PHYTOTOXKIT

MICROBIOTESTS

Seed germination and early growth tests with higher plants

Rapid and user-friendly phytotoxicity tests with direct root/shoot length measurements by image analysis

Each Phytotoxkit contains all the materials to perform a complete test with one monocotyl and two dicotyl plant species, in 3 replicates

PHYTOTOXKIT

3 days microbiotest for phytotoxicity screening of soils, sludges, sediments, composts, effluents for irrigation, chemicals and biocides

Each PHYTOTOXKIT contains all the materials necessary to perform one complete phytotoxicity test with 3 plant species, in 3 replicates. The assays are performed in special transparent test containers which allow for direct observations and length measurements by image analysis at the end of the test. Easy to follow instructions and detailed illustrations are provided in the kits for the conduct of the very practical assays. Calibrated high quality seeds of the 3 selected test plants are included in the kits for the germination and early growth tests.

Test species

- In accordance with conventional phytotoxicity assays the selected plant species encompass monocotyls as well as dicotyls.
- The plants selected for the Phytotoxkit microbiotest are : the monocotyl *Sorghum saccharatum* (Sorgho) and the dicotyls *Lepidium sativum* (garden cress) and *Sinapis alba* (mustard).
- The 3 former test species are frequently used in phytotoxicity analyses and have been selected for the Phytotoxkit microbiotest because of their very rapid germination and growth of roots and shoots, which allow observations and scoring after only 3 days.

Test criterion

- Germination of the seeds and root length (and wherever appropriate also shoot length) of the 3 selected plant species, on exposure to contaminated solid substrates or to chemicals, in comparison to germination and growth on a reference soil.

User-friendliness/ Cost-Effectiveness

- Very rapid set up and scorings which allow to handle multiple tests concurrently.
- Direct observation of the germination success and automatic measurement of root (and shoot) length in the unique transparent test containers, by image analysis.
- A simple and convenient image analysis programme can be provided free of charge on demand.
- Vertical incubation of the flat test containers in their holders, requiring a minimum of shelf- and incubation space.
- "Image capturing" of the germinated seeds in the test containers with any type of "digital" equipment (camera, web-camera or flatbed scanner).
- Analyses and measurements can be deferred (since the "pictures" of the test plates are stored on computer) which is a major asset in comparison to conventional phytotoxicity tests.
- Minimal equipment needed for test performance: small incubator - (webcam) camera or flatbed scanner - computer with image analysis programme

Contents

- 18 transparent test containers with black filter paper, in 3 holders - 9 bags with reference soil - 3 tubes with seeds of the 3 test species.
- Detailed Standard Operational Procedure brochure and abbreviated Bench Protocol.
- Specification sheet with batch number of the seeds and the reference soil.

Data treatment

- A computer programme for easy data treatment can be obtained on demand.

Sensitivity

- The sensitivity of the Phytotoxkit microbiotest has been compared with that of conventional phytotoxicity tests based on seed germination and early growth, and was found to give similar results.

Validation

- The Phytotoxkit is used in many laboratories worldwide for various applications, and has been validated by an extensive international interlaboratory comparison.
- **The PHYTOTOXKIT microbiotest strictly adheres to ISO standard 18763.**
- A substantial number of publications, reports and posters can be found in the section "Publications" on website www.microbiotests.be

Accessories package

- A package with various items for practical test preparation can be obtained separately.

N.B. All the materials included in the Phytotoxkit are also available separately.