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Rice — Determination of biometric characteristics of kernels

Riz — Détermination des caractéristiques biométriques des grains

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 4, *Cereals and pulses*.

This second edition cancels and replaces the first edition (ISO 11746:2012), which has been technically revised. It also incorporates the Amendment ISO 11746:2012/Amd 1:2017. The main changes compared with the previous edition are as follows:

— the preparation of the test sample has been modified;

— a determination of length/width ratio has been added.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Rice — Determination of biometric characteristics of kernels

1 Scope

This document specifies a method for the determination of the biometric characteristics of husked or milled rice kernels.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 5725-1, *Accuracy (trueness and precision) of measurement methods and results — Part 1: General principles and definitions*

ISO 7301, *Rice — Specification*

ISO 24333, *Cereals and cereal products — Sampling*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5725-1, ISO 7301, ISO 24333 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
biometric characteristics
length, width and thickness of the kernel measured along the three Cartesian axes

Note 1 to entry: See Figure A.1.

4 Principle

Manual selection of kernels and measurement of their biometric characteristics with a micrometer.

5 Apparatus

Usual laboratory apparatus and, in particular, the following.

5.1 Sample divider, conical sampler or multiple-slot sampler with a distribution system.

NOTE Some sample dividers are described in ISO 24333.

5.2 Tray, or equivalent device, coloured in contrast with the colour of the rice to be evaluated.

5.3 Tweezers, of different types (metal, plastic, round tips or pointed, etc.), for easy handling of kernels.

5.4 Micrometer, or equivalent device capable of being read to the nearest 0,01 mm and which ensures that no kernel deformation occurs during measurement.

Avoidance of kernel deformation is particularly important for husked rice.

6 Sampling

Sampling is not part of the method specified in this document. A recommended sampling method is given in ISO 24333.

It is important the laboratory receives a truly representative sample that has not been damaged or changed during transport or storage.

7 Procedure

7.1 Preparation of the test sample

Mix and reduce an aggregate sample, using a sample divider (5.1). Repeat the first step of dividing at least three times. By the following steps, reduce the sample until a test sample of about 50 g is obtained.

Spread it on the tray (5.2) and, with the aid of tweezers (5.3), remove extraneous matter, immature and/or malformed kernels, and kernels in any way broken to obtain the test sample.

7.2 Determination

7.2.1 Randomly draw out two sets of 100 kernels from the test sample obtained in 7.1.

7.2.2 While maintaining each kernel motionless in the correct orientation (see Annex A) with the aid of tweezers (5.3), measure the biometric characteristics of the kernels of both sets (see 7.2.1) using the micrometer (5.4). Report the values to the nearest 0,01 mm.

7.2.3 For each biometric characteristic (length, width and thickness), calculate the arithmetic means for both sets, $(\bar{X}_1, \bar{X}_2)$, and check whether the value calculated using Formula (1) is less than or equal to 2:

$$\left| \frac{\bar{X}_1 - \bar{X}_2}{\left(\bar{X}_1 + \bar{X}_2\right)/2} \times 100 \right| \tag{1}$$

A value higher than 2 indicates that sets have not been randomly selected, in which case, return all the kernels to the test sample and repeat the procedure from 7.2.1.