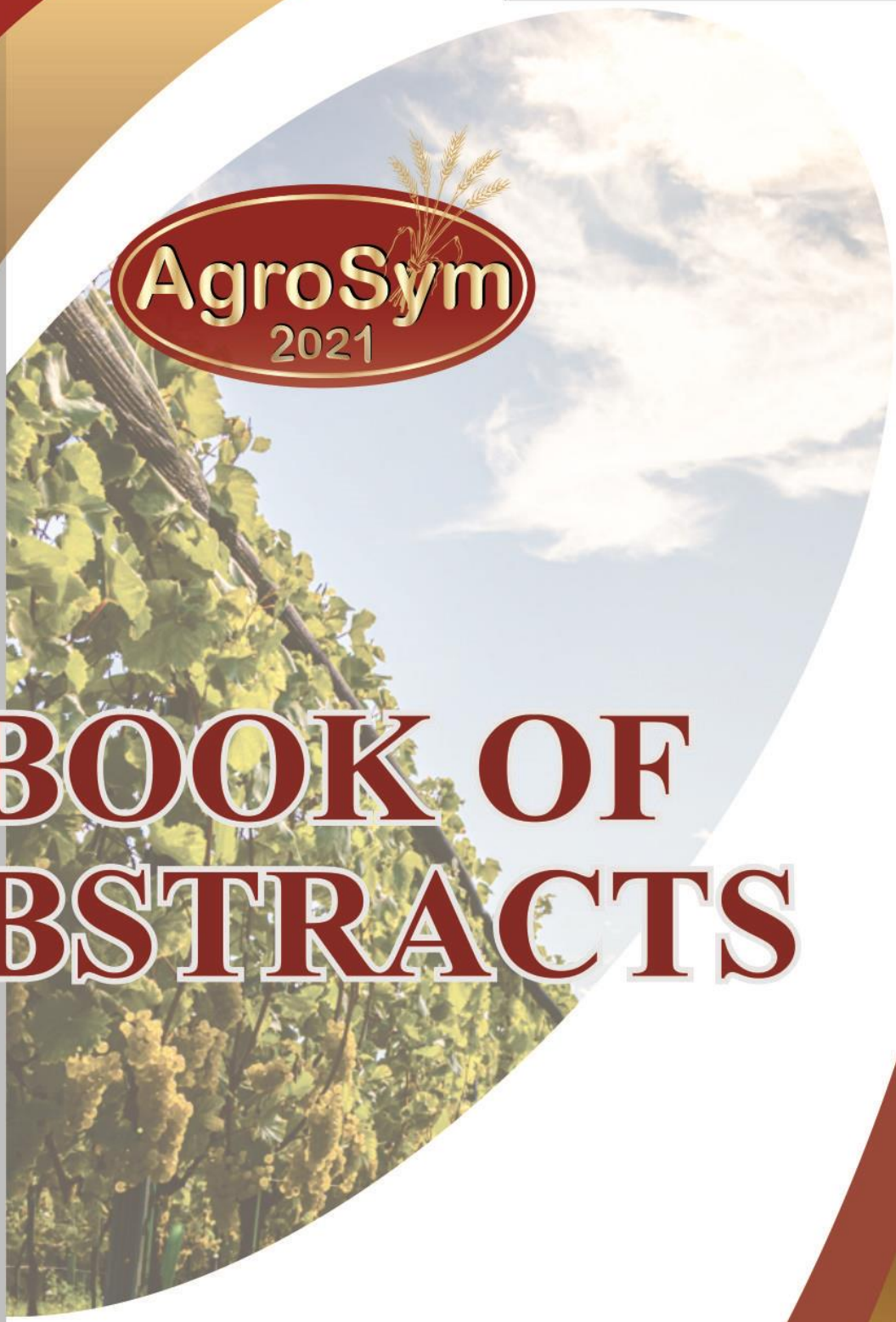

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ANTIFUNGAL ACTIVITY OF ESSENTIAL OILS ON ASPERGILLUS FLAVUS ORIGINATING FROM MAIZE KERNELS

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Abstract

The application of pesticides is an actual plant protection measure in agriculture that can have adverse effects on people's health and environments. A great attention is paid to the biological fungicides. Performed studies indicate satisfactory results of activities of essential oils, which furthermore point out to possibilities of their inclusion in crop protection programs. The aim of this study was to determine antifungal, contact activity of essential oils of thyme (*Thymus vulgaris* L.) and oregano (*Origanum vulgare* L.) on toxigenic fungal species *Aspergillus flavus* causing maize kernel rot. The sterile filter paper was placed in the inner lead of Petri dish. Two, four, six, eight and 10 µl of essential oils were pipetted on the paper, and then pure *A. flavus* cultures were subcultured on PDA. After seven days in the dark at 25°C, the degree of inhibition was determined by measuring the fungal growth and their comparison to the control. The fungus, without addition of essential oils, was used as the control. The strongest antifungal activity was expressed by thyme essential oil, which already at the amount of 2 µl completely inhibited the mycelium growth. The identical effect was achieved with the amount of 4 µl. The greater amount of essential oil the more progressive growth of the fungal colony (6 µl – 3 mm; 8 µl – 9 mm). However, the mycelium growth at the amount of 10 µl of essential oil was only 1 mm. The similar results were gained with oregano essential oil (2 µl – 3 mm; 4 µl – 7 mm; 6 µl – 9 mm; 8 µl – 9 mm; 10 – 6 mm). The fungal growth of control was 30 mm. The obtained results indicate the significant potential of the application of thyme and oregano essential oils as possible natural and environmentally friendly means for the protection of maize against *A. flavus*.

Keywords: *Biological fungicides, Essential oils, Aspergillus flavus, Maize.*