SLOVENSKI STANDARD
SIST EN ISO 23611-5:2013

01-maj-2013

Kakovost tal - Vzorčenje nevretenčarjev v tleh - 5. del: Vzorčenje in ekstrakcija velikih nevretenčarjev v tleh (ISO 23611-5:2011)

Soil quality - Sampling of soil invertebrates - Part 5: Sampling and extraction of soil macro-invertebrates (ISO 23611-5:2011)

Bodenbeschaffenheit - Probenahme von Wirbellosen im Boden - Teil 5: Probenahme und Extraktion von Makroinvertebraten (Großwirbellosen) im Boden (ISO 23611-5:2011)

Qualité du sol - Prélèvement des invertébrés du sol - Partie 5: Prélèvement et extraction des macro-invertébrés du sol (ISO 23611-5:2011)

Ta slovenski standard je istoveten z: **EN ISO 23611-5:2013**

ICS:

13.080.30	Biološke lastnosti tal	Biological properties of soils

SIST EN ISO 23611-5:2013 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 23611-5

February 2013

ICS 13.080.30; 13.080.05

English Version

Soil quality - Sampling of soil invertebrates - Part 5: Sampling and extraction of soil macro-invertebrates (ISO 23611-5:2011)

Qualité du sol - Prélèvement des invertébrés du sol - Partie 5: Prélèvement et extraction des macro-invertébrés du sol (ISO 23611-5:2011)

Bodenbeschaffenheit - Probenahme von Wirbellosen im Boden - Teil 5: Probenahme und Extraktion von Makroinvertebraten (Großwirbellosen) im Boden (ISO 23611-5:2011)

This European Standard was approved by CEN on 5 February 2013.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN ISO 23611-5:2013: E

Contents

Page

Foreword

The text of ISO 23611-5:2011 has been prepared by Technical Committee ISO/TC 190 “Soil quality” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 23611-5:2013 by Technical Committee CEN/TC 345 “Characterization of soils” 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 August 2013, and conflicting national standards shall be withdrawn at the latest by August 2013.

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

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 23611-5:2011 has been approved by CEN as EN ISO 23611-5:2013 without any modification.

INTERNATIONAL STANDARD

ISO 23611-5

First edition
2011-12-01

Soil quality — Sampling of soil invertebrates —

Part 5: Sampling and extraction of soil macro-invertebrates

Qualité du sol — Prélèvement des invertébrés du sol — Partie 5: Prélèvement et extraction des macro-invertébrés du sol

Reference number
ISO 23611-5:2011(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 23611-5 was prepared by Technical Committee ISO/TC 190, *Soil quality*, Subcommittee SC 4, *Biological methods*.

ISO 23611 consists of the following parts, under the general title *Soil quality — Sampling of soil invertebrates*:

— *Part 1: Hand-sorting and formalin extraction of earthworms*

— *Part 2: Sampling and extraction of micro-arthropods (Collembola and Acarina)*

— *Part 3: Sampling and soil extraction of enchytraeids*

— *Part 4: Sampling, extraction and identification of soil-inhabiting nematodes*

— *Part 5: Sampling and extraction of soil macro-invertebrates*

— *Part 6: Guidance for the design of sampling programmes with soil invertebrates*

Introduction

This part of ISO 23611 was prepared in response to a need to standardize sampling and extraction methods for soil macro-invertebrates in several European (temperate) and tropical countries. These methods are needed for the following purposes:

— biological classification of soils, including soil quality assessment (e.g. References [21], [32] and [41]);

— terrestrial bio-indication and long-term monitoring (e.g. References [71], [79], [80] and [81]).

Data collected using standardized methods can be evaluated more accurately as it allows more reliable comparison between sites (e.g. polluted vs non-polluted sites, changes in land-use practices).

Soils of the world host an abundance of highly diverse macro-invertebrate communities. Their biology and ecology have been widely studied. Soil invertebrates are irreplaceable actors of soil formation and conservation in natural ecosystems. Their relevance to the soil system comes from their abundance and diversity, and also from their role in key biological processes. They are sensitive indicators of soil quality and recognized agents of its fertility (e.g. References [63] and [56]). Among the wide diversity of species, adaptive strategies and size ranges represented, one specific group, also called “soil ecosystem engineers”, includes large invertebrates that actually determine the activities of other smaller organisms through the mechanical activities they produce in soil (e.g. References [24] and [49]).

Soil macro-invertebrates span a wide range of ecological functions in soil: decomposition of organic matter, through their own activity and by stimulating the soil’s microbiological activity (e.g. References [8], [10] and [40]), predation that plays an important part in food webs (e.g. References [16], [55], [61], [64] and [68]), soil aggregation by the production of organo-mineral structures (e.g. nests, galleries, casts) that can last for days, months or years, and soil bioturbation (e.g. Reference [32]), etc. These characteristics, coupled with in-depth taxonomic knowledge, has enabled their use as study organisms in several research programmes dealing with the impacts of forest practices (e.g. References [18], [40], [50], [62], [65] and [75]) or crop management practices (e.g. References [15], [25], [31], [33], [34], [37], [42], [60] and [66]). These features make them suitable organisms for use as bio-indicators of changes in soil quality, especially with respect to land-use practices and pollution (e.g. References [26], [39], [48], [52], [53], [59], [65] and [79]).

The method proposed in this part of ISO 23611 covers the sampling of all soil macro-invertebrates. However, the sampling of earthworms is already covered in ISO 23611-1. This method is described in ISO 23611-1:2006, Annex C, as an alternative sampling method for earthworms.

Soil quality — Sampling of soil invertebrates —

Part 5:
Sampling and extraction of soil macro-invertebrates

1 Scope

This part of ISO 23611 specifies a method for sampling, extracting and preserving macro-invertebrates from soils, including the litter zone. The proposed method is a prerequisite for using these animals as bio-indicators (e.g. to assess the quality of a soil as a habitat for organisms). The main premise of this method is rapid assessment (completing the sampling of a plot in one or two days with only basic equipment and a small number of field assistants) in order to be able to address all the taxonomic groups of soil macro-invertebrates at the same time and in the same place. The Tropical Soil Biology and Fertility (TSBF) method has evolved and some modifications have been introduced in order to use it in temperate regions.

The sampling and extraction methods in this part of ISO 23611 are applicable to almost all types of soil, with the exception of soils in extreme climatic conditions (hard, frozen or flooded soils) and matrices other than soil, e.g. tree trunks, plants or lichens.

A sampling design is specified in ISO 23611-6.

NOTE 1 The method specified in this part of ISO 23611 is based on guidelines developed under the Tropical Soil Biology and Fertility Program (TSBF method)[7].

NOTE 2 Basic information on the ecology of macro-invertebrates and their use can be found in the references listed in the Bibliography.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1
macro-invertebrates
soil organism whose longest dimension is greater than 10 mm

NOTE See Annex A for further details.

EXAMPLE These include especially the following groups: Oligochaeta, Gastropoda, Chilopoda, Diplopoda, Isopoda, Arachnida, plus various insects: Coleoptera, Orthoptera, Hymenoptera, Hemiptera, Dermaptera, Lepidoptera (larvae) and Diptera (larvae).

2.2
blotted mass
mass of individuals after preservation in formalin or ethanol (when the substance used for preservation has been absorbed by the tissues)

3 Principle

Soil macro-invertebrates are collected in the field using a metallic frame to delimit the soil surface of the sampling point. Macro-invertebrates present in litter and soil are picked up separately. In temperate regions, a reagent is used to extract macro-invertebrates from soil. The sampling is completed by hand-sorting. Animals are preserved and transported to the laboratory for further identifications (e.g. References [11], [12], [13], [14], [17], [19], [20], [22], [23], [27], [28], [29], [30], [35] ,[36], ,[38], [45], [46], [47], [54], [57], [70], [72], [73], [76], [77], [78] and [84]). Abundance values are usually recalculated relative to area (1 m^2).