SLOVENSKI STANDARD
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Polimerni materiali - Biorazgradljive termoplastične folije za mulčenje za uporabo v kmetijstvu in vrtnarstvu - Vodnik za količinsko ugotavljanje sprememb folij

Plastics - Biodegradable thermoplastic mulch films for use in agriculture and horticulture - Guide for the quantification of alteration of films

Kunststoffe - Biologisch abbaubare thermoplastische Mulchfolien für den Einsatz in Landwirtschaft und Gartenbau - Leitfaden für die Quantifizierung der Veränderung von Folien

Plastiques - Films de paillage thermoplastiques biodégradables pour utilisation en agriculture et horticulture - Guide pour la quantification de l'altération des films

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Plastics - Biodegradable thermoplastic mulch films for use in agriculture and horticulture - Guide for the quantification of alteration of films

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European foreword

This document (CEN/TR 17219:2018) has been prepared by Technical Committee CEN/TC 249 “Plastics”, the secretariat of which is held by NBN.

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Introduction

Biodegradable mulch films have become a common practice in agriculture. Their characteristics in terms of environmental impact (biodegradation in soil and ecotoxicity) have been indicated in EN 17033, *Biodegradable mulch films for use in agriculture and horticulture – Requirements and test methods.*

In order to complete the characterization of these materials, this technical report gives information on a procedure for sampling and measuring the occurrence of a damage on the biodegradable mulch film when in use in the field [1].

It is recommended to collect the agronomic and weather information of the mulched area. The information collected does not alter the procedure described.

This document may be used to assess the surface integrity of the biodegradable thermoplastic mulch film during its service life.

1 Scope

This document gives guidance for the quantification of alteration of biodegradable thermoplastic mulch films for use in agriculture and horticulture.

It can be used for biodegradable thermoplastic mulch films in conformity with EN 17033.

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.

EN 17033, *Plastics — Biodegradable thermoplastic mulch films for use in agriculture and horticulture — Requirements and test methods*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 17033 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
alteration
alteration of the film in anyway either confined to a well-defined and attributed to a specific cause or distributed on the whole surface of the film

Note 1 to entry: Alterations not considered due to the characteristics of the material, are all those injuries caused by animals or particularly violent weather events (storms, hail, wind, etc.) or mechanical damage accidentally caused by objects, equipment improperly used or man-made (trampling, damages done by tools, other similar).

3.2
damage
alteration that affects more than 10 % of the surface of the sampled areas of a mulch film

3.3
row
succession of plants placed at a uniform and defined distance

4 Principle

The alteration incurred by a biodegradable mulching film is represented by the interruption of the continuity of the surface and the consequent exposure of the underlying soil.

Applying the provisions of agrarian evaluation [2], the evaluation of the alteration of a biodegradable mulching film is comparable to the valuation of the damage caused by hail, or by pathogenic foliaceous agents. Therefore, it is possible to operate by performing visual examinations and photographic surveys by using the analytical procedure described in this document.

The quantification of the alteration is performed through visual examinations and photographic surveys if necessary. The number of zones to be sampled might be determined following national regulations, if any [3].

The visual examination is a tool for quick evaluations that helps determine the type of alteration (systematic and widespread or localized) and, if systematic and widespread, its percentage of incidence on the surfaces analysed.

The photographic survey, once defined that the alteration is systematic and widespread through the visual examination, allow confirming, in the areas of sampling the measurement of the percentage of film missing.

5 Sampling method

The sampling of the area to be surveyed shall be performed in accordance with the rules of block randomization design scheme.

The block randomization scheme is the most widely applied scheme in agronomical tests and consists in dividing the area under observation in sub-areas. This allows to have the maximum homogeneity among the sub-areas and at the same time are differentiated as possible between them. The block randomization scheme offers the possibility to control the effects of heterogeneity of the mulching film, improving the power of the observation and allows eliminating the experimental error variability between the blocks.

Concerning the arrangement and the shape of the blocks, in the case of detection of the alteration of a mulching film placed on a soil, it is assumed not to have information about the fertility gradient or the damage on the same film. For this reason it is not possible to define gradients resulting detection and randomization shall be carried out according to Clause 6.

The visual examinations and the photographic surveys shall be performed on portions of film of a width not less than the width of the mulched area and for a length of 1 000 mm. The number of areas viewed to be chosen as provided in 6.2.

The visual examination is performed by assigning an index number between 1 and 9 to the sampled parcels according to regulations, if any [3].

The index numbers of the scale indicate:

— value 1 for a completely free soil from covering mulching film;

— value 9 for a soil completely covered by mulching film.

Intermediate values give the incidence of alteration that varies between the maximum and minimum.

The assessment of this variability is carried out by means of examples given Figure 1.

If the index numbers 8 and 9 represent more than 80 % of the examined parcels, the alteration is considered accidental, and then it is not necessary to continue with further detections. Similarly if they are less than 20 %, the photographic survey will also run to highlight or not the presence of damage.

a) Index of the evaluation scale: 9

b) Index of the evaluation scale: 8

c) Index of the evaluation scale: 7

d) Index of the evaluation scale: 6

e) Index of the evaluation scale: 4

f) Index of the evaluation scale: 1

Figure 1 — Sample photographs for the evaluation in the field of the cover of the soil by biodegradable film

Photographic survey refers to a photograph of mulched area with a length of 1 000 mm and a defined width by the exposed part of the biodegradable mulching film. The photographic survey it is subjected to image analysis through the use of specific software, which allows determining the percentage of the area of the missing film.

The analysis of the image cannot ignore the visual examination of the spread of the alteration.