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Plant biostimulants — Determination of microorganisms' concentration

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The UK participation in its preparation was entrusted to Technical Committee EH/4/-/7, Plant Biostimulants.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Plant biostimulants - Determination of microorganisms' concentration

Biostimulants des végétaux - Détermination de la concentration en microorganismes

Pflanzen-Biostimulanzien - Bestimmung der Konzentration von Mikroorganismen

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European foreword

This document (CEN/TS 17714:2022) has been prepared by Technical Committee CEN/TC 455 "Plant biostimulants", the secretariat of which is held by AFNOR.

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

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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Introduction

This document was prepared by the experts of CEN/TC 455 “Plant Biostimulants”. The European Committee for Standardization (CEN) was requested by the European Commission (EC) to draft European standards or European standardization deliverables to support the implementation of Regulation (EU) 2019/1009 of 5 June 2019 laying down rules on the making available on the market of EU fertilizing products (“FPR” or “Fertilising Products Regulation”).

This standardization request, presented as M/564, also contributes to the Communication on “Innovating for Sustainable Growth: A Bio economy for Europe”. The Working Group 5 “Labelling and denominations”, was created to develop a work program as part of this request. The technical committee CEN/TC 455 “Plant Biostimulants” was established to carry out the work program that will prepare a series of standards. The interest in biostimulants has increased significantly in Europe as a valuable tool to use in agriculture. Standardization was identified as having an important role in order to promote the use of biostimulants. The work of CEN/TC 455 seeks to improve the reliability of the supply chain, thereby improving the confidence of farmers, industry, and consumers in biostimulants, and will promote and support commercialisation of the European biostimulant industry.

Biostimulants used in agriculture can be applied in multiple ways: on soil, on plant, as seed treatment, etc. A microbial plant biostimulant consists of a microorganism or a consortium of microorganisms, as referred to in Component Material Category 7 of Annex II of the EU Fertilising Products Regulation.

This document is applicable to all biostimulants in agriculture.

The Table 1 below summarizes many of the agro-ecological principles and the role played by biostimulants.

Table 1 — Agro-ecological principles and the role played by biostimulants

Increase biodiversity
By improving soil microorganism quality, quantity

Reinforce biological regulation and interactions
By reinforcing plant-microorganism interactions
- symbiotic exchanges i.e. *Mycorrhizae*
- symbiotic exchanges i.e. *Rhizobiaceae/Faba*
- secretions mimicking plant hormones (i.e. *Trichoderma*)
By regulating plant physiological processes
- e.g. growth, metabolism, plant development…

Improve biogeochemical cycles
- improve absorption of nutritional elements
- improve bioavailability of nutritional elements in the soil
- stimulate degradation of organic matter

This document defines the general rules for the determination of microorganism concentration in a sample of biostimulant product.

The specific concentrations of microorganisms required in specific standard methods take precedence over the general rules listed in this document.

WARNING — Persons using this document should be familiar with normal laboratory practice. This document does not purport to address all of the safety problems, if any, associated with its use. It is the

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responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.

IMPORTANT — It is absolutely essential that tests conducted in accordance with this document be carried out by suitably trained staff.

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1 Scope

This document specifies general rules to determine the concentration of microorganisms present in plant biostimulant products.

The method is applicable to microbial plant biostimulants for verifying that the concentration of microorganisms does not exceed the respective limits outlined in the EU Regulation on Fertilising Products [1].

This horizontal method might not be appropriate in every detail for certain products. In this case, it is necessary to refer to the methodology of specific determination and quantification of the microorganisms.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CEN/TS 17708, *Plant biostimulants — Preparation of sample for microbial analysis*

3 Terms and definitions

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

3.1
plant biostimulant
product stimulating plant nutrition processes independently of the product's nutrient content with the sole aim of improving one or more of the following characteristics of the plant or the plant rhizosphere:

a) nutrient use efficiency;

b) tolerance to abiotic stress;

c) crop quality traits;

d) availability of confined nutrients in soil or rhizosphere

3.2
microorganism
entity of microscopic size, encompassing bacteria, fungi, protozoa and viruses

[SOURCE: EN ISO 11139:2018, 3.176]

3.3
colony
localized visible accumulation of microbial mass (such as prokaryotes, bacteria, micromycetes, yeast and fungi) or organisms (such as *Dreissena* species) developed on or in a solid nutrient medium from a viable particle or organism

NOTE Frequently, micro colonies from nearby viable particles, before becoming visible, fuse into one macro colony. The number of visible colonies is, therefore, usually and underestimate of the number of viable particles.

[SOURCE: ISO 6107-6:2021, [5], modified]

3.4
product
portion of an identified plant biostimulant product received in the laboratory for testing

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