NEW FUNGAL PATHOGENS CAUSING DISEASES ON PEPPER IN MACEDONIA

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Introduction

During the implementation of ERA 226 project individual and joint pepper disease surveys were carried out in Albania, Bulgaria, Greece, Macedonia and Serbia.
Bulgaria
Greece
Macedonia
Introduction

• *Colletotrichum coccodes* (Wallr.) S.J. Hughes and *Phomopsis capsici* (Magnaghi) Sacc. were found on pepper in Macedonia for the first time in 2011.

• *C. coccodes* is a cosmopolitan pathogen primarily found on vegetables in the Solanaceae and it is one of the causal agents associated with fruit anthracnose of pepper. Infection by this species affects the quality and causes preharvest and postharvest yield loss.

• In Bulgaria this pathogen occurred with increased frequency in the last 10 years (Rodeva et al., 2009).

• *Phomopsis capsici* was found in Bulgaria as the causal agent of pepper fruit disease in 2009 (Rodeva et al., 2009).
Purpose

• to make morphological, cultural, pathogenic and molecular characterization of *Colletotrichum coccodes* and *Phomopsis capsici* found on pepper fruits in Macedonia;

• to compare Macedonian isolates of *C. coccodes* and *P. capsici* with Bulgarian ones.
Material, Methods, Approaches

- Field experiments
- Joint and individual pepper disease surveys
- Root, stem, leaf, fruit and seed samples
- Isolation, identification and characterization of the pathogens
RESULTS

• *C. coccodes* was isolated mainly from fruits, seeds of heavily infected fruits and occasionally from roots although it could infect stems and leaves.
• *P. capsici* was found only on the fruits. The lesions often occurred together and resembled slightly those resulting from infection by the anthracnose (*Colletotrichum* spp.) but differed in the shape and color of the infected areas and in the pliable leathery condition of the invaded tissue.
• Both pathogens attacked predominantly ripe fruits.
Colletotrichum coccodes

- young lesion with sporulating acervuli on the fruit surface
- advanced lesion with microsclerotia on the upper part of the fruit
- sporulating acervuli beneath the fruit lesion
Colletotrichum coccodes – seed infection
Colletotrichum coccodes – colony morphology

![Colletotrichum coccodes colony morphology images](image-url)
Colletotrichum coccodes – morphology

3-days old colony on PDA

acervulus with seta

conidia
Colletotrichum coccodes – pathogenicity test
Colletotrichum coccodes – molecular identification

Colletotrichum - specific primers
Cc1F1/Cc2R1

C. coccodes - specific primers
Cc1NF1/Cc2NR1
Phomopsis capsici found in Macedonia
Colony morphology of Bulgarian isolates of *Phomopsis capsici*
Morphology of *Phomopsis capsici* conidia

Spore mass

Alpha and beta conidia

Alpha and gamma conidia
Phomopsis capsici – fruit and seed infection
Conclusions

• This is the first report of *C. coccodes* and *P. capsici* on pepper in Macedonia.

• Warm and wet periods during the vegetation promote the development of the diseases caused by *C. coccodes* and *P. capsici*.

• The infection by *C. coccodes* could predispose the infection by *P. capsici*. 
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Thank you for your attention