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Tropical livestock farming systems, global framework and case studies at the biotechnical and decisional levels

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Introduction

Setting development priorities and implementing research must be accomplished through the farming system concept. Sustainability stakes for livestock farming systems (LFS) depend on the local context. Beyond general characteristics of biotic and abiotic factors, the human and cultural values and the socio-economic constraints induce a high variability in LFS in the Tropics. Promoting integrated and sustainable TLFS requires a better understanding of productive and non-productive functions of livestock at the farming, sector and territory levels. According to Dedieu *et al.* (2008), the Livestock Farming System concept was developed to assess and model the interactions between the human and biotechnical dimensions of livestock husbandry activities. The two main dimensions can be unfold as technical (biotechnical/animal production) and decision-making (involving policy related to the importance of man, farmer, family, socioeconomic conditions). Tropical LFS have been characterized (Dedieu *et al.*, 2010) as being very diverse, multifunctional and must be assessed at different interlinked levels from animal to animal production unit, from farm to economic sector, from resources to territory or from man/family to society.

Case studies

Four case studies will underline the main TLFS qualities, functions and levels for evaluation and development. 1] The high and rich diversity of TLFS is presented through the neo-tropical animal wildlife (NTAW) program (Garcia, 2005) implemented in the Caribbean. Around thirty important neo-tropical animal wildlife species are found in Latin America and the Caribbean. Twelve of these species are native to Trinidad and Tobago, and most are found nowhere else in the Caribbean. Wildlife animals are sold at higher prices than domestic animals. There could be some economic potential for the wildlife farmers however there is limited widespread knowledge. The NTAW program allows empowering the high biodiversity of wildlife building a whole concept in order to sustain a viable economic activity on the basis of farmers, hunters, researchers, teachers, extension officers, processors and markets. 2] The multifunctionality of TLFS is described through the experiences of Rodríguez (2009) at the ecological farm (TOSOLY) occupying 7 ha in the Colombian foothills (humid climate and acidic soils). TOSOLY is a multistrata system for multiple use of crops, trees and animals: 1 ha sugar cane; 1.5 ha coffee; 1 ha citrus; 500 banana plantain in mixed systems; 200 cacao trees; 250 fruit trees; 100 fat pigs/year; 20 goats; 4 multipurpose cattle; 16 bee hives; 4 breeding rabbits; 2000 fish; 10 laying local hens, 2 horses for transport; biodigesters and gasifier. TOSOLY is a contribution to the strategy to “de-carbonize” agro-systems, by reducing emissions of greenhouse gases, generating electricity locally from natural resources, making maximum use of solar energy and ensuring there is no conflict between use of available resources. 3] The cultural and social dimensions of TLFS are considered through the study of the goat sector in Guadeloupe (Alexandre *et al.*, 2008). Goat rearing is significant as a source of food and income for many families. The sector provides different products and services: entire bucks for animal sacrifices; meat cooked as “colombo” national meal appreciated by all the communities; skins used for traditional drums for very famous traditional music (internationally known). The human values come from religion, music, cooking habits (ethnocuisinology) and somehow tourism activities. 4] The objectives of development of TLFS are highlighted by the successful project of “Let agogo” carried out by a Haitian NGO (Veterimed, 2010) which mission is to help small Haitian farmers increasing their income and improving their quality of life through training, research and technical support. Given the high level of milk imports in Haiti (>40 million €) Haitian producers organized and developed sustainable alternate strategies with support from young professionals. This project adds value to locally-produced milk (local breeds and feeds, traditional systems). It works to increase milk production in order to increase farmer’s family income, as well as on commercialization opportunities. On 2007, the network was made up of 13 mini-dairies who transformed between 3000 and 8000 l/d of milk. Thousands of small farms (families) are involved. “Let agogo” is also the brand name for the milk products (yogurt and sterilized milk) distributed across the country with support from many youth and rural organizations.

Conclusions

The farm size and the lack of infrastructures are not insurmountable obstacles. On the contrary, traditional systems and informal sectors reveal some potential that we must promote. Biodiversity together with variability of systems are qualities to enhance. Multiple use of resources allow to reach both productivity and sustainability. The integration of human and social activities within a whole economical sector (family

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household, market and eco-tourism) support TLFS prosperity. How to assess human value(s) of the animal and/or activity? How to take into account the social determinants and the environmental impacts of the human and/or economic activity? How to address recommendations and build a development project by the way of participatory approach based on the society and territory context? Many challenges for searchers, teachers and extension officers for the future of TLFS.

References

- Alexandre G, Asselin de Beauville S, Shitalou E and Zébus MF 2008. <http://www.cipav.org.co/lrrd/lrrd20/1/alex20014.htm>
- Dedieu B, Faverdin P, Dourmad J-Y and Gibon A 2008. *INRA Prod Anim* 21, 45–58.
- Dedieu B, Aubin J, Duteurtre G, Alexandre G, Vayssières J, Bommel P and Faye B 2010. *INRA Prod Anim* (in press).
- Garcia GW 2005. Wildlife farmers' and producers' booklets; GWG Publications, Trinidad booklet # 1 pp 93 and # 2 pp 238.
- Veterimed 2010. <http://www.haitiinnovation.org/en/2008/05/18/let-agogo-example-more-jobs-and-better-nutrition-through-dairies>
- Rodríguez L 2009. Integrated Farming Systems for Food and Energy in a Warming, Resource-declining World. Thesis of Humboldt University, Berlin towards the Degree of Doctor of Philosophy.

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The situation of goat farming in Haiti

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Introduction

Located on the western side, Haiti shares the Hispaniola Island with the Dominican Republic and occupies a surface of 27,750 km². It is mainly mountainous, with more than 60% of the land having slopes over 40%. Farming activities are considered the cornerstone of the Haitian economy because more than 60% of the population lives in the countryside and earn a living from farming activities. Statistics for 2003 indicate a national GDP of 3.46 billion dollars from which farming activities account for only 25%. However, in spite of these published figures, some areas of agricultural production have been identified in 2004–2005, as generating more than 1 billion dollars of income that were redistributed in rural areas.

Importance of "Goat" sub-sector

Figures for 1990 stated a population of 2,633,000, distributed respectively in the departments of "Grand Anse" (443000), Southern Dept (311000), Western Dept (232000) Southeast Dept (216000) and "Plateau Central" (181000). While this last one can be qualified as a humid area with a few dry and semi-arid pools, the other regions are considered humid to very humid mountainous areas, except for the Western department, where all the landscape units are used for production associated with the nearby urban market of the capital. According to a report on the identification of potential niches in the Haitian rural sector, approximately 38% of family farming businesses, nearly 300,000 production units are involved in goat farming, with variable farm and herd size.

Haitian "creole" goat characteristics

Height and weight: Withers height for male adults is on average 55 to 75 cm; and for females 45 to 60 cm. Average weight for male adults is 35 to 45 kg and for females 28 to 40 kg. There is no data available on the growth potential for Haitian "creole" goats.

Reproduction Performance

The age of puberty is 5 to 6 months. Service is natural, not seasonal and often influenced by the fodder availability. In the plains, where the dry and the rainy seasons are more significant, there are 2 birth peaks: one in January/February, the other in August. In the mountains, there are more births between January and March (Bien-Aimé, 1991). The mean age at first parturition is about 12 months with a greater period between each birth in elevated areas, around 14 months as against 9.5 months in the plains. Goats give birth to approximately 2 kids per litter.

Management

Rope driving is predominant. Goat roaming can be seen mostly in the so-called drier or semi-arid areas. In these agro-economic pools where the vegetation is spontaneous and dominated by ligneous bushes, the goats graze on large uncultivated lands. Often livestock from different farmers are grouped at dusk by a herder under a natural shelter or in a rough fold.

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