



Deutscher Tropentag, October 11-13, 2005, Hohenheim

“The Global Food & Product Chain—
Dynamics, Innovations, Conflicts, Strategies”

Agriculture and Biodiversity in Fragmented Landscapes of the Atlantic Rainforest of Rio de Janeiro

JUAN CARLOS TORRICO¹, HARTMUT GAESE², MARC J. J. JANSSENS³, SABINE SCHLÜTER²,
NICOLE KRETSCHMER²

¹*University of Bonn, Department of Tropical Agriculture, Germany*

²*University of Applied Sciences Cologne, Institute for Technology in the Tropics, Germany*

³*University of Bonn, Institute of Horticulture, Germany*

Abstract

Crop and animal husbandry systems were evaluated in the Atlantic Rainforest (Mata Atlantica), located in the hinterland of Rio de Janeiro, Brazil using the municipality of Teresópolis as study area. Their influence upon the conservation of biodiversity, agro-diversity, landscape and society was appreciated.

Landscape evolution over time was analysed with the help of GIS. Farming systems were characterised and classified by way of three different surveys implemented on a total sample of 304 agricultural production units. Thereafter, 18 well contrasted farms were chosen and studied during one year with the purpose of knowing economic productivity, dynamics of biomass, market relationships and finally, agro-diversity.

The specific study was carried out in the “Corrego Sujo” basin with a surface of 51 km² divided in 9 sub-basins, located at an average altitude of 900 m asl. In the latter basin, 36 % of the surface was identified as fragmented forests —12 ha on average— and undergoing severe pressure from agricultural expansion and fire. Although horticulture occupies only 3 % of the area, it impacts negatively on soil and water due to inappropriate use of irrigation and agro-chemicals. The low productivity grassland corresponds to 31 % of the area and isolates the fragments, impeding consequently on natural dispersion of seeds and on animal movement. The remaining 19 % of the area corresponds to regeneration sites that are likely to revert to grassland.

The economic and ecological viability of the different agricultural systems was evaluated, including agroforestry, sylvo-pastoral systems, forestry, other perennial crops and vegetable growing. Above systems were appraised as to their pressure on deforested areas and fragments, as well as to their additional benefits to local population, encompassing influences on microclimate, water cycle, nutrient flow, dissemination of pests and diseases, and on dispersion of fauna and flora.

Above mentioned agricultural systems were rated for their protection of resources, habitat, plant and animal survival. Unconventional agricultural systems may play an important role in linking and buffering fragment reserves and in contributing to the improvement of both agro-diversity and biodiversity in these degraded areas of the Atlantic rainforest.

Keywords: Agro-diversity, atlantic forest, biodiversity, farming systems