Irish Standard
I.S. EN ISO 18311:2018

Soil quality - Method for testing effects of soil contaminants on the feeding activity of soil dwelling organisms - Bait-lamina test (ISO 18311:2016)

I.S. EN ISO 18311:2018

Incorporating amendments/corrigenda/National Annexes issued since publication:

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National Foreword

I.S. EN ISO 18311:2018 is the adopted Irish version of the European Document EN ISO 18311:2018, Soil quality - Method for testing effects of soil contaminants on the feeding activity of soil dwelling organisms - Bait-lamina test (ISO 18311:2016)

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 18311

February 2018

ICS 13.080.30

English Version

Soil quality - Method for testing effects of soil contaminants on the feeding activity of soil dwelling organisms - Bait-lamina test (ISO 18311:2016)

Qualité du sol - Méthode pour tester les effets des contaminants du sol sur l'activité alimentaire des organismes vivant dans le sol - Test Bait-lamina (ISO 18311:2016)

Bodenbeschaffenheit - Verfahren zur Prüfung der Auswirkungen von Bodenverunreinigungen auf die Fraßaktivität von bodenbewohnenden Organismen - Köderstreifentest (ISO 18311:2016)

This European Standard was approved by CEN on 14 February 2018.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

The text of ISO 18311:2016 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 18311:2018 by Technical Committee CEN/TC 444 “Test methods for 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of an identical text or by endorsement, at the latest by August 2018, and conflicting national standards shall be withdrawn at the latest by August 2018.

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I.S. EN ISO 18311:2018

INTERNATIONAL STANDARD

ISO 18311

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Soil quality — Method for testing effects of soil contaminants on the feeding activity of soil dwelling organisms — Bait-lamina test

Qualité du sol — Méthode pour tester les effets des contaminants du sol sur l'activité alimentaire des organismes vivant dans le sol — Test Bait-lamina

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Foreword

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The committee responsible for this document is ISO/TC 190, *Soil quality*, Subcommittee SC 4, *Biological methods*.

Introduction

Ecotoxicological test systems are applied to obtain information about the effects of contaminants in soil and are proposed to complement conventional chemical analysis [38]. In addition to laboratory tests with individual species from important organism groups (e.g. earthworms, enchytraeids, or collembolans), functional tests can be used to assess the activity of the whole soil organism community *in situ* in the field and, thus, the habitat function of soil. They are potentially useful for the evaluation of the effects of chemicals on the soil [1][11][12][26][28], as well as for the long-term monitoring of the biological quality of soils (see Annex A)[16][18][34]. Data for these purposes are gained by standardised methods since they can form the basis for far-reaching decisions (e.g. whether a given site should be remediated or not). In fact, the lack of such standardised methods is one of the most important reasons why functional methods have been so far relatively rarely used for the assessment of contaminated soils or for soil monitoring purposes.

The bait-lamina test is an approach which is used to measure the feeding activity of soil organisms *in situ* [23][35][36].

The important advantage of the bait-lamina method is its simplicity. Minimal training, special skill, or equipment is necessary. In contrast to the measurement of other functional parameters, like organic matter breakdown determined in a litterbag test [22][25][27], the bait-lamina method does not disturb the soil substrate, needs only short exposure periods (few days up to few weeks), and is rapidly evaluated.

In temperate regions, the applicability and usefulness of the bait-lamina test for the comparison and assessment of the influence of land use or chemicals on the feeding activity of soil communities has been demonstrated several times [2][14][28][31]. In addition, bait-lamina tests have also been applied in the tropics [13][15][30].

In addition to measures such as microbial respiration or litter decomposition, feeding activity is one of several functional parameters applicable for the assessment of the biological status of soils [7][13]. Recently, the bait-lamina test was used successfully in several case studies at which an environmental risk assessment for polluted soils was performed [8][21]. As a result of these works, the bait-lamina test was included into the tool box for site-specific risk assessment [e.g. the TRIAD approach (see ISO 19204)]. In fact, it became part of the recommended battery of tests for the ecological risk assessment of soils in Great Britain [9]. In addition, in the context of a European soil monitoring programme, the method was recommended for this purpose as well by the members of an EU Working Group [4].

Soil quality — Method for testing effects of soil contaminants on the feeding activity of soil dwelling organisms — Bait-lamina test

1 Scope

This International Standard specifies a technique for determining the effects of anthropogenic impacts (e.g. substances) in the context of the prevailing environmental conditions on the feeding activity of soil organisms in the field. In addition, the use of this method for monitoring the biological quality of soil is described (see Annex A). The breakdown of organic matter by soil invertebrates and microorganisms is a crucial process that determines important soil functions such as nutrient availability for plants and the maintenance of soil fertility. In addition, decomposing plant litter provides habitats and food for a wide range of organisms, thus supporting biodiversity and ecosystem services [33][34].

This International Standard is applicable to all soils in which soil organisms are active. The use of the bait-lamina test is independent from whether there is a litter layer or not. The sampling design of field studies in general is specified in ISO 23611-6 (see also Reference [20]). The design can vary according to the aim of the study as well as conditions (e.g. soil properties, contamination, etc.) of the site to be investigated.

This International Standard is not applicable for semi-terrestrial or very shallow soils. It can be difficult to use it under extreme climatic or geographical conditions (e.g. in high mountains).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 11074, *Soil quality — Vocabulary*

ISO 23611-6, *Soil quality — Sampling of soil invertebrates — Part 6: Guidance for the design of sampling programmes with soil invertebrates*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 23611-6, ISO 11074, and the following apply.

3.1
exposure time
period in which the bait-lamina strips are exposed in the field, usually in the mineral *soil* (3.2)

EXAMPLE In temperate zones: 10 d to 20 d; in tropical areas: 4 d to 8 d.

3.2
soil
topsoil with or without a *litter layer* (3.3)