SLOVENSKI STANDARD
SIST EN ISO 11063:2020

01-december-2020

Nadomešča:
SIST EN ISO 11063:2013

Kakovost tal - Neposredna ekstrakcija DNK iz vzorcev tal (ISO 11063:2020)

Soil quality - Direct extraction of soil DNA (ISO 11063:2020)

Bodenbeschaffenheit - Direkte Extraktion von DNA aus Bodenproben (ISO 11063:2020)

Qualité du sol - Extraction directe de l'ADN du sol (ISO 11063:2020)

Ta slovenski standard je istoveten z: **EN ISO 11063:2020**

ICS:

13.080.30	Biološke lastnosti tal	Biological properties of soils

SIST EN ISO 11063:2020	**en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 11063

October 2020

ICS 13.080.30

Supersedes EN ISO 11063:2013

English Version

Soil quality - Direct extraction of soil DNA (ISO 11063:2020)

Qualité du sol - Extraction directe de l'ADN du sol (ISO 11063:2020)

Bodenbeschaffenheit - Direkte Extraktion von DNA aus Bodenproben (ISO 11063:2020)

This European Standard was approved by CEN on 18 September 2020.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN ISO 11063:2020) has been prepared by Technical Committee ISO/TC 190 "Soil quality" in collaboration with Technical Committee CEN/TC 444 “Environmental characterization of solid matrices” the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2021, and conflicting national standards shall be withdrawn at the latest by April 2021.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

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Endorsement notice

The text of ISO 11063:2020 has been approved by CEN as EN ISO 11063:2020 without any modification.

INTERNATIONAL STANDARD

ISO 11063

Second edition
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Soil quality — Direct extraction of soil DNA

Qualité du sol — Extraction directe de l'ADN du sol

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical committee ISO/TC 190/SC 4, *Soil quality,* Subcommittee SC 4 *Biological characterization*

This second edition cancels and replaces the first edition (ISO 11063:2012), which has been technically revised. The main changes compared to the previous edition are as follows (see details in Annex A):

— the amount of soil used (1 g instead of 0,25 g dry mass equivalent);

— the nature and amount of beads (2,5 g of ceramic beads, 2 g of 0,1 mm silica beads and 4 glass beads instead of 0,5 g of 106 µm glass beads and 2 glass beads);

— the duration of the mechanical lysis (90 s instead of 30 s);

— the salt used to precipitate the proteins (potassium acetate instead of sodium acetate).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

DNA (deoxyribonucleic acid) is an essential component of any living organism coding for enzymes responsible for any biological activities. The study of DNA sequences from DNA sources extracted from different matrices, by means of numerous molecular approaches, provides molecular markers that can be used to sharply distinguish and identify different organisms (bacteria, archaea and eucaryotes).

Up to now, most of the studies aiming to develop microbial soil quality indicators applicable to complex environments, such as soil, were biased by the unculturability of many microorganisms and the lack of sensitivity of traditional microbiological methods.[1] The recent development of numerous molecular biology methods based primarily on amplification of soil-extracted nucleic acids have provided a pertinent alternative to classical culture-based microbiological methods, providing unique insight into the composition, richness, and structure of microbial communities.[2],[3],[4],[5],[6] DNA-based approaches are now well-established in soil ecology and serve as genotypic (molecular genetic) markers for determining microbial diversity.

The results of molecular analyses of soil microbial communities and/or populations rely on two main parameters:

a) the extraction of DNA representative of the indigenous bacterial community composition;

b) PCR bias, such as the choice of primers, the concentration of amplified DNA, errors in the PCR, or even the method chosen for analysis.[4],[7],[8],[9] Recently, numerous studies have investigated new methods to improve extraction, purification, amplification, and quantification of DNA from soils[10].

The first edition (ISO 11063:2012) described the procedure used to extract DNA directly from soil samples suitable for the study of the composition of microbial community by both quantitative (q-PCR) and qualitative (A-RISA) approaches[11].

The aim of this document is to describe a new method recently reported[12] derived from the first edition procedure to analyse the diversity of soil microorganisms by next-generation sequencing of ribosomal amplicons generated by polymerase chain reactions (PCR) using soil DNA as template. This new method was shown to increase the DNA recovery and to better represents the abundance and the structure of archaeal and fungal communities as compared to the original method[12].