Soil quality - Sampling of soil invertebrates - Part 2: Sampling and extraction of micro-arthropods (Collembola and Acarina) (ISO 23611-2:2006)

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 23611-2:2011 sisaldab Euroopa standardi EN ISO 23611-2:2011 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 23611-2:2011 consists of the English text of the European standard EN ISO 23611-2:2011.
Standard on kinnitatud Eesti Standardikeskuse 29.07.2011 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 29.07.2011 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 13.07.2011.	Date of Availability of the European standard text 13.07.2011.
Standard on kättesaadav Eesti standardiorganisatsioonist.	The standard is available from Estonian standardisation organisation.

ICS 13.080.05, 13.080.30

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 23611-2

July 2011

ICS 13.080.30; 13.080.05

English Version

Soil quality - Sampling of soil invertebrates - Part 2: Sampling and extraction of micro-arthropods (Collembola and Acarina) (ISO 23611-2:2006)

Qualité du sol - Prélèvement des invertébrés du sol - Partie 2 : Prélèvement et extraction des micro-arthropodes (Collembola et Acarina) (ISO 23611-2:2006)

Bodenbeschaffenheit - Probenahme von Wirbellosen im Boden - Teil 2: Probenahme und Extraktion von Mikroarthropoden (Collembolen und Milben) (ISO 23611-2:2006)

This European Standard was approved by CEN on 17 June 2011.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN ISO 23611-2:2011: E

Foreword

The text of ISO 23611-2:2006 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 23611-2:2011 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 January 2012, and conflicting national standards shall be withdrawn at the latest by January 2012.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of ISO 23611-2:2006 has been approved by CEN as a EN ISO 23611-2:2011 without any modification.

Contents

Page

Introduction

This part of ISO 23611 has been drawn up since there is a growing need for the standardization of sampling and extraction methods of soil micro-arthropods. These methods are needed for the following purposes:

— biological classification of soils including soil quality assessment (e.g. References [31], [32], [35], [41], [45], [46]);

— terrestrial bioindication and long-term monitoring (e.g. References [1], [7], [17], [40], [42]).

Data collected by standardized methods can be more accurately evaluated allowing more reliable comparisons between sites (e.g. polluted versus non-polluted sites, changes in land-use practices).

From the several micro-arthropod groups, Collembola and Acarina are the most studied in soil ecology. Their relevance for the soil system comes from their high abundance and diversity, and also from their role in key biological processes. Collembola and Oribatid mites act mainly as catalysts in organic matter decomposition [4], [20], whereas predacious mites may act as webmasters in soil food webs [9]. These characteristics, allied to a widespread taxonomic knowledge, allowed their use as study organisms in several research programmes dealing with the impacts of forest practices (e.g. References [12], [13], [14], [15], [18], [19], [21], [22], [23], [25], [26], [27], [28], [29], [30], [31], [33], [34], [37], [38], [39]) or crop management practices (e.g. [6], [11], [16], [24]). These features make them suitable organisms to be used as bio-indicators of changes in soil quality, especially due to land-use practices and pollution [43].

Soil quality — Sampling of soil invertebrates —

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

1 Scope

This part of ISO 23611 specifies a method for sampling, extracting and preserving collembolans and mites from field soils as a prerequisite for using these animals as bio-indicators (e.g. to assess the quality of a soil as a habitat for organisms).

Basic information on the ecology of micro-arthropods and their use can be found in the references listed in the Bibliography.

The sampling and extraction methods of this part of ISO 23611 are applicable to almost all types of soils. Exceptions may be soils from extreme climatic conditions (hard, frozen or flooded soils) and other matrices than soil, e.g. tree trunks, plants or lichens. For the sampling design of field studies in general, see ISO 10381-1.

Methods for some other soil organism groups such as earthworms are covered in other parts of ISO 23611.

This part of ISO 23611 does not cover the pedological characterization of the site which is highly recommendable when sampling soil invertebrates. ISO 10390, ISO 10694, ISO 11272, ISO 11274, ISO 11277, ISO 11461 and ISO 11465 are more suitable for measuring pH, particle size distribution, C/N ratio, organic carbon content and water-holding capacity.

2 Terms and definitions

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

2.1
micro-arthropods
group which is defined by its small size (range size from 100 µm to a few millimetres) making up a significant part of the below-ground food web in many terrestrial ecosystems

NOTE This group is mainly composed by mites (Acarina), springtails (Collembola), Protura, Diplura, garden centipedes (Symphyla), Pauropoda, small centipedes and millipedes, and insects and their larvae from several orders (Diptera, Coleoptera, etc.).

3 Principle

Soil samples are collected in the field using a split corer. Soil cores are placed in plastic tubes (or plastic bags) and transported to the laboratory. Afterwards, Collembola and Acarida are rapidly (within a few days) extracted by behavioural methods, using a MacFadyen apparatus, and preserved for future identifications [7], [40]. In addition, preparation techniques are also described. Finally, abundance values can be recalculated related to area (usually 1 m^2), volume or weight (usually 1 kg).