

## Graduate student assistantship (Ph.D.) in vegetable-leguminous tree alley cropping systems in the Department of Plant Sciences at the University of Tennessee, Knoxville

**Position description:** We are looking for a highly motivated Ph.D. student to work on a recently funded USDA-NIFA-SARE project evaluating vegetable crop performance in leguminous tree alley cropping systems. The overarching goal of this project is to establish alley cropping as a viable solution for organic and similarly managed vegetable production systems in the face of climate extremes in the southeastern USA. As part of the Ph.D. dissertation, the successful candidate will evaluate microclimate [e.g., soil, air, and crop canopy temperature, humidity, soil moisture, crop canopy light (PAR)], crop performance (growth, yield, quality and physiological parameters), vegetable crop mycorrhizal associations, and nutrient (carbon, nitrogen and phosphorus) cycling effects of leguminous tree alley cropping systems [nodulating black locust (*Robinia pseudoacacia*), or non-nodulating honey locust (*Gleditsia triacanthos*)] compared to open field systems on two model vegetable crops (winter squash and lettuce) at two soil nitrogen fertilization rates on an established alley cropping site in replicated research farm trials. The successful candidate will also have the opportunity to participate in on-farm studies of alley cropping establishment, and develop additional research questions related to alley cropping system function.

**Expectation:** We expect that a Ph.D. student will publish at least two manuscripts from research studies in refereed journals, present results at scientific society meetings, participate in farmer outreach, and to gain college-level teaching experience (e.g., as a TA) during the course of their studies.

**Qualifications:** We are looking for a highly motivated student with an academic and research background in Horticulture, Plant Science/Plant Biology, Soil Science, Forestry, or a related field. Preference is for a candidate who can start in summer/fall 2023.

**Stipend:** This GRA will provide a monthly stipend with both in and out-of-state tuition costs waived. A graduate student health insurance plan is included. Continuity of funding is subject to satisfactory academic and research performance and compliance with established standards of conduct.

**Location:** This position is based in the [Butler Lab](#) in the [Department of Plant Sciences](#) at the [University of Tennessee, Knoxville](#)

If you would like to learn more about this opportunity, please contact Dr. David Butler ([dbutler@utk.edu](mailto:dbutler@utk.edu))

Figure 1. Schematic diagram (not necessarily to scale) of each alley cropping system plot evaluated as part of Obj. 1, 2, & 3. Black locust or honey locust trees create a modified microclimate for lettuce and squash crops. With advancing tree maturity, the center row of trees can be harvested to widen alleys and increase herbaceous crop light availability.

