Livestock systems’ trajectories over the long term: which adaptations for which resilience? The case of family farms in the Amazon

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Abstract

On the pioneer fronts in the Brazilian Amazon since the 60s, livestock breeding has been fundamental to maintain small-scale farms on the medium and long-term (Santiago, 1976; Boudet, 1983; Veiga et al. 2004; Toni et al., 2005). Indeed, this activity is less exposed to risks than other agricultural products, especially concerning the variability of prices. Family farms, which are often diversified, managed to build and adapt small structures to an uncertain political and natural environment thanks to livestock farming. Despite the current consolidation of public institutions and a strong regional economic dynamism, many factors still weaken family farms on the long term such as isolation, lack of system board and suitable credit etc. in the pioneer fronts. (Poccard - Chapuis, 2004). Moreover, the rapid vegetation dynamics in the humid tropics complicate the management of pastures and of cultivated plots (Navegantes, 2009). In this context, livestock farming offers solutions to get out of precarious situations and further on allows investments in equipment, agricultural inputs and sometimes the purchase of land (Ferreira, 2001; Veiga et al 2004.). However, this trend covers a variety of trajectories and adaptations of production systems whatever farms have been created from virgin land or on existing farms. A cross-analysis of two local studies of farms trajectories shows that livestock systems are resilient because of some mechanisms of adaptation to risks and economic uncertainties. Thus, small farmers have developed two types of trajectories: a first type is more stable than the second, which is more changeable and opportunistic. In the last type of trajectories, adjustments and changes in the orientation of livestock production and in practices are more frequent. On the one hand, stable trajectories have a positive effect on the ecological balance of pastures in their environment (Navegantes, 2012). The more livestock projects are stable over time, the more control and grassland management is efficient on the technical and economic dimensions and thus provide sustainability to livestock systems. On the other hand, stable trajectories lead to increase the added value of livestock products through the valuation of milk and strengthen the economic efficiency of the production systems. The results show that opportunistic and changing trajectories frequently mean precarious socio -economic conditions for the families (Carvalho, 2012). In the Amazon, livestock systems show adaptive mechanisms that allow long term consolidation of small farm trajectories. The concept of resilience is then relevant at this level of analysis. However, this concept has two limitations in this example. Firstly, livestock systems are

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built after the cut of the primary forest. As a consequence, the ecosystem functioning is deeply altered, mainly with a loss of biodiversity and a decrease in soils’ fertility. Secondly, resilience and the long term step is hardly taken into account by the farmers’, who rather seek to build new and more favorable situations, including radical and quick changes in their activity systems (Vaz et al., 2012) than preserve their farms from chocks or prepare the transfer to the young generation.

**Keywords:** family farms, livestock systems, trajectories, adaptation, resilience