



Tropentag, October 5-7, 2011, Bonn

“Development on the margin”

Farm Management Strategies to Enhance the Farm Performance in Changing Climate: A Case Study in the Mid-hills of Nepal

NAGENDRA BASTAKOTI, JOHANNES SCHOLLBERG, JEROEN C.J. GROOT

Wageningen University, Organic Farming Systems Group, The Netherlands

Abstract

A multi-level study was carried out to identify and explore farm resource endowment and ecological performance of mixed farming systems (improved and traditional) in Baglung district of Nepal. This study focused on farm input resources, soil organic matter-carbon (SOC) and nitrogen dynamics. Farm and soil survey was carried out in 62 farms in two communities: Amarbhumi and Tityang. A representative farm from each group was selected for further study using the Farm DESIGN model. Both principal component analysis and hierarchical cluster analysis was carried out to identify the farm typology. In the case study region livestock and free access to common natural resources (CNRs) were central components of the farming system. It was observed that animal density was high (5.1 LU ha^{-1}) in both communities. It was also observed that 47.9 % and 43.1 % DM intake for livestock was derived from CNRs in Amarbhumi and Tityang, respectively. The contribution of CNRs on carbon balance at farm was observed to be very high (45 %). In the Amarbhumi FYM/compost applications were high (44 Mt) with improved farms than traditional farms (32 Mt) compared to the Tityang (21 Mt), where there was no difference in application rate between farm groups. The soil analysis results showed that increases in SOC content at improved farm amounted to 11 and 22.4 % higher in Amarbhumi and Tityang, respectively. The results also showed that soil N% in improved farms in both communities were significantly higher; 0.46 and 0.25 % than the corresponding values of traditional farms which were 0.41 and 0.20 %, respectively. At the farm level, result showed that farmers pursuing sustainable soil management (SSM) were using input resources more efficiently than traditional farms. It was observed that improved farms at Amarbhumi and Tityang had 6.3 % and 47.6 % higher N-efficiency than traditional farms, respectively. This study provides the evidence that there is a wide scope and direct benefits associated with the use of improved SSM practices in terms of adaptation and mitigation of climate change.

Keywords: Farm management, improved farm, nitrogen efficiency, resources, soil organic carbon, traditional farm