

NPL 1: Paul F. Morris. et. al. "Chemotropic and Contact Responses of *Phytophthora sojae* Hyphae to Soybean Isoflavonoids and Artificial Substrates", Plant Physiol. (1998) 117: 1171-1178

#### Summary

[0007]

The present disclosure is directed to a plant, tomato, which often suffers from fungus diseases that are said to be mostly caused by three species of pathogenic fungi: a tomato gray mold fungus (*Botrytis cinerea*), a tomato Cercospora leaf mold fungus (*Pseudocercospora fuligena*), and a tomato leaf mold fungus (*Passalora fulva*). Of these pathogenic fungi, the gray mold fungus (*Botrytis cinerea*) is omnivorous and infects other plants, whereas the Cercospora leaf mold fungus (*Pseudocercospora fuligena*) and the leaf mold fungus (*Passalora fulva*) have been known to infect tomato alone and are highly plant-specific pathogenic fungi. For these pathogenic fungi specific to tomato, the inventors of the present invention considered that such a tomato pathogenic fungus needs to be detected at a stage of not knowing which fungus is actually present on tomato leaves, namely, the pre-onset stage, and performed studies.

[0008]

On the other hand, the basic technique of selectively detecting a fungus described in PTL 2 and used by the inventors of the present invention, that is, the technique of distinguishing a pathogenic fungus using an artificial cell wall can detect, in addition to tomato pathogenic fungi, other plant pathogenic fungi. Specifically, when a pathogenic fungus for another plant adheres to tomato leaves, it may be detected as a tomato pathogenic fungus. Tomato is mostly cultivated not from seeds but from seedlings; in the seedling fields, for example, tomato may be cultivated together with other plants, or the same facility may be repeatedly used for a plurality of plants, so that plant pathogenic fungi other than tomato pathogenic fungi may adhere to tomato seedlings. In addition, as in the seedling fields, in the actual cultivation sites and cultivation facilities such as plastic greenhouses, pathogenic fungi for plants other than tomato may adhere to tomato seedlings. When this is not addressed, plant pathogenic fungi other than tomato pathogenic fungi may give false positives in the technique of distinguishing a pathogenic fungus using an artificial cell wall, which may result in considerable disadvantages in cultivation, such as unnecessary use of chemicals and introduction

of new seedlings.

[0009]

This probability of giving false positives was studied and investigated, and some fungi other than tomato pathogenic fungi were actually found to give false positives in a detection method using an artificial cell wall under development. These were four species that are *Biscogniauxia* fungi, *Penicillium* fungi, *Phoma* fungi, and *Trichoderma* fungi. Thus, studies on how not to detect these became necessary.

[0010]

Under such circumstances, the present invention has been made. An object of the present invention is to provide a selective detection device and a detection method for a tomato pathogenic fungus.

[0011]

The disclosure was performed thorough studies and, as a result, found that a detection device having a configuration described below can achieve the above-described object; and the inventors further performed studies on the basis of such findings and have completed the present disclosure.

[0012]

Specifically, a device for detecting a tomato pathogenic fungus according to an aspect of the present disclosure includes an artificial cell wall, a test-sample-solution receptacle disposed over the artificial cell wall, and a culture-solution storage disposed under the artificial cell wall, wherein, in the culture-solution storage, a culture solution contains greater than or equal to 0.5 mg/L and less than or equal to 1.3 mg/L of fludioxonil.

[0013]

The present disclosure provides a device and a method for simply and safely achieving selective detection of a tomato pathogenic fungus. The present invention achieves detection of the presence of a tomato pathogenic fungus at the stage prior to onset caused by the fungus. In this case, false positives due to non-tomato plant pathogenic fungi are prevented, which is highly advantageous in industrial applicability.