

100. Adaptation strategies for livestock production systems in a changing environment

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The inter-tropical zone counts a majority of smallholders for whom livestock rearing is the family's food self-sufficiency. These smallholders are vulnerable to variations in productions, inputs and products prices caused by a changing environment, endangering their food security. One line of research is to utilize animal and plant resources diversity as a lever for livestock adaptation in hot regions to maintain and increase the production systems and farmers' economic benefits in a changing environment. Heat stress on animal, drought on forage production and increase in raw materials prices are part of the main constraints to ruminant systems in hot regions. Studies, through THI analysis, were conducted on the genetic potential expression of different cattle breeds in Mayotte and on forecasts of livestock production zones in 2050 in Australia. Adaptation strategies against heat stress are to migrate animal to regions less prone to heat, create options to cool the animals (water sprays, showers or isolation) and maintain local breeds' presence and shift to other cattle breeds more resistant to heat stress. Regarding adaptation strategies to drought, studies carried out in Australia and Madagascar suggest a better pasture management through harvest and forages conservation, multi-species pastures, grazing rotation and selling animals before dry periods. Markets fluctuations and uncertain environments lead to the promotion of recycling and limitation of wastes along the production chain while reducing the impact on the environment by substituting mineral fertilizers with livestock production effluents. The evaluation of cost-benefit relations of the different adaptation methods is still a key question for the future as well as the development and the spread of the management tools allowing assessments and monitoring over time of crops and animals performances, particular in contexts with poor references.

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