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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 26628.1-2024

Replacing GB/T 26628.1-2011

**Inspection of grain and oils-Standard atlas of stored grain
fungi-Part 1: Aspergillus**

粮油检验 储粮真菌标准图谱 第1部分：曲霉属

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is Part 1 of GB/T 26628 "Standard Atlas of Stored Grain Fungi for Inspection of Grain and Oils". Lower part.

- Part 1: *Aspergillus*;
- Part 2: *Penicillium*;
- Part 3: *Fusarium*;
- Part 4: Other common bacterial genera.

This document replaces GB/T 26628.1-2011 "Standard Atlas of Stored Grain Fungi for Inspection of Grain and Oils Part 1: *Aspergillus*" and Compared with GB/T 26628.1-2011, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

- Deleted two species of *Aspergillus giganteus* and *Aspergillus niger*, which are less commonly found in grains (see 5.7 and 5.17 of the 2011 edition);
- Deleted *Aspergillus terrestris* and *Aspergillus* figs (see 5.8 and 5.20 of the 2011 edition). These two species of *Aspergillus* are respectively related to *Aspergillus styracifolius* (see 5.6, 5.25 of the 2011 edition) and *Aspergillus niger* (see 5.14, 5.22 of the 2011 edition) of the same species;
- Deleted the *Aspergillus glaucoides* group (see 5.10 of the 2011 edition), which includes multiple species, including *Aspergillus monteri*, *Aspergillus chevalieri*, and *Aspergillus*

rubrum.

Aspergillus pseudoglaucus and *Aspergillus pseudoglaucus* are species of the *Aspergillus glaucus* group and are listed separately in this document (see 5.8, 5.9, 5.10, and 5.11);

- Deleted *Aspergillus restrictedus* (see 5.16 of the 2011 edition). *Aspergillus restrictedus* is a group, and *Aspergillus sauvignon* (see 5.12) is a group of *Aspergillus restrictedus*.

Common species found in food;

- Added 4 species of *Aspergillus* commonly found in grain, including *Aspergillus nicotianae*, *Aspergillus multiflorus*, *Aspergillus cristatus* and *Aspergillus osmolytes* (see 5.20, 5.21, 5.22, 5.23);

- Changed the names of two species, Amsterdam *Aspergillus* (see 5.11 of the 2011 edition) to Montefiore *Aspergillus* (see 5.8), *Aspergillus* (see 5.15 of the 2011 edition) is changed to *Aspergillus pseudoglaucoides* (see 5.11);

- Changed the diagram of common *Aspergillus* colonies and microscopic morphological characteristics in grains (see Chapter 5, Chapter 5 of the 2011 edition);

- Changed the textual description of the main morphological characteristics of *Aspergillus* commonly found in grains (see Chapter 5, Appendix B of the 2011 edition).

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

This document was submitted by the State Administration of Grain and Material Reserves.

This document is under the jurisdiction of the National Technical Committee on Standardization of Cereals and Oils (SAC/TC270).

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The previous versions of this document and the documents it replaces are as follows.

- First published in 2011 as GB/T 26628.1-2011;

- This is the first revision.

Introduction

Fungi are one of the important biological factors that cause the deterioration of grain quality. In order to early evaluate and identify fungi and mycotoxins in grain To better understand the pollution hazards of grain storage and reduce the risk of grain quality and safety, it is necessary to study the types and distribution of fungi in grain.

The standard atlas of stored grain fungi, which was established based on the different morphological characteristics of different fungi species under different growth conditions, can be used to accurately identify the fungi.

Provide auxiliary reference for fungal inspection in stored grain and improve the accuracy and reliability of fungal identification results.

GB/T 26628 "Standard Atlas of Stored Grain Fungi for Inspection of Grain and Oils" aims to specify the inspection requirements for different species of fungi in stored grains and give The standard atlas and characteristic descriptions of the main fungi in the species are planned to consist of four parts.

- Part 1: *Aspergillus* spp.
- Part 2: *Penicillium* spp.
- Part 3: *Fusarium* spp.
- Part 4: Other common bacterial genera.

In terms of stored grain fungus inspection, China issued GB/T 26628.1-2011 "Standard Chart for Inspection of Grain and Oil for Stored Grain Fungus" in 2011.

Since its implementation, this document has played a significant role in the detection of *Aspergillus* fungi in stored grains such as rice, wheat, and corn.

Good auxiliary reference function.

This revision fully draws on the advanced methods of bacterial species identification at home and abroad, as well as the presentation of colony and microscopic morphological characteristics, and is more These technical changes will provide better support for the inspection and identification of *Aspergillus* in stored grains.

Scientific guidance will help improve the level of food quality and safety management in China.

Standard Atlas of Stored Grain Fungi for Grain and Oil Inspection Part 1: *Aspergillus*

1 Scope

This document defines the terms and definitions of the *Aspergillus* genus in the Standard Atlas of Stored Grain Fungi, describes the test methods, and gives the common *Aspergillus* species found in stored grains.

Morphological characteristics diagram and microscopic morphological characteristics diagram and characteristic description.

This document is used as a supplementary reference for the detection of *Aspergillus* in stored grains.

2 Normative references

This document has no normative references.

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 *Aspergillus*

Ascomycota, Eurotiomycetes, Eurotiales, Aspergillaceae One genus.

Note 1. The main characteristic of *Aspergillus* is that the asexual reproduction body is formed by the differentiation and expansion of some cells on the mycelium into foot cells, which grow upwards into conidiophores.

The swells into a apical capsule, on which one or two layers of stalks grow. From the top of each stalk, a string of conidia grows, forming a head-shaped structure.

A conidial head with a stalk is the basic characteristic of the asexual reproduction of *Aspergillus*. Sexual reproduction only occurs in some taxa.

The fungus forms brightly colored perithecia, or antheridia, which contain numerous asci, which contain ascospores. Some *Aspergillus* species can produce sclerotia.

Note 2. The toxin-producing fungi of the genus *Aspergillus* mainly include *Aspergillus flavus*, *Aspergillus versicolor*, *Aspergillus nidulans*, *Aspergillus ochra*, *Aspergillus niger*, etc. These *Aspergillus* may produce aflatoxins, Secondary metabolites such as ochratoxin, fumonisin, and patulin.

4.1 Observation of colony morphology

The indoor environment should be bright and well-lit, or the observation should be conducted under a light source with an illumination of $450\text{lx} \pm 100\text{lx}$.

Follow Appendix A. For culture medium preparation, see Appendix B.

4.2 Microscopic morphological observation

According to the different objective lens magnifications, adjust the light source intensity of the microscope and the aperture diaphragm of the condenser. The aperture diaphragm of