, internal circulation temperature control or a combination of them is used according to local conditions to achieve controlled temperature storage.

3.4 moisture content for grain safe storage. Under conventional storage and controlled temperature storage, the highest moisture value at which grain can pass the local summer safely without heating and without moulding.

4 Moisture content for grain safe storage

The moisture content for grain safe storage is given in Table 1. Where the highest layer average temperature falls between two temperatures listed in Table 1, the safe storage moisture is determined from the higher of the two temperatures, while making sure that the grain remains safely stored.

Table 1 lists the grain moisture, as a percentage, against the highest layer average temperature of the bulk in degrees Celsius, in steps of five degrees from 10 to 35, for five grain groups: wheat, early indica rice, late indica rice together with japonica rice, maize, and soybean. At the lowest temperature listed, values are given only for maize and soybean, the entry for the other three groups being marked as not occurring in practice. Across the range the limit for wheat falls from 14.0 % to 12.5 %, for early indica rice from 15.0 % to 13.0 %, for late indica and japonica rice from 15.5 % to 13.5 %, for maize from 15.5 % to 13.0 % and for soybean from 13.5 % to 11.0 %.

Note 1: under controlled temperature storage the temperature of the bulk is easier to hold, so the safe storage moisture is comparatively stable; under conventional storage the temperature of the bulk is readily affected by the surroundings, so changes in the safe storage moisture are to be dealt with properly.

Note 2: a dash stands for a case that does not occur in practice.

5 Test methods

5.1 Measurement of grain bulk temperature. Carried out according to 7.1.1 of GB/T 29890-2013.

5.2 Measurement of grain moisture. Carried out according to 7.1.3 of GB/T 29890-2013.