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Farmers’ and academia’s views”

## Contribution of silvopastoral systems toward a sustainable livestock farming in the Amazonian foothills

MARTHA DEL RÍO<sup>1</sup>, MICHELLE BONATTI<sup>2</sup>, TATIANA RODRÍGUEZ<sup>3</sup>, MARCOS LANA<sup>4</sup>, STEFAN SIEBER<sup>5</sup>

<sup>1</sup>*Leibniz Centre for Agric. Landscape Res. (ZALF), Sustainable Land Use in Developing Countries (SusLAND), Germany*

<sup>2</sup>*Leibniz Centre for Agric. Landscape Res. (ZALF), Sustainable Land Use in Developing Countries (SusLAND), Germany*

<sup>3</sup>*Leibniz Centre for Agric. Landscape Res. (ZALF), Sustainable Land Use in Developing Countries (SusLAND), Germany*

<sup>4</sup>*Swedish University of Agricultural Sciences, Dept. of Plant Production Ecology, Sweden*

<sup>5</sup>*Leibniz Centre for Agric. Landscape Res. (ZALF), Sustainable Land Use in Developing Countries (SusLAND), Germany*

### Abstract

In recent years multifunctional arrangements integrating crop, livestock, and forest have been adopted in tropical areas. These arrangements known as silvopastoral systems (SPS) intend to improve animal welfare, to generate new economic, environmental, and climatic benefits. In Colombia, agricultural land has been predominantly used for the livestock sector. The Amazonian foothill, specifically the department of Caquetá had 6.9% of cattle herds and was the fifth department for dairy production. Given this context, it is particularly important to implement SPS to protect the Amazonian forest and to avoid extensive cattle ranching in this zone. However, even though SPS are beginning to be promoted in Colombia as strategies for sustainable land management, the contribution of these strategies has not yet been fully explored. To address this challenge, this study used a modified version of contribution analysis to evaluate the economic, social, and environmental benefits, drivers and hinders factors, and negative externalities. Contribution analyses on SPS were developed with cattle farmers and other stakeholders in Caquetá using in-depth semi-structured interviews and two workshops (n=40). Contribution analysis proved to be a useful framework for assessing the impacts and valuable feedback for implementers and sponsors of this kind of strategy.

Results from the contribution analysis showed that the main benefits of SPS are: better feeding for cattle, higher dairy production, greater diversification on the farm, higher farm economic valuation, lower loss of the herd, greater welfare and life quality for producers, social awareness of the importance of buffer zones, efficiency in water use, greater availability of organic fertilisers and microorganisms, new training and knowledge, improved soil protection, landslide prevention, more shade, and less soil compaction. An important driver of these systems is the empowerment of both men and women to work together in the different tasks of this type of system. On the other hand, the lack of resources to replicate the strategy in larger areas of the farm and the lack of livestock water supply systems

are frequently mentioned as hindering factors. Two negative externalities are important to take into account: shortages of electric fences and fuel needed to pump water to paddocks.

**Keywords:** Amazonian region, contribution analysis, silvopastoral systems, sustainable land management