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Climate Adaptations to Traditional Milpa Farming Practices in Mayan Communities of Southern Belize: A Socio-Ecological Systems Approach

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Abstract : Climate change has exacerbated food and livelihood insecurity for Mayan milpa farmers in Central America. For centuries, milpa farming has been sustainable for subsistence; however, in the last 50 years, milpas have become less reliable due to accelerating climate change, resource degradation, declining markets, poverty, and other factors. Using interviews with extension leaders and milpa farmers in Belize, this qualitative study examines the capacity for increasing climate-smart agriculture (CSA) aspects of existing traditional milpa practices, specifically no-burn mulching, soil enrichment, and the use of cover plants. Applying community capitals and socio-ecological systems frameworks, this study finds four key capitals were perceived by farmers and agriculture extension leaders as barriers for increasing CSA practices: (1) human-capacity, (2) financial, (3) infrastructure, and (4) governance-justice capitals. The key barriers include a lack of CSA technology and pest management knowledge-sharing (human-capacity), unreliable roads and utility services (infrastructure), the closure of small markets and crop-buying programs in Belize (financial), and constraints on extension services and exacerbating a sense of marginalization in Maya communities (governance-justice). Recommendations are presented for government action to reduce barriers and facilitate an increase in milpa crop productivity, promote food and livelihood security, and enable climate resilience of Mayan milpa communities in Belize.

Keywords : socio-ecological systems, community capitals, climate-smart agriculture, food security, milpa, Belize
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