



BSI Standards Publication

**Plant biostimulants — Detection
of *Listeria monocytogenes***

National foreword

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

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Plant biostimulants - Detection of *Listeria monocytogenes*

Biostimulants des végétaux - Détection de *Listeria monocytogenes*

Pflanzen-Biostimulanzien - Nachweis von *Listeria monocytogenes*

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European foreword

This document (CEN/TS 17710:2022) has been prepared by Technical Committee CEN/TC 455 “Plant Biostimulants”, the secretariat of which is held by AFNOR.

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

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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 plants or 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 microbial 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
- <i>symbiotic exchanges (i.e. Mycorrhizae)</i>
- <i>symbiotic exchanges (i.e. Rhizobiaceae/Faba)</i>
- <i>secretions mimicking plant hormones (i.e. Trichoderma)</i>
By regulating plant physiological processes
- <i>for e.g. growth, metabolism, plant development...</i>
Improve biogeochemical cycles
- <i>improve absorption of nutritional elements</i>
- <i>improve bioavailability of nutritional elements in the soil</i>
- <i>stimulate degradation of organic matter</i>

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 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.

1 Scope

This document provides a method for the detection of *Listeria monocytogenes* in microbial plant biostimulants for verifying that the concentration of this human pathogen does not exceed the respective limits outlined in the EU Regulation on Fertilising Products [1].

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 17724, *Plant biostimulants — Terminology*

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

EN ISO 11290-1:2017, *Microbiology of the food chain — Horizontal method for the detection and enumeration of *Listeria monocytogenes* and of *Listeria* spp. — Part 1: Detection method (ISO 11290-1:2017)*

EN ISO 11133,¹ *Microbiology of food, animal feed and water — Preparation, production, storage and performance testing of culture media*

EN ISO 7218, *Microbiology of food and animal feeding stuffs — General requirements and guidance for microbiological examinations (ISO 7218)*

3 Terms and definitions

For the purposes of this document, the terms and definitions are given in CEN/TS 17724 and the following apply.

3.1

Listeria monocytogenes

microorganisms which form typical colonies on solid selective media described and which display the morphological, physiological and biochemical characteristics described when the analysis is carried out in accordance with this document

[SOURCE: EN ISO 11290-1:2017, 3.1]

4 Principle

4.1 General

The detection of *Listeria monocytogenes* requires four successive stages as specified in Annex A.

NOTE *Listeria monocytogenes* can be present in small numbers and is often accompanied by considerably larger numbers of bacteria belonging to different taxonomic groups or different *Listeria* species. Pre-enrichment is used to permit the detection of low numbers of *L. monocytogenes* or injured *L. monocytogenes*.

4.2 Pre-enrichment in non-selective liquid medium

Half-Fraser broth (225 ml) at ambient temperature is inoculated with the test portion sample (25 g or 25 ml), then incubated at 30 °C ± 1 °C for 24 h to 26 h.

¹ As impacted by EN ISO 11133:2014/A1:2018 and EN ISO 11133:2014/A2:2020.