

***Origanum vulgare* ssp. *hirtum* essential oil as inhibitors of *Fusarium* dry rot of potato**Slavtcho Slavov<sup>1,2</sup>, Milena Nikolova<sup>3</sup><sup>1</sup>AgroBioInstitute, Agricultural Academy, 8 Dragan Tsankov blvd., 1164 Sofia, Bulgaria<sup>2</sup>Plant Protection Department, Faculty of Agronomy, University of Forestry, 10 "Kliment Ohridski" blvd., 1797 Sofia, Bulgaria<sup>3</sup>Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Science, 23 Acad. G. Bonchev str., 1113 Sofia, Bulgaria

*Fusarium* dry rot on potato, caused by the fungal pathogen *Fusarium solani* is characterized by an internal light to dark brown or black and usually dry rot of the potato tubers. The disease progresses noticeably faster during the last half of the storage season. Biological control of dry rot is an intriguing concept, but currently nothing is available commercially. It was found that the essential oil of a number Lamiaceae species, including oregano, have strong biocidal properties. Significant antifungal activity of *Origanum vulgare* ssp. *hirtum* essential oil against different phytopathogens in *in vitro* experiments has been demonstrated.

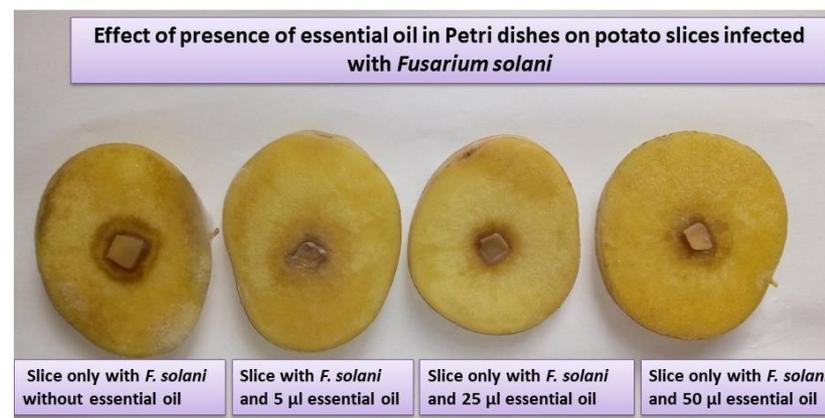
In the present study effect of oregano essential oil on potato tuber infected with *Fusarium solani* was evaluated. For this purpose potato slices with cut thickness 8-10 mm were inoculated with mycelium plugs of *F. solani* in the slice center.

**The oregano oil was tested in two approaches - contact and airimpact**

In the first approach, the essential oil was applied as an aqueous solution with concentration range of 1-3 µg/mL on the potato tubers' slices

In the second approach, the essential oil was placed in the Petri dishes with tubers' slices in amounts from 5 to 50 µL without contact between them.

In the first approach no good results were obtained, while in the second the results shown in the following figure



*Origanum vulgare* ssp. *hirtum* - donor plant of essential oil

A strong reduction in micellar growth on tuber tissue was observed at airimpact application of the essential oil in amounts upper 25 µL.

The result showed that the *Origanum vulgare* ssp. *hirtum* essential oil shows antifungal activity against *Fusarium solani* and has the potential for application in the storage rooms of potato tubers especially during the last half of the storage season.