ASU SCHOOL of SUSTAINABILITY

ARIZONA STATE UNIVERSITY

In Partial Fulfillment of the Requirements for the Degree of

Master of Science

M. Ryan Delaney

Will defend his thesis

Identification of Appropriate Technology and Strategic Action Plan for Adoption and Diffusion in a High Poverty Context: The Case of Central Haiti

Abstract

Haiti has witnessed a high rate of deforestation in recent decades, caused largely by the fuel needs of a growing population. The resulting soil loss is estimated to have contributed towards a decline in agricultural productivity of 0.5% - 1.2% per year since 1997. Recent studies have shown the potential of biochar use through pyrolysis technology to increase crop yields and improve soil health. However, the appropriateness of this technology in the context of Haiti remains unexplored. The objectives of this research were to identify agricultural and fuel use-related needs and gaps in rural Haitian communities; determine the challenges inherent in the adoption of biochar pyrolyzer technology; and develop an action-oriented plan for use by development organizations, communities, and governmental institutions to increase the likelihood of adoption.

Data were collected using rapid rural appraisal techniques involving 30 individual interviews and four focus-group discussions in the villages of Cinquantin and La Boule in the La Coupe region of central Haiti. Topics discussed included agricultural practices and assets, fuel use and needs, technology use and adoption, and social management practices. The Sustainable Livelihoods Framework is used to examine the asset position of households and the livelihood strategies currently employed. The analysis was used to identify specific needs and gaps. Roger's theory of diffusion of innovations is used to develop potential strategies for the introduction of pyrolysis technology.

Preliminary results indicate that biochar pyrolysis has potential to address agricultural and fuel needs in rural Haiti. Probable early adopters of biochar technology include households who have adopted new agricultural techniques in the past, such as manure-use and irrigation. Education about biochar, and a variety of pyrolysis technology options from which villagers may select based on their

needs, are important factors in successful adoption of biochar use. A grain mill in one of the study villages provides a model of ownership and use of pyrolysis technology that may increase its likelihood of successful adoption. Additionally, women represent a group that may be well suited to control a new local biochar economy, which has the potential to benefit the community.

July 19, 2011
10:00 a.m.
WGHL 481

Faculty, students, and the general public are invited.

Supervisory Committee:
Dr. Rimjhim Aggarwal
Dr. Nalini Chhetri
Dr. Mark Henderson