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Impacts of community-based sheep breeding programme to household adaptive capacity towards climate change under extensive livestock production system of Ethiopia

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Abstract

Adaptive capacity in the context of climate change is a system's, institution's, or household's ability to adjust to current and future climate variability, reduce impacts, seize opportunities, and cope with consequences. It entails building conditions and capabilities to address the social, economic, and environmental effects of climate change, integrating social, economic, and human capital to enable efficient adaptation. This study examines the contribution of a community-based sheep breeding programme (CBBP) to enhancing household adaptive capacity in response to climate change within Ethiopia's extensive livestock production system. A cross-sectional study with a multistage sampling technique was used to select 213 sheep producers for household interviews across the selected three districts. Menz Mama district for Menz sheep producers and Adiyo-Kaka and Telo districts for Bonga sheep producers. The respondents were sampled from CBBP participants and non-participants to examine the net impact of the CBBP intervention. Besides the household interview, 14 key informant interviews and 6 focus group discussions were conducted. The Local Adaptive Capacity (LAC) framework followed the data collection and analysis for adaptive capacity. The analysis was done through the Propensity Score Matching model of STATA 14. Households participating in the CBBP programme have significantly ($p < 0.05$) higher adaptive capacity compared to the non-participants. The participants have a higher average treatment effect (ATE) on adaptive capacity across various LAC indicators, including financial assets, human assets, social assets, institutions and entitlements, knowledge and information, innovation and technology, and flexible and forward-looking decision-making. The positive contribution of CBBP for adaptive capacity is due to the presence of integrative activities such as capacity building through trainings, market linkage, and improved feed and animal health interventions that have a positive relationship with LAC indicators. In conclusion, community-based breeding programmes in Menz and Bonga sheep enhance the adaptive capacity of smallholder farmers rearing these animals. Hence, it is recommended to integrate CBBP and its interventions into Ethiopia's future climate change adaptation and mitigation strategies.

Keywords: Climate change, community-based breeding program, cross-sectional, local adaptive capacity, sheep