

# Development of an Armillaria resistance screen for clonal walnut rootstocks

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## **Project Summary/Abstract**

*Briefly describe the long-term objectives for achieving the stated goals of the project.*

- 1. Identify the most important factor(s) for the successful Armillaria infection of walnut roots**
- 2. Test a greenhouse growth chamber assay system using ex vitro rooted microshoots**
- 3. Test a greenhouse or growth chamber aeroponics based assay system using bare rooted, clonal, line-sized plants**

## **Scope of Work**

*Describe the goals and specific objectives of the proposed project and summarize the expected outcomes. If applicable, describe the overall strategy, methodology, and analyses to be used. Include how the data will be collected, analyzed, and interpreted as well as any resource sharing plans as appropriate. Discuss potential problems, alternative strategies, and benchmarks for success anticipated to achieve the goals and objectives.*

The goal of this project is to develop a screening assay for *A. mellea* resistance that can be performed rapidly under controlled conditions in a greenhouse or growth chamber using small clonal walnut rootstock plants.

To reach this goal, the following objectives will be pursued:

1. Identify the most important factor(s) for the successful infection of roots, symptom development, and death of in vitro grown walnut rootstock genotypes by modifying components of the culture medium and environment.
2. Test a greenhouse growth chamber assay system using ex vitro rooted microshoots, taking in to account the factor(s) found to be most important for infection and symptom\_development of in vitro grown plants.
3. Test a greenhouse or growth chamber aeroponics based assay system using bare rooted, clonal, line-sized plants, taking in to account the factor(s) found to be most important for infection and symptom development of in vitro grown plants.

In vitro micropropagated walnut rootstock clones that have been tested for resistance to other walnut rootstock diseases will be used for this project (Browne et al., others). Emphasis will be placed on two clones (RXI and AXI) which were shown by Baumgartner et al. (2013) to have very different responses to *Armillaria mellea* when infected as newly rooted plants in vitro.