

The enigma of biofuels: Impact on water resources and soil fertility

Odemari Stephen Mbuya
Florida A&M University, USA

Biofuels (solid, liquid or gas) are fuels derived from recently dead biological matter, whereas fossil fuels are composed of “long dead” organic matter. Production of biomass used as a source for biofuel requires large quantities of water, nutrients and solar energy.

Approximately 500 liters of water is required to produce 1 kilogram of biomass. The biomass has to be further processed to produce biofuels. Currently, about 15 liters (4 gallons) of water are used to process biomass (e.g. corn) to produce 3.78 liters (1 gallon) of ethanol. In agriculture, large amounts of the biomass produced for food and fiber are recycled back into the soil as organic matter to improve soil chemical, physical and biological properties, consequently having a direct impact on soil fertility and quality. While it is a noble idea to engage in production of biofuels, it is equally crucial to understand the different components involved in this complex system. In complex systems cause and effect are distant in time and space, and their efficiency is not necessarily measured by economics. Production of biofuels involves a complex system characterized by feedback loops and interconnection among different components. While different methods and techniques of production of biofuels have been suggested and discussed in many conferences, too often we overlook the common thread connecting the different components of the system on a long term and sustainable basis. This presentation will discuss the implication of biofuels on water resources and soil fertility with local and global perspective.

Biography

Odemari Stephen Mbuya is a professor of Agricultural Sciences at Florida A&M University where he teaches Research Methods/Biostatistics, Plant and Soil Sciences. Dr. Mbuya holds an M.S. and Ph.D. from the University of Florida (USA) and a Bachelor's degree in Crop Science from Sokoine University of Agriculture (Tanzania). His research interest focuses on phytoremediation, water resources (quantity and quality), watershed processes and computer simulation modeling. Dr. Mbuya has worked at CIAT (Centro Internacional Agricultura Tropical) in Colombia as a visiting researcher, a consultant representing the United States Department of Agriculture in South Africa and an Agricultural Research Scientist in Tanzania. Dr. Mbuya has served in numerous national and international committees representing water, climate change, agricultural production and biofuels.

odemari.mbuya@famuedu