ICS 13.080
CCS B 10

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 39228-2020

Determination of soil microbial biomass - Fumigation-extraction method

Issued on: November 19, 2020 **Implemented on: March 1, 2021**

Issued by: State Administration for Market Regulation, China National Standardization Administration

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the translation method equivalent to ISO 14240-2.1997 "Soil Quality Determination of Soil Microbial Biomass Part 2.Fumigation Extraction Method".

This standard has made the following editorial changes.

a) Change the standard name to "Determination of Soil Microbial Biomass Fumigation Extraction Method";

b) Change the organic carbon concentration C in formula (1) to C0;

c) The unit in formula (1), formula (2) and formula (4) is deleted, and the description of its unit is added to the formula description;

d) The footnote "coming soon" in Reference [2] is changed to "Publication Date..1998".

This standard was proposed by the Ministry of Agriculture and Rural Affairs of the People's Republic of China.

This standard is under the jurisdiction of the National Soil Quality Standardization Technical Committee (SAC/TC404).

Drafting organizations of this standard. Institute of Subtropical Agricultural Ecology, Chinese Academy of Sciences, Hunan Yongqing Environmental Protection Research Institute Co., Ltd., China Science

College Nanjing Soil Research Institute, Jiangsu Quality and Standardization Research Institute.

1 Scope

This standard specifies a method to determine the total amount of organic matter that can be extracted after killing fresh soil microorganisms by chloroform fumigation to estimate soil

Methods of microbial biomass. This standard only describes the determination of extractable organic carbon content, but this method is also suitable for estimating soil

The microbial nitrogen content and the microbial ninhydrin reaction nitrogen content. This standard is applicable to aerobic and anaerobic (waterlogging,

Paddy field) determination of soil microbial biomass. This standard is also applicable to the determination of microbial biomass in soils containing easily decomposable organic substrates and supersaturated potassium sulfate solutions.

Note. Chloroform fumigation also affects soil animals, but the carbon contribution of such organisms is generally small (< 5%) and can usually be ignored.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this document.

For undated references, the latest version (including all amendments) applies to this document.

ISO 10381-6.19931) Soil quality sampling Part 6.Guidelines for the collection, treatment and storage of soil used in the laboratory determination of aerobic microorganisms

ISO 10694.1995 Soil quality Determination of soil organic matter and total carbon dry burning method (elemental analysis)

ISO 11465.1993 Soil quality Determination of dry soil weight and water content gravimetric method

1) In.2009, ISO 10381-6.1993 was replaced by ISO 10381-6.2009; in.2018, ISO 10381-6.2009 was replaced by ISO 18400-206.2018.

3 Terms and definitions

The following terms and definitions apply to this document.

3.1

Soil microbial biomass

The quality of living microbial cells in the soil.

Note. This indicator can be estimated by measuring the carbon or nitrogen content in the cell or measuring its mineralization ability to the added carbon source. When using carbon or nitrogen analysis, it can be measured

Cells or cell debris; when measuring soil respiration, only live cells are measured.

4 Principle

After the soil sample was fumigated, all living microbial cells were damaged and microbial organic matter was released. Fumigation has no effect on non-living soil organic matter

Significantly affected. After the soil samples were fumigated with chloroform for 24 hours, for fumigated and unfumigated soil samples, use 0.5mol/L K2SO4 solution to determine