

ICS 65.020.01

CCS B 16



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

GB/T 28080-2011

Detection and identification of *Tilletia indica* Mitra

小麦印度腥黑穗病菌检疫鉴定方法

Issued on: December 30, 2011

Implemented on: June 1, 2012

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine;
Standardization Administration of the PRC**

Table of Contents

1 Scope	1
2 Normative references	1
3 Indian wheat bunt fungus basic information 1 4 principle of the method 1 5 quarantine and identification of Scheme	1
6 Sampling Method	3
6.1 unprocessed wheat sampling methods	3
6.2 Processing wheat sampling methods	3
6.3 Example 3 bags of flour sample	7
7.1 The main equipment	3
7.2 Reagents	4
4 Sample preparation before 8.1	4
8.2 Morphological identification	5
8.4 spore culture	5
5 Analyzing Results 9 and Expression	5
9.1 morphological analysis showed judgment and presentation	5
9.2 single molecule detection spore direct result of the determination and presentation	5
9.3 spore cultures molecule detection result of the determination and presentation	6
9.4 Sequencing and alignment 6 10 samples and raw data storage 6	6
16 Annex G (normative) Sequencing and alignment	18

Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules. This standard by the National Standardization Technical Committee of Plant Quarantine (SAC/TC271) and focal points. This standard was drafted. People's Republic of China, Shenzhen CIQ, Shenzhen Inspection and Quarantine Science Research Institute. The main drafters. Zhang Guiming, Cheng Yinghui, Wang Ying, Lu Qing, Yuan Ling apricot, Longhai, Chen Chi-nan, only to jade, Yang Weidong, Miao Jian Kun. India's wheat bunt quarantine and identification of bacteria

1 Scope

China's national method for the quarantine detection and identification of *Tilletia indica* Mitra, the fungus that causes Karnal bunt of wheat. It specifies the detection and identification methods, both morphological and molecular, sets out the identification

procedure, and defines the sampling and the preservation of samples. It applies to the detection of the fungus in wheat and its processed products, and to the detection of the same fungus carried on hosts other than wheat. Karnal bunt is the most consequential quarantine disease in the world wheat trade, and its importance has very little to do with the damage it does to a crop. It infects only part of the grain in an ear, and even a heavily affected field loses a small percentage of its yield. What it does is make the grain unsaleable: the infected kernels contain a black spore mass with a strong fishy odour, and flour milled from grain above a very low tolerance is unacceptable. More decisively, a large number of countries prohibit the import of wheat from areas where the fungus occurs, so a single confirmed detection can close an export market for an entire producing region for years. That is the context in which this standard operates. The detection problem is one of finding a very small number of infected kernels, or of teliospores washed from the surface of clean grain, in a bulk consignment - and of distinguishing the spores of *Tilletia indica* from those of related *Tilletia* species that are common, harmless in this context, and similar under a microscope. So the standard combines a size-selective washing and sedimentation procedure to recover spores from a large sample, morphological examination of the spores, and molecular identification to settle the species. Issued on 30 December 2011 and in force since 1 June 2012.

This standard specifies the method for inspection and identification of bacteria bunt of wheat in India, including morphological and molecular biology methods, provisions Indian wheat bunt quarantine bacteria identification process, defined the sampling and sample preservation methods. This standard applies to wheat bunt India Detection of bacteria in wheat and its processing products pass band. This standard is also applicable to other than wheat the other host bacteria pass detecting bacteria with India bunt of wheat.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document. Laboratory use specifications and test methods GB/T 6682 Analysis

GB/T 18085 phytosanitary wheat dwarf bunt quarantine and identification of bacteria

GB/T 19495.2 technical requirements for GMO testing laboratories

3 Indian wheat bunt fungus basic information

Chinese name. India wheat bunt fungus. Name. *Tilletia indica* Mitra. Synonyms. *Neovossia indica* (Mitra) Mundkur. Disease English. karnalbunt of wheat (abbreviated KB), partial bunt of wheat. Fungi industry Fungi, Basidiomycota Basidiomycota, Ustilago Gang Ustomycetes, Ustilago mesh Ustilaginales, *Tilletia* Bacteria Branch Tilletiaceae, fishy

Ustilago Tilletia. India's wheat bunt incidence of bacteria, mainly through seed propagation over long distances and attached to the surface of the seed teliospore health, but also with Soil and other agricultural tools to spread. For additional information, see Appendix A.
Bacteria bunt of wheat in India

4 Principle of the method

According to the biological and morphological characteristics of the Indian wheat bunt fungus and molecular biological characteristics, application-related instruments, including microscopes PCR instrument, such as wheat and India bunt fungus was identified.

5 Quarantine and identification processes

Quarantine and identification process shown in Figure 1. * * *