

Cost and Benefits of Climate Resilient Livestock Production in Tropics: A Conceptual Analysis for Adaptation Techniques

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Climate change impacts are of serious concern in livestock production all over the world. Scientists have come up with several adaptation techniques to apply for climate resilient livestock production. The livestock farming requires adjustments in economic and social systems to adapt to climate change and its impacts for its sustainability. The climate resilient livestock production techniques that incur cost and the consequent benefits are found limited in previous studies compared to crop production. Hence this study was carried out to propose a conceptual model integrating cost incurring adaptation techniques and subsequent benefits which will be helpful to analyze the economics of livestock production under climate change in tropics. A detailed literature review was carried out to identify the potential cost incurring adaptation techniques for livestock production to thrive under climate change and their benefits. According to the literature reviewed, major cost incurring adaptation techniques were identified as adaptation to heat-stress, mitigation measures applied for drought tolerance and variable precipitation, adaptation against pests and diseases and adaptation for change in pasture and fodder production. The consequent benefits of the implementation of the adaptation techniques were identified as higher level of productivity under heat-stress, increased water use efficiency, improved animal welfare, and increase in pasture and fodder availability. From the conceptual analysis, it is concluded that the livestock farmers need to incur cost and obtain consequent benefits while adopting for climate change. From this backdrop, current study suggests that the available climate adaption techniques need to be investigated in detail and associate real-time cost and benefit analysis should be performed using the proposed conceptual model under local conditions to develop effective local policy decisions.

Keywords: adaptation measures, climate change, heat-stress, sustainability