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Understanding the farmers’ stewardship of neglected and underutilised crops in Timor’s drylands

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Abstract

Neglected and underutilised species (NUS) primarily consist of wild or semi-domesticated varieties that have adapted to their local environments, as well as neglected varieties of mainstream crops. They are also referred to as traditional crops, orphan crops, lost or forgotten food crops, and minor crops. Understanding the biocultural significance of NUS and how communities have managed them is a key strategy for mainstreaming them in crop production while conserving the traditional and local knowledge associated with them. We address these research gaps through a study of farmers’ stewardship of NUS on mainland Timor Island, Indonesia. In this area, smallholder farmers cultivate NUS as staple crops and for many other purposes. Although some of these species originated in forests and remain connected to forest-based knowledge systems, farmers today manage them primarily in agricultural landscapes. We conducted a photo-elicitation survey involving 224 farmers across five crop types: corn, lima beans, vegetable-hummingbirds, rice beans, and yams. We appraise 1) how farmers steward NUS, 2) the influence of farmers’ motivations, capacities, and actions on ecological and social outcomes, and 3) the pathways to enhance biocultural conservation and food system transformation by utilising mixed-effects logistic regression with false discovery rate correction. Farmers steward NUS mainly to provide local food for their families and to preserve their food culture. By sharing seeds and knowledge within their communities, they practice traditional farming methods. Respondents highlight key benefits such as improved food security, greater dietary diversity, and better soil quality. We identified that traditional practices, knowledge sharing, and social support mechanisms emerged as the strongest predictors of ecological and cultural outcomes. These findings illustrate that the potential for transforming the food system can be unlocked by understanding the actions, motivations, and capacities of farmers in their stewardship practices. Our findings further indicate that interventions of local stewardship should address multiple capacity dimensions as they are mutually reinforcing. Recognizing farmers as stewards rather than mere resource users provides a practical approach to biocultural conservation, as their stewardship is rooted in reciprocal relationships between humans and nature.

Keywords: Biocultural conservation, food system transformation, mixed-effects logistic regression, neglected and underutilised species, stewardship, Timor

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