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To maintain vegetable agro-biodiversity for nutrition security: insights from ethnic minorities in northern Vietnam

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Abstract

Vegetables are crucial elements to ensure food and nutrition security. Ethnic minority communities in Northern Vietnam are the key holder of vegetable diversity but are also suffering from low nutrient intake and nutrition-rich food crises. Home-grown crops, including vegetables, are the major source of daily food and/or income that on which farmers have sovereignty and easy access. This study aimed at exploring the associations of environmental, socio-economic and agro-ecological characteristics, and seed diversity with the current vegetable agro-biodiversity in different ethnic minority communities in Northern Vietnam. Mixed methods included a quantitative household survey (409 farmers), qualitative farmer focus group discussions (13 FGDs) and key informant interviews (31 stakeholders) executed in 2019–2020. Variable importance evaluation was implemented to select the most important variables using projection predictive variable selection approaches by R package projpred v2.4.0. Bayesian inference approach was employed using R package brms v2.19.0 for the final analysis with the dependent variables being the total number of vegetable crops grown per household and the farmer’s decision to source seed from external sources. Given the rich diversity of vegetables at landscape and community levels, diversity was quite modest at the household level, and a large variation in crops grown was observed among households within and between ethnic communities, reflecting households’ preference diversity. A larger cropping land but not land for vegetables, more diversity of seed sources, better access to information, and home gardens supported a higher diversity of vegetables. In addition, vegetable availability was highly seasonal, and there were critically lean periods for vegetable availability which hints at an important shortage of vegetables for home consumption. Regarding farmers’ seed choice, when starting materials needed were more diverse and given farmers’ trust in seed sources, they intended to seek seed from external sources (i.e., involvement in integrated seed systems). Also, if vegetables were primarily grown for home consumption, the self-saved seed was prioritised. We recommend that it is necessary to enhance farmers’ access to information, and diversification of reliable seed sources via bolstering an integrated seed system, and empowerment of local market channels for enhanced seed and vegetable diversity.

Keywords: Bayesian, ethnic minority, integrated seed system, nutrition security, seed source, vegetable diversity