

Phytopsanitary treatments
Traitements phytosanitaires

Low energy electron treatment of cereal seed against fungi

Specific scope

This standard describes the surface disinfection of seed with low energy electrons emitted by an accelerated electron beam gun.

Specific approval and amendment

First approved in 2008-09.

Introduction

Triticum aestivum and *Secale cereale* seed may be infested with several seed borne fungi such as smut and bunt diseases and damping off pathogens. Routinely the disinfection of these seeds is carried out using chemical seed dressing. Physical seed treatment may serve as an alternative to reduce the use of chemicals.

Commodities/regulated articles

Seed of *Triticum aestivum* (TRZAX) and *Secale cereale* (SECCE)

Disease

Tilletia caries (TILLCA)

Urocystis occulta (UROCOC)

Treatment schedule

The treatment is carried out using low energy electrons derived from an electron beam accelerator. The currently available treatment is called 'e-ventus©' and uses two electron beam generators installed opposite each other. The seeds descend in free fall at atmospheric pressure in a single seed-thick layer between the generators. The unit of measurement for the absorbed dose is gray (Gy).

Seed species	Pathogen	Acceleration voltage	Dose
<i>Triticum aestivum</i>	<i>Tilletia caries</i>	105 kV	12 kGy
<i>Secale cereale</i>	<i>Urocystis occulta</i>	105 kV	12 kGy

Efficacy of treatment

According to Jahn *et al.* (2005) the degree of effectiveness against *Tilletia caries* on *Triticum aestivum* is greater than 95%. Against *Urocystis occulta* on *Secale cereale* the degree of effectiveness is 95%.

Notes

The penetration depth of the treatment is limited to the surface and outer part of the seed coat, therefore the germination capacity of seed is not affected.

Using the above mentioned parameters is only possible in connection with the electron beam plant of the system 'e-ventus©'.

Reference

Jahn M, Röder O & Tigges J (2005) Electron Treatment of Cereal Crop Seeds. *Mitteilungen aus der Biologischen Bundesanstalt für Land- und Forstwirtschaft* **399**, 126 pp. Berlin (DE).

Enquiries

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