THESIS

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CROP PRODUCTION ENGINEERING

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ABSTRACT OF THESIS

Thesis title: Investigations on the effect of NeemAzal, a botanical pesticide, against sunflower downy mildew (*Plasmopara halstedii* (Farl.) Berl. et de Toni)

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Downy mildew of sunflower caused by *Plasmopara halstedii* is one of the most devastating plant diseases of sunflower. The management of sunflower downy mildew actively used resistance breeding and seed coating. However, these methods are vulnerable due to the appearance of new pathotypes and variants of the pathogen. Therefore, the importance of alternative crop protection solutions within IPM, such as botanical pesticides is increasing. The thesis aimed to illuminate the effect of plant resistance inducers, BTH (benzothiadiazole in Bion 50 WG) and NeemAzal on disease development of downy mildew in Iregi Szürke Csíkos seeds. BTH solution (320ppm) and NeemAzal (0.1%) were prepared for the experiment. The defense reactions were defined by assessing the disease rates, and plant height (disease severity) and identifying histological responses exhibited by host plants upon infection. As a result, the BTH inducer restricted downy mildew symptoms including stunting of plants. However, the effectiveness of NeemAzal was lower than BTH in restriction of disease. Moreover, both treatments showed positive effects on plant growth. The histological examination of host responses revealed that BTH and NeemAzal significantly impeded the development of pathogenic hyphae in sunflowers. Both treatments reduced most of the hyphae and necrosis in the pith and cortical parenchyma. To conclude, the study presents the positive effect of both inducers against *Plasmopara halstedii*.

Keywords: Sunflower downy mildew; BTH (benzothiadiazole); NeemAzal; host reactions; histological examination.