Discussion

Milk appears to be an environment-friendly product. Such differences between milk and meat products would certainly increase with the inclusion of post-farm-gate stages in the boundaries of the studied system because additional environmental impact during these stages is usually smaller for milk than for meat products. Based on our results, we could promote the substitution of red meat by white meat but conclusions have to be balanced. Compared with rations of ruminants, the rations of monogastric animals contain relatively more products, such as cereals, that humans could consume directly and more efficiently. Environmental consequences of this competition between humans and animals are not incorporated in this LCA study. Other aspects not considered that may affect conclusions of the study are CO_2 emissions associated with land use change (e.g. deforestation for cultivation of feed crops) and the on-farm carbon storage on grasslands (greater for beef production). Moreover the production of food is the only function of livestock systems considered here and a consumer's choice among different types of livestock protein should not depend only on energy conversion and climate change. Other ecological functions, such as the production of fertilisers, the use of by-products and marginal lands, and landscape maintenance should also be integrated in a further, more holistic analysis.

Conclusions

In the perspective of mitigating global warming, results indicate that red meat may be substituted by milk and white meat products in the human diet. However, results need to be balanced because the LCA method applied does not consider determining elements such as consequences of land use change and competition for food crops between humans and animals. A more comprehensive view of the situation including other ecological functions of livestock activities is needed.

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A participatory approach in agricultural development: A case study of a Research-Education-Development project to optimise mixed farming systems in Guadeloupe (FWI)

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Introduction

This paper presents the methodology of a participatory Research – Education – Development (RED) project which is on-going in Guadeloupe studying mixed farming systems (MFS) (Stark *et al.*, 2010). This project involves numerous local partners, ranging from researcher to farmers through to agricultural technical advisors. In our regional context, we aim to develop alternatives to specialised and intensified agricultural standards toward more sustainable farming systems. To do so, we based our approach on the assumption that the sustainability of a given farm would result (at least partly) from diversifying production and optimising complementarities and interactions between animal and crop productions (also termed integration), with attempts to keep productivity high. This needs a bottom-up approach through systemic methodology (Thornton and Herrero, 2001). This project would therefore lead to the design of innovative farming systems that would be evaluated on agro-ecological and socio-economical indicators (i.e., multicriteria evaluation) and thus create guidelines for farmers.

Methodology

Although 80% of Guadeloupe farms are MFS, limited information is available becuase there are many less studies covering systemic approaches than with sectorial approaches. In this context, our project has three steps.

Firstly, a descriptive analysis will be carried out to characterise MFS in Guadeloupe as well as identify different systems of production and of crop-animal integration that are currently present. Different methodologies would be used to describe and better understand MFS typology (Figure 1): (1) an exploratory study to identify MFS types, (2) a focus study to analyse and describe each identified system, and (3) an expert

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opinion-based study to validate previous results and initiate collective reflections.Secondly, several experimental studies (Figure 1) will be implemented in different conditions (on farm and on-station) and scales (both temporal and spatial) representative of the different identified and promising MFS types. This has the objective of evaluating their efficiency in term of agro-ecological and socio-economical outcomes, and develop the methodology to optimise these promising integrative systems relevant to particular Guadeloupean farms conditions.

Finally, communication on the different outcomes of this project will be at different levels: to farmers and agricultural technical advisors by producing technical reports and guidelines; to educational staff and students by creating lecture notes and educational tools, and; to the scientific community by publishing results in scientific journals.

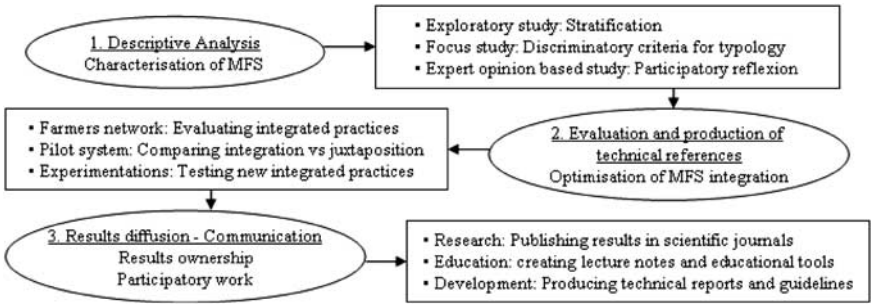

Figure 1 RED project methodology

Perspective

This participatory methodology should be an example which demonstrates that sustainable agricultural development can be reached if relationships between different local partners of RED are involved. It should be stressed that communicating outcomes is essential in order to develop ownership of the results and further focus all stakeholders on the same goals.

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Study of carcass characteristics of Creole cattle steers raised in two contrasting post weaning systems

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Introduction

Urbanization, rising per capita incomes and economic growth has encouraged higher consumption of meat in developing countries. As a consequence, livestock production must be more productive. The productivity of livestock systems depends on many factors, which we should

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