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Restoring ecological integrity through agroforestry: Survey insight from Ghana's forest fringe communities

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Abstract

The ecological integrity of Ghana's forest-fringe landscapes is under increasing pressure from land degradation, deforestation, and biodiversity loss. These changes are not distant environmental statistics; they are lived realities for farming households whose livelihoods depend on the land's resilience. In recognition of this urgency, the EMBRACE project, led by CSIR–Crops Research Institute, conducted ecological surveys across Ashanti, Ahafo, and Western North regions to establish baseline data for agroecological restoration. Our participatory approach combined structured questionnaires, focus group discussions, and ecological sampling, ensuring that both scientific rigour and community voices shaped the findings. Results revealed a striking ecological divide. Forest reserves supported higher species richness, with abundant insects, birds, and butterflies, while adjacent degraded lands showed diminished diversity and weakened ecological functions. Farmers themselves vividly articulated these differences, describing how soils on degraded plots “no longer breathe” and how the absence of shade trees intensifies heat stress on crops. Socio-economic data added further context: farming was the dominant occupation, migration rates were high, and formal education levels were limited, particularly in Ahafo and Western North. Yet, amid these challenges, agroforestry awareness was widespread (75–93%), and more than 90% of farmers actively integrated trees into cropping systems, deliberately preserving native species during land preparation. Farmers consistently cited practical benefits of shade, soil fertility, erosion control, and climate regulation, demonstrating that ecological stewardship is rooted in livelihood needs rather than in cultural taboos alone. These insights highlight clear pathways for scaling interventions: embedding agroforestry into farmer field schools, promoting native tree species, and tailoring restoration models to local ecological zones. By fostering community ownership, EMBRACE strengthens the feasibility of long-term ecological stewardship. Agroforestry thus emerges not only as a conservation strategy but as a lifeline restoring biodiversity while securing the resilience of rural livelihoods in Ghana's forest-fringe communities.

Keywords: Agroforestry, biodiversity, ecological restoration, forest fringe communities, Ghana, participatory research

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