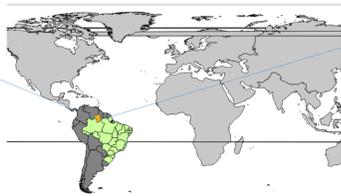


"Crop-Cattle-Tree" Integration in Roraima State, Brazilian Amazon

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INTRODUCTION

In the Brazilian Amazonian region, farmers need to invent new systems to produce, especially to replace the traditional livestock systems of low-sustainable. Research on sustainable farming systems also advanced. Crop-cattle-tree integration system or SILPF (for *Sistema Integrado Lavoura – Pecuaria - Floresta*) is perceived as an alternative for the future. However, even though SILPF existed since colonization, their expansion at a large level is difficult, and the integration is more an association rather a real integration, at least regarding the tree component (Bendahan, 2015).

OBJECTIVE OF RESEARCH

The purpose of this research is to analyze the impacts on the economy of farms and changes in the management of internal and external factors to farms due to the adoption of the systems in the State of Roraima in the Northern Amazonia Brazilian.

MATERIAL & METHODS

Data source

- Public data
- Interviews with key-actors in the sector of grains, livestock and wood
- Workshops
- Follow-ups on farms that have adopted SILPF;
- Experiments at the Embrapa Research Station.

Methods

- Analysis qualitative and quantitative of the public data
- Analysis qualitative of the interviews and workshops (Wood, 2015)
- Analysis qualitative and quantitative of the monitoring of the private farms and of the research station
- Analysis economic of the farms that adopted SILPFs

RESULTS

The external factors:

The credit is available to develop SILPF even though the overall context is not satisfactory especially the roads infrastructures, especially during rainy season, the weakness of public services in rural area, mainly in health, education and information networks systems, and the lack of efficient extension service as well as the persistence of landownership problems.

The internal factors:

Several interactions between the three components (Crop, Cattle, Tree) of the system have been proved especially the best soil fertility, the effect of the trees shade on the crops, the complementarity in terms of cash flow, etc.

A widest differentiation of activities and diversification of knowledge is also noted.

Another major result is the strong increasing of complexity of the system and, consequently, a necessary management of the complications.

The success of the SILPF requires a very rigorous management of the agricultural calendar, labor, material, input supply and marketing of the products as well as the cash flow, especially to increase the availability of liquidity.

Analysis economics:

It was found higher Net present value (NPV) in the economic analysis of the three farms when the systems were introduced (Table 1).

Table 1: Net present value of three farms that adopted SILPFs in the State of Roraima, Amazonia Brazilian.

Farms	NPV	
	Without SILPF	With SILPF
Livestock subsistence	-R\$ 27.973,64	R\$ 30.190,63
Livestock fattening	R\$ 333.940,86	R\$ 554.082,94
Creating Livestock	-R\$ 677.114,58	R\$ 280.220,33

CONCLUSION

- If well managed, SILPF are economically more viable and attractive than cattle ranching.
- The optimization of the resources relevant to the infrastructures and labor contribute to their viability.
- Their development in Roraima, but also at the Amazon scale, will depend a lot on the context, especially vis-à-vis the health and education systems, extension services and access to information.
- For these reasons, we believe that the adoption of SILPF on a wide level is not short-term possible

References: Bendahan, Amaury Burlamaqui (2015) *Système Intégré Culture – Élevage – Arbre (SILPF) dans l'État du Roraima, Amazonie Brésilienne. Thèse Doctorat, AgroParisTech*; Wood CH (2015) *Introdução metodológica ao estudo da pecuária, do uso da terra e do desmatamento no Brasil, no Peru e no Equador. In: Pecuária, Uso da Terra e Desmatamento na Amazônia. UNB, Brasília, DF, p 284.*