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

GB/T 47305-2026

Determination of available boron in soil

土壤有效硼的测定

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1.Structure and Drafting Rules of Standardization Documents". Drafting. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed by the Ministry of Agriculture and Rural Affairs of the People's Republic of China. This document is under the jurisdiction of the National Technical Committee on Soil Quality Standardization (SAC/TC404). This document was drafted by: the Center for Supervision and Protection of Cultivated Land Quality and Farmland Engineering, Ministry of Agriculture and Rural Affairs, and the Sichuan Provincial Center for Cultivated Land Quality and Fertilizer Work. Station, Institute of Agricultural Resources and Environment, Sichuan Academy of Agricultural Sciences, Nanjing Institute of Soil Science, Chinese Academy of Sciences, Institute of Agricultural Resources, Chinese Academy of Agricultural Sciences In collaboration with the Institute of Agricultural Regional Planning, the Institute of Environmental Protection Research and Monitoring of the Ministry of Agriculture and Rural Affairs, and the Institute of Agricultural Quality Standards and Testing Technology of the Chinese Academy of Agricultural Sciences Institute of Agricultural Environment and Sustainable Development, Chinese Academy of Agricultural Sciences; Sichuan Keyuan Engineering Technology Testing Center Co., Ltd.; Huazhong University of Science and Technology Agricultural University, Fujian Academy of Agricultural Sciences Institute of Resources, Environment and Soil Fertilizer, Jilin Provincial Soil and Fertilizer Station, Guangxi Zhuang Autonomous Region Soil Fertilizer Workstation (Guangxi Zhuang

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---Personnel using this document should have practical experience working in a formal laboratory. This document does not address all possible safety issues. Users are responsible for taking appropriate safety and health measures and ensuring compliance with relevant national regulations.

1 Scope

GB/T 47305-2026 is the Chinese national standard covering the plant-available boron in a soil - a micronutrient with an unusually narrow window between deficiency and toxicity, which makes the measurement worth doing before the fertiliser is chosen. First edition, in force since 1 October 2026. It was issued on 31 March 2026 and takes effect on 1 October 2026, as a first edition. The document is under the responsibility of the Ministry of Agriculture and Rural Affairs. This page is published from the official record of the 2026 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document describes the use of inductively coupled plasma atomic emission spectrometry, inductively coupled plasma mass spectrometry, curcumin colorimetry, and methylamine... A method for determining available boron in soil using the amine-H colorimetric method. In this document, inductively coupled plasma atomic emission spectrometry, inductively coupled plasma mass spectrometry, and curcumin colorimetric method are applicable to various types of soil. The methylamine-H colorimetric method is not suitable for determining available boron in soils with a boron content below

0.29 mg/kg. When the sample weight is

10.00 g and the extraction solvent is 20 mL of water. the detection limit of inductively coupled plasma atomic emission spectrometry is

0.03 mg/kg. The lower limit of detection was

0.08 mg/kg; the limit of detection for inductively coupled plasma mass spectrometry was

0.02 mg/kg, and the lower limit of determination was

0.04 mg/kg; curcumin The colorimetric method has a detection limit of

0.05 mg/kg and a quantification limit of

0.08 mg/kg; the methylimine-H colorimetric method has a detection limit of

0.12 mg/kg and a quantification limit of

0.08 mg/kg. The limit is

0.29 mg/kg.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

NY/T 149 Method for Determination of Available Boron in Soil

NY/T 1121.1 Soil Testing - Part

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 Soil available boron Boron in the soil that can be absorbed and utilized by plants.

Note. Boron that can be extracted by boiling water under the conditions specified in this document.

4. Sample collection and preparation Soil samples were collected, air-dried, ground, and stored in accordance with NY/T 1121.1. The samples were ground to pass through a 2mm sieve.

5 Inductively Coupled Plasma Emission Spectroscopy

5.1 Principle Soil samples were extracted with water and heated. The boron content in the extract was determined by inductively coupled plasma atomic emission spectrometry (ICP-AES). The sample was carried in by a carrier gas.