

# CHANGE

Global Change and Sustainability Institute

*Science  
CHANGing  
Policy*

**Book of Abstracts**

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# CHANGE

Global Change and Sustainability Institute

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## Preface

The world faces a series of different global changes, which are complex in nature and require urgent action from Academia, Public and Private Organizations and Governments.

The Institute for Global Change and Sustainability, Associated Laboratory CHANGE, integrates researchers from multidisciplinary areas of expertise that shall enable the development of appropriate solutions targeting the present and future environment and natural resources management, forestry and farming systems, energy and climate, as well as demographic and social challenges.

The Mission of CHANGE is the development of scientifically supported solutions for public policy and governance targeting an environmentally friendly, resource-efficient, and competitive economy, in the context of existent global changes. These should be innovative and up-to-date policies, implemented at multiple scales.

For fulfilling this Mission, the integration of knowledge, synergies and complementary aspects of the research undertaken within the three R&D units, CENSE, cE3c and MED, is fundamental. Innovative solutions for a changing world require often interdisciplinary approaches and combinations of knowledge not seen before. Therefore, we believe that exchange and networking, within the CHANGE community itself, is key in strengthening our skills and competences, and our capacity to respond to changing societal challenges.

The event *Science CHANGing Policy* was a showcase of CHANGE capabilities and a platform to boost the interaction and collaborative work between the researchers from CHANGE.

This event included past, present and future work covering the areas of biodiversity and ecosystem services restoration, promotion of sustainable food and biomass systems, preservation and restoration of natural resources, circular economy and energetic transition and territorial cohesion enhancement.

Susana Filipe  
*Executive Director CHANGE*

&

Teresa Pinto-Correia  
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## ***qPCR as a sensitive tool for detecting Fusarium spp. in tomato plants.***

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### Abstract

The need to increase food production together with the demand to reduce the application of synthetic chemicals that have consequences on increasing the carbon footprint and negative impacts on the environment and human health, led to the search for alternative methods to protect plants against pathogens. The use of the highly sensitive real-time quantitative PCR (qPCR) arises as an extremely useful tool for studying various agents of infection in plants, such as fungi, viruses, or bacteria leading to a better control of diseases and limiting the use of chemical defence strategies. Given the high incidence of diseases in tomato plants caused by *Fusarium* spp., their consequent negative economic impacts, and the fact that most phytosanitary treatments are based on the application of synthetic fungicides, the establishment of a molecular-based tool that enables their early and accurate detection is of great interest. Furthermore, it will provide an additional tool for the screening of resistant plants. In the presented study, a TaqMan®-based qPCR method targeting the *Fusarium* spp.-specific internal transcribed spacer (ITS) region was developed for the simultaneous detection and quantification of a panoply of *Fusarium* species that affect tomato. As a proof of principle, the new qPCR assay was used to assess *Fusarium* spp. contamination of tomato field plants and of plants grown under controlled conditions. qPCR combined with the chemistry of TaqMan® MGB probes represents a highly specific and sensitive detection system, even when low amounts of target DNA are present, as in the case of early plant–fungi interactions.