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Land Competition Between Farming Systems and a Biodiversity Paradise in the Central Atlantic Rainforest of Brazil

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Abstract

The mountainous hinterland of Rio de Janeiro is the habitat of the Atlantic Rainforest, characterised by a potentially dense forest of rich biological diversity. The hilly upland forms a highly fragmented agricultural landscape with a very few forest fragments. Land use is dominated by extensive cattle farming systems and small ruminants on marginal land (60% of the same State) and by intensive, thriving horticulture farming systems on the adjacent flatlands, irrigated from water sources mostly originating in the surrounding forested hills. This enables intensive production of leafy vegetables. Farming systems have been analysed within a Brazilian-German research cooperation, the BLUMEN project. A detailed survey was conducted in the municipality of Teresopolis, within the Preto river basin at an altitude between 700–1000 m above sea level among crop and animal farmers. About 83% of the farms are family owned and 51.3% are less than 10 ha in size. These smallholdings occupy only 6.7% of the cultivated area, whilst farms larger than 150 ha cover the largest portion (36.6%) of the cultivated area.

Crop land and range land compete with preservation and reforestation strategies. Degradation of land is a mean feature of the municipality. Testimonies suggest that in the last 50 years water discharges have decreased up to 50%, due to deforestation and to the loss of many small water springs (1/6 in this survey). The Rio Preto is polluted with agro-chemicals residues.

Cattle husbandry based on a local Mestizo breed, is done by the vast majority (76%) of the surveyed farmers. Sheep, goat and horse husbandry rank in a secondary position. Cattle farmers prefer cattle breeding (61%), to beef cattle (22%) and lastly to milk cattle (17%). Although stocking rate approximates 0.7^{ha}/TLU, paddock rotation is rarely practised. Average weight increase is only 350 g/head/day. Stabled husbandry of goats and sheep shows better levels of sustainability. Horse breeding is usually carried out for recreation, showing high levels of investment and underlining the tourism potential of the region.

It is concluded that preserving, if not improving, 20% (say 8% for the whole of Mata atlantica) of total land with fragmented biodiversity paradises can only be achieved by increasing agro-diversity elsewhere whereby tree crops could play a buffer and connecting role.

Keywords: Brazil, farming systems, land degradation, land use, Mata atlantica