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# Agroecology in motion: Driving sustainable transitions in peri-urban cattle farming in Benin

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**Abstract**

Cattle farming plays a pivotal role in ensuring food security and sustaining livelihoods in Benin. Yet, its long-term viability is challenged by environmental pressures, economic constraints, and social dynamics, particularly in rapidly expanding peri-urban areas. While agroecological practices are increasingly promoted as pathways to resilience, their actual integration at farm-level remains underexplored, limiting insights into system-wide transformation. This study applies the Food and Agriculture Organisation's Tool for Agroecology Performance Evaluation (TAPE) to assess the degree of agroecological transition among cattle farms in three municipalities in southern Benin (Grand-Popo, Ouidah, and Abomey-Calavi). Using a snowball sampling, 130 cattle farmers were surveyed through semi-structured questionnaire interviews with data analysed via descriptive statistics and multivariate methods. Findings reveal an overall modest agroecological performance (47.6 %) with the Characterisation of Agroecological Transitions (CAET) distinguishing two farm types: (i) non-agroecological farms, (62 %, CAET score of 44.4 %), characterised by limited tree cover (40.7 % without trees), low crop diversification (82.7 %), and minimal recycling of crop residues; and (ii) transitioning farms (38 %, CAET score of 53.2 %), showing stronger tree integration, greater production diversification and reliance on local varieties (55.1 %), and improved nutrient cycling through crop residues (34.7 %) and manure use (55.9 %). Across agroecological dimensions, diversity, synergies, and human and social values scored lowest (<44 %), indicating weak systemic integration. Conversely, higher scores (> 50 %) for culture and food traditions, circular and solidarity economy, and knowledge co-creation and sharing highlight strong cultural and community embeddedness of practices. These results position peri-urban cattle farming in Benin at an early but promising stage of agroecological transition. To accelerate progress, targeted interventions are needed, particularly in crop-livestock diversification, integrated agroforestry, and enhanced nutrient recycling. Strengthening extension services and improving farmers' access to technical and institutional support will be critical to foster resilient peri-urban cattle farming systems.

**Keywords:** Crop-livestock integration, TAPE, tropical livestock systems

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