



Tropentag, September 19-21, 2012, Göttingen -
Kassel/Witzenhausen

“Resilience of agricultural systems against crises”

Efficiency Analysis of Coffee Cultivation: The Case of Smallholder Farming in the Coffee Sector of Nicaragua

CHRISTIAN STAACKE¹, CHRISTIAN BUNN¹, MARIA GUADALUPE BACA GOMEZ², PETER LÄDERACH²

¹*Humboldt-Universität zu Berlin, Faculty of Agriculture and Horticulture, Germany*

²*International Center for Tropical Agriculture (CIAT), Nicaragua*

Abstract

Coffee, one of the main contributors to agricultural GDP in Nicaragua, is the dominating cash crop within smallholder farming systems of the central and northern highland departments. In recent years certain activities have been undertaken by development agencies and policy makers to strengthen smallholders' production capacities in order to improve their livelihoods. However, still today the majority of Nicaraguan smallholder coffee producers is suffering from poverty, making them highly vulnerable to extreme shocks. Shortages in financial as well as managerial capacities put their efforts in production at risk, enforcing inefficiency in the use of scarce resources.

To cope with risks linked to climate change and to volatile agricultural commodity markets, smallholder farmers are forced to manage scarce resources in their portfolio the most efficient way. This research especially focuses on efficiency and inefficiency of smallholder farming in the coffee sector of Nicaragua. To this end we analysed a sample of 135 coffee cultivating households distributed in 4 different coffee producing departments. The data is a sub-set of a bigger survey developed within the Coffee Under Pressure Project of the International Center for Tropical Agriculture (CIAT) including 3,500 coffee cultivating farmers in Nicaragua. The selected households have been separated into two groups, namely traditional and organic certified farmers. The collected data contain socio-economic as well as farm level specific production input quantities and prices. A stochastic frontier analysis is undertaken to analyse technical as well as cost efficiency.

The mean technical efficiency of traditional farmers is estimated to be 52.7%, while organic producers show an efficiency of 56.7%. Similar results were found in the case of cost efficiency. Surprisingly traditional farmers showed lower average costs while producing higher outputs than organic farmers. The applied inefficiency model found the variable age to be significant, with inefficiency increasing as older the household head is older, and vice versa.

Keywords: Cost efficiency, smallholder coffee production, stochastic frontier analysis, technical efficiency