

# PHYTOTESTKIT

## *MICROBIOTESTS*

**Seed germination and  
early growth tests for  
determination of the  
« direct » (intrinsic)  
effects of chemicals on  
higher plants**



**Rapid and user-friendly tests  
with direct length measurements  
by image analysis**



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

# PHYTOTESTKIT

## ***3 days microbiotest for testing of the direct (intrinsic) effects of chemicals on the germination and early growth of plants***

The **Phytotestkit** is a variant of the **Phytotoxkit** which allows to determine the “direct” (= intrinsic) effects of “growth inhibiting” (toxic) chemicals and “growth promoting” chemicals on the germination and early growth of plants, without prior incorporation of the chemicals into a (reference) soil.

***Each PHYTOTESTKIT contains all the materials necessary to perform one complete test with one monocotyl and two dicotyl 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 Phytotestkit 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 Phytotestkit microbiotest because of their very rapid germination and growth of roots and shoots, which allow observations and scoring after only 3 days.
- Phytotestkit tests can, however, also be applied with any type of seeds, with adaptation of the exposure time in function of the speed of germination and growth of the plants.

### **Test criterion**

- Germination of the seeds and growth of the roots (and wherever appropriate also the growth of the shoots) of the 3 selected plant species, upon “direct” exposure of the plants to solutions of chemicals spiked onto a thick filter paper, in comparison to germination and

growth in a control, on a filter paper without chemical spiking.

### **Reproducibility**

- The high quality seeds, the special standard test containers and materials are a guarantee for the high repeatability and reproducibility of the assays, in comparison to conventional assays on plants.

### **User-friendliness/ Cost-Effectiveness**

- Very rapid set up and scorings which allow to handle multiple tests concurrently.
- Direct observation of the germinated seeds and automatic measurement of the roots (and shoots) 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, webcam 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 tests on plants.
- Minimal equipment needed for test performance: small incubator - (webcam) camera or flatbed scanner – computer with image analysis programme

### **Contents**

- 18 transparent test containers each provided with a foam pad, thick white filter paper and black filter paper - 3 cardboard holders for the test containers and 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.

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