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## Non-local cattle breed farmers’ perception of climate variability and adaptation strategies in Benin

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### Abstract

In response to the growing demand for livestock products, zebu cattle breeds from the semi-arid Sahelian zone, perceived as “high milk-producing”, such as Gudali, White Fulani, M’Bororo, and Azawak, have been increasingly introduced into various livestock production systems in central and southern Benin. However, in these sub-humid and humid zones, these breeds are facing environmental and anthropogenic challenges that may prevent them from expressing their full production potential. This study aimed to document the perception of keepers of non-local cattle breeds of the impacts of climate change on their cattle keeping and analyse possible adaptation strategies. Randomly selected 305 keepers of non-local cattle breeds were interviewed with a questionnaire in three vegetation zones (Guineo-Congolese, Guineo-Sudanian and Sudanian) of Benin. Comparing respondents’ perceptions to recently published climate trends showed that a majority was aware of a decrease in rainfall pattern (74.4 %) and of an increase in temperature (88.2 %). Perceptions did not differ between vegetation zones and agreed with rainfall and temperature data recorded during 1990–2020. In the surveyed herds, White Fulani (34.0 %), Gudali (20.4 %), Azawak (6.3 %) and M’Bororo (1.9 %) were encountered along with crossbreed zebu X taurine (28.4 %) and shorthorn taurine breeds (9.0 %). According to the respondents, the observed climatic changes negatively impact milk yields (99.7 %), herd reproduction (97.0 %), herd size (74.1 %), and threaten livestock productivity (92.5 %). In response to these negative impacts, respondents mentioned to increase crop residue feeding (80.7 %), continue long-distance herd mobility practice despite its ban (20.0 %), and shift to local taurine breeds (14.1 %). A logistic regression analysis revealed that vegetation zone and breed composition of the herd determined the choice of herd mobility. Keepers with more than 60 % White Fulani in their herd were 23 times more likely than others to practice mobility. However, long-distance mobility has been disrupted and is restrained to areas spared from rising insecurity caused by militant Islamist groups. In addition to climatic variability affecting forage availability, dwindling access of mobile herds to available pasture could be another important factor that hinders the expression of the performance potential of non-local breeds.

**Keywords:** Adaptation strategies, climate variability, logistic regression, non-local cattle breeds

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