

Irish Standard I.S. EN ISO 23611-2:2011

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

© NSAI 2011 No copying without NSAI permission except as permitted by copyright law.

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation - recommendation based on the consensus of an expert panel and subject to public consultation.

٦

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

<i>This document replaces:</i>				
<i>This document is based o</i> EN ISO 23611-2:2011	n: Published: 21 July, 2011			
This document was publi under the authority of the and comes into effect on 21 July, 2011	shed e NSAI :		<u>ICS number:</u> 13.080.05 13.080.30	
NSAI 1 Swift Square, Northwood, Santry Dublin 9	T +353 1 807 3800 F +353 1 807 3838 E standards@nsai.ie W NSAI.ie	Sales: T +353 1 857 6730 F +353 1 857 6729 W standards.ie		
Údarás um Chaighdeáin Náisiúnta na hÉireann				

EUROPEAN STANDARD

EN ISO 23611-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

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.

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



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

EN ISO 23611-2:2011 (E)

Contents

Page

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.

This page is intentionally left BLANK.



ISO 23611-2

First edition 2006-02-01

Soil quality — Sampling of soil invertebrates —

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

Qualité du sol — Prélèvement des invertébrés du sol —

Partie 2: Prélèvement et extraction des micro-arthropodes (Collembola et Acarina)



Reference number ISO 23611-2:2006(E)

ISO 23611-2:2006(E)

I.S. EN ISO 23611-2:2011

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

© ISO 2006

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

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

Contents

Fore	word	iv
Intro	oduction	v
1	Scope	1
2	Terms and definitions	1
3	Principle	1
4 4.1 4.2	Test materials Biological material Reagents	2 2 2
5	Apparatus	3
6 6.1 6.2 6.3	Procedure Collecting the soil samples Extracting Collembola and Acarina from soil samples Sorting, preserving and identifying Collembola and Acarina	
7	Assessment of results	6
8	Study report	6
Anne	ex A (informative) Species determination in collembolans and mites	7
Anne	ex B (informative) Alternative methods for sampling of micro-arthropods	
Bibli	iography	10

ISO 23611-2:2006(E)

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 23611-2 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 free-living stages of terrestrial nematodes

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].

This is a free page sample. Access the full version online.

I.S. EN ISO 23611-2:2011

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 m²), volume or weight (usually 1 kg).



This is a free preview. Purchase the entire publication at the link below:

Product Page

S Looking for additional Standards? Visit Intertek Inform Infostore

> Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation