

ICS 13.080
CCS B 10



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

GB/T 47215-2026

Determination of ammonia volatilization from soil

土壤氨挥发测定方法

Issued on: February 27, 2026

Implemented on: September 1, 2026

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

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Foreword

This document was drafted in accordance with the rules given in GB/T 1.1-2020 "Directives for standardization - Part 1: Rules for the structure and drafting of standardizing documents".

Attention is drawn to the possibility that some of the content of this document may be the subject of patent rights. The issuing body of this document shall not be held responsible 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 of Standardization Administration of China (SAC/TC 404).

This document was drafted by the Institute of Soil Science of the Chinese Academy of Sciences, Northwest A&F University, the Institute of Agricultural Resources and Regional Planning of the Chinese Academy of Agricultural Sciences, China Agricultural University and the Jiangsu Institute of Quality and Standardization.

1 Scope

This document describes the methods for the determination of ammonia volatilization from soil.

This document applies to the determination of ammonia volatilization from cropland and grassland soils. The determination of ammonia volatilization from soils under other land uses may be carried out by reference to this document.

2 Normative references

The contents of the following documents constitute indispensable provisions of this document through normative reference in the text. For dated references, only the edition corresponding to that date applies. For undated references, the latest edition (including all amendments) applies.

GB/T 601 Chemical reagent - Preparations of standard volumetric solutions · GB/T 4883 Statistical interpretation of data - Detection and treatment of outliers in the normal sample · GB/T 6682 Water for analytical laboratory use - Specification and test methods · GB/T 18204.2 Examination methods for public places - Part 2: Chemical indicators · HJ 666 Water quality - Determination of ammonia nitrogen - Flow injection analysis and salicylic acid spectrophotometry

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 ammonia volatilization from soil - The escape of nitrogen in the soil to the atmosphere in the gaseous form of ammonia (NH_3).

3.2 airflow hood intermittent sampling - A sampling method in which a gas collection hood covers the soil to be measured; one end of the hood is open to the atmosphere and the other is connected in turn to an ammonia absorption bottle and a miniature vacuum pump, the pump drawing the airflow through the absorption bottle so that the gaseous ammonia volatilized from the soil is collected.

3.3 enclosure continuous sampling - A sampling method in which a gas collection hood is inserted into the soil and a sponge soaked in ammonia absorption solution is placed at its upper end to adsorb the gaseous ammonia volatilized from the soil.

4 Principle

4.1 Airflow hood intermittent sampling with spectrophotometry or acid-base titration. Air enters from the top of the ventilation rod and passes through the corrugated tube into the air exchange chamber, carrying the ammonia volatilized in the chamber into the washing

bottle, where the absorption solution takes it up; the amount of ammonia volatilized is calculated from the total ammonia determined in the absorption solution.

4.2 Enclosure continuous sampling with spectrophotometry. The soil is enclosed by the gas collection hood and the ammonia volatilized from the soil is absorbed by a sponge holding ammonia absorption solution inside the device; the ammonia content of the sponge is determined by spectrophotometry and the ammonia volatilized from the soil surface, together with its cumulative amount, is calculated.