Vulnerability of Farming Communities Practicing Livestock Monocultures or Crop-Livestock Integrated Systems to Climate Change: A Case Study in Ampara District

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Livestock either as monocultures or as crop-livestock integrated systems is an integral part of the socio-economic fabric and physical landscape of Ampara District, where the population remains largely rural. This study used Livelihood Vulnerability Index (LVI) and Intergovernmental Penal on Climate Change Vulnerability Index (VI–IPCC) to assess and compare the vulnerability of two types of livestock farming systems. A household survey among 200 farm families practicing livestock alone and as a component of crop-livestock integrated systems was carried out in four divisional secretariats (Nintavur, Sammanthura, Irakamam, and Ampara) in Ampara District. Eight major components were considered under LVI assessment: Socio-Demographics, Livelihood Strategies, Social Network, Health, Food, Water, Natural Disasters, and Climate Variability. Each major component made up of several sub-component variables that were averaged to calculate the weighted value of major components for each division. Assessment based on the IPCC framework considered exposure, adaptive capacity, and sensitivity. Goat farmers showed a higher vulnerability score for livelihood strategies (0.620) major component. Poultry farmers reported a higher vulnerability score for water (0.083) major component. Buffalo farmers gave a higher vulnerability score for social networks (0.576). Integrated farmers recorded a higher vulnerability score for socio-demographics (0.255), health (0.418), food (0.451) and natural disasters (0.559) major components. For the VI–IPCC, Goat farmers reported a higher adaptive capacity score (0.597). Integrated farmers have a higher exposure score (0.460) and a sensitivity score (0.291). Irakamam division and Poultry farmers were identified as the most vulnerable, while Ampara division and goat farmers were the least vulnerable. Compared to crop-livestock integrated systems, livestock alone systems are concluded to be more vulnerable to climate change.

Keywords: Climate change, Livestock farming systems, Vulnerability, Vulnerability index