



Final Report

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Student Project No. CP185

Title: Role of auxin in Phytophthora root rot disease development in soft fruit

auxin, TIBA, phytophthora, raspberry, root, germin-like proteins (GLP)

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1. Industry Summary

Phytophthora species cause significant problems for crop production due to their ability to produce long-lived spores that can remain dormant for years, and early detection of the disease is challenging. This disease also affects raspberry production, and to avoid contaminated fields, farmers resort to growing raspberries in plastic pots, which is costly and not environmentally friendly. Moreover, even potted raspberries can get infected by contaminated nursery plants. The objective of this project was to address these issues and explore alternatives to encourage growers to cultivate raspberries in fields. The project's key findings are outlined below.

- The screening of 11 different chemicals on ten different isolates of *Phytophthora rubi*, led to the identification of several chemicals that can inhibit the growth of the pathogen in vitro and have the potential to be used in the propagation industry for the treatment of infected plants.
- The effect of an auxin transport inhibitor, TIBA (2,3,5-Triiodobenzoic Acid) on the plant-pathogen infection system was investigated, and the results suggest that low concentrations of the chemical may have a positive impact on root infection. However, the experiments were conducted in a hydroponic system and further research is necessary to determine whether this approach could be beneficial for cultivating healthy raspberries in soil/field systems.
- Multiple germin-like proteins were discovered in the raspberry genome, and their potential involvement in auxin binding and disease resistance was investigated, which could be used by the raspberry breeding industry to develop cultivars that are resistant to Phytophthora root rot.