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ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 1162

CEREALS AND PULSES

METHOD OF TEST FOR INFESTATION
BY X-RAY EXAMINATION

1st EDITION

January 1970

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Printed in Switzerland

Also issued in French and Russian. Copies to be obtained through the national standards organizations.

BRIEF HISTORY

The ISO Recommendation R 1162, *Cereals and pulses – Method of test for infestation by X-ray examination*, was drawn up by Technical Committee ISO/TC 34, *Agricultural food products*, the Secretariat of which is held by the Magyar Szabványügyi Hivatal (MSZH).

Work on this question led to the adoption of a Draft ISO Recommendation.

In September 1967, this Draft ISO Recommendation (No. 1236) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Australia	Greece	Romania
Brazil	Hungary	Turkey
Chile	India	U.A.R.
Czechoslovakia	Iran	United Kingdom
France	Israel	U.S.S.R.
Germany	Poland	

No Member Body opposed the approval of the Draft.

This Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in January 1970, to accept it as an ISO RECOMMENDATION.

CEREALS AND PULSES

METHOD OF TEST FOR INFESTATION

BY X-RAY EXAMINATION

1. SCOPE

This ISO Recommendation describes a method for the detection and measurement of hidden infestation due to insects in grain, pulses and similar material, by means of X-rays.

NOTE. – Pest damage and current infestation can both be detected by this method, but insects recently killed (for example by fumigation) may be difficult to distinguish from those still living.

2. PRINCIPLE

Spreading of the test portion in a layer, one grain thick, on a support interposed between a source of X-rays and a radiographic film; exposure to soft X-rays and examination of the film after development.

3. APPARATUS

3.1 The apparatus and installation should comply with the rules in force in each country with regard to the construction of generators and their accessories and to installations for the production and use of X-rays.

3.2 X-ray apparatus

An X-ray source according to the following specification has been found satisfactory.

3.2.1 *Power supply.* The machine should not require more than 2 kW of electrical power.

3.2.2 *X-ray tube.* The X-ray tube should be suitable for producing primarily “soft” X-rays. These X-rays have low penetrating power and because of this the X-ray tube is usually fitted with a beryllium window.

The effective focal spot of the X-ray tube should be as small as possible but not less than 1.5 mm × 1.5 mm.

3.2.3 *X-ray control.* For most grains it is usual to use an X-ray apparatus producing X-rays in the range of about 20 kV* and 5 mA. In some cases it will be necessary to have X-rays of higher energy, up to 50 kV. In such cases the voltage should be variable continuously or stepwise between 15 and 50 kV and the current should be variable between 0 and 20 mA.

The X-ray apparatus should be equipped with a line voltage control, by means of which fluctuations in line voltage may be compensated. The compensated line voltage should be read on a special voltmeter, on which the correct value should be marked. The X-ray apparatus should have an X-ray tube indicator, preferably a milliammeter.

An electric time clock to switch the machine off at the end of the exposure, although not essential, is nevertheless useful. This timer should have a time range of not less than 10 minutes.

* Voltages quoted in this ISO Recommendation are *peak values*.