



SLOVENSKI STANDARD SIST EN ISO 21285:2020

01-november-2020

Kakovost tal - Zaviranje razmnoževanja pršice (*Hypoaspis aculeifer*) zaradi onesnaževal v tleh (ISO 21285:2019)

Soil quality - Inhibition of reproduction of the soil mite (*Hypoaspis aculeifer*) by soil contaminants (ISO 21285:2019)

Bodenbeschaffenheit - Hemmung der Reproduktion von Raubmilben (*Hypoaspis aculeifer*) durch Bodenverunreinigungen (ISO 21285:2019)

Qualité du sol - Inhibition de la reproduction de l'acarien prédateur (*Hypoaspis aculeifer*) par des contaminants du sol (ISO 21285:2019)

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EUROPEAN STANDARD

EN ISO 21285

NORME EUROPÉENNE

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April 2020

ICS 13.080.30

English Version

Soil quality - Inhibition of reproduction of the soil mite (Hypoaspis aculeifer) by soil contaminants (ISO 21285:2019)

Qualité du sol - Inhibition de la reproduction de
l'acarien prédateur (*Hypoaspis aculeifer*) par des
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Bodenbeschaffenheit - Hemmung der Reproduktion
von Raubmilben (*Hypoaspis aculeifer*) durch
Bodenverunreinigungen (ISO 21285:2019)

This European Standard was approved by CEN on 13 April 2020.

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European foreword

The text of ISO 21285:2019 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 21285:2020 by 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of an identical text or by endorsement, at the latest by October 2020, and conflicting national standards shall be withdrawn at the latest by October 2020.

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INTERNATIONAL
STANDARD

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**Soil quality — Inhibition of
reproduction of the soil mite
(*Hypoaspis aculeifer*) by soil
contaminants**

*Qualité du sol — Inhibition de la reproduction de l'acarien prédateur
(Hypoaspis aculeifer) par des contaminants du sol*

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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 of 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 www.iso.org/iso/foreword.html.

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

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

Ecotoxicological test systems are applied to obtain information about the effects of contaminants in soil and are proposed to complement conventional chemical analysis (see ISO 15799 and ISO 17616). ISO 15799 includes a list and short characterization of recommended and standardized test systems and ISO 17616 gives guidance on the choice and evaluation of the bioassays. Aquatic test systems with soil eluate are applied to obtain information about the fraction of contaminants potentially reaching the groundwater by the water path (retention function of soils), whereas terrestrial test systems are used to assess the habitat function of soils.

Mites (Acari) are a world-wide and diverse group of arthropods belonging to the class Arachnida with over 40 000 species recorded, divided into two super-orders (Acariformes and Parasitiformes). Due to their relative small size (a few μm to a few cm), they occupy specific ecological niches on plants as well as in soils (see Reference [13]).

Among soil-inhabiting mites, the role of predation is ensured by, for example, *Hypoaspis* sp. (Laelapidae). Because they are exposed to chemical contamination, mites are already considered in the environmental risk assessment of pesticides, as non-target organisms (see Reference [10]). Indeed, among the data required for active substances of pesticides, effects on predatory mites are assessed, i.e. for the plant-inhabitant *Typhlodromus pyri* (Phytoseiidae) and the soil-inhabitant *Hypoaspis aculeifer* (Laelapidae) (see Reference [6]).

The first authors introducing *H. aculeifer* as a test organism in ecotoxicological studies [23][17] were later proposed a two-species test system in the European project SECOFASE (Sublethal Effects of Chemicals on Fauna in the Soil Ecosystem), including the collembolan *Folsomia fimetaria* as prey. In the context of the development of an ecotoxicological test for the assessment of plant protection products on non-target arthropods (see References [5][6]), a protocol on soil predatory mites using *H. aculeifer* was further proposed. More recently, a standard test protocol for the assessment of chemicals was developed for this species by OECD in 2008 and revised in 2016. The results of the associated international ring-test were published in Reference [25].

Among mites, the predator *Hypoaspis aculeifer* is the most studied species in laboratory. The reproduction end point was found in general to be more sensitive than mortality and avoidance. Compared to other soil meso-fauna invertebrates, mites were found in general less sensitive than or as sensitive as other test species, depending on the end points and chemicals studied. Considering semi-field studies, *H. aculeifer* was used as a top predator whereas other soil invertebrates, mainly springtails, were ranked in the grazer group. In these studies, mites showed to be quite tolerant towards anthropogenic contamination. This statement was also corroborated by field surveys. However, the applicability of laboratory test methods for the assessment of environmental samples (contaminated soils, wastes etc.) with mites is emphasized, as to date a limited number of studies are available.

This document describes a method that is based on the determination of lethal and sublethal effects of contaminated soils to adult predatory mites of the species *Hypoaspis aculeifer*. This species is considered to be representative of predatory soil arthropods. Background information on the ecology of these mites and their use in ecotoxicological testing is available in Reference [14].

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