



Grace Baldwin is from Lafayette, Indiana. She received her undergraduate degree in Agricultural Engineering with a focus in Environment & Natural Resources Engineering from Purdue University. Grace completed international internship experiences in both Ghana and Haiti. She then continued at Purdue to pursue a Master's Degree as part of Dr. Stwalley's lab group. She has completed various international development projects and has served as a technical adviser for projects in both Haiti and Ghana. Grace is the recipient of the Purdue University Hydrologist's Helping Others Grant (H2O), which allowed her to conduct her master's research in Ghana, West Africa. Grace will continue working towards her Ph.D. under Dr. Stwalley this fall.



# Agricultural & Biological ENGINEERING

## Thesis Defense

**Speaker:** Grace Baldwin

**Title:** DEVELOPMENT OF DESIGN CRITERIA AND OPTIONS FOR PROMOTING LAKE RESTORATION OF LAKE BOSOMTWE AND INCREASED LIVELIHOODS FOR SMALLER-HOLDER FARMERS NEAR LAKE BOSOMTWE - GHANA, WEST AFRICA

**Major Professor(s):** Dr. Robert Stwalley

**Date:** Friday, July 05, 2019

**Time:** 9:30 AM

**Location:** ADM 145 A/B

### Abstract:

A market assessment survey was conducted to create a comprehensive baseline survey of agricultural and fishing practices within the Lake Bosomtwe area, providing small holder-farmers the opportunity to share their needs, insight, and input into a demonstration farm design. Interviews were conducted in the 12 villages located along the lake's shore. Within the last seven years, the lake has been subjected to overfishing and environmental degradation. The loss of fish has forced residents of the area to have to transition from fishing to subsistence farming as their main vocation. These people have little to no experience in areas such as crop rotation, fertilizer use, and erosion control. Unfortunately, this has resulted in more problems within the lake and continued loss of fish. Farmers from the 12 villages within walking distance to the lake participated in individual interviews of a 140-question survey. Data collected were: demographics, land use, farming practices, water sanitation, personal hygiene, and participation in fishing. Spatial data were also collected for drinking water sources, pit latrines, and village centers. This survey data will serve as the most comprehensive assessment for the area and guide the development of the demonstration farm. Analysis of collected market assessment data is essential to determine the correct elements for inclusion in the proposed extension demonstration farm.

### Application:

This survey data obtained provided the most comprehensive assessment within the study area. It guided the direction to the design components required for a demonstration farm design at Lake Bosomtwe. The focus of this ongoing work is to improve the livelihoods of small-holder farmers and provide better management Ghana's only natural lake. This study provides a frame work for other development workers to use and adapt.