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"Reconcile land system changes
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Factors influencing the decision on forage development by crop-livestock farmers in northwest Vietnam

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Abstract

In the Northwest region of Vietnam, large ruminant production plays a crucial role in agricultural systems due to its socio-economic contribution. Dien Bien province ranks second in cattle population in this region, with 228.9 million heads in 2021. Cattle population has grown at an average annual rate of 12.9 % since 2010. This development was driven by increasing domestic demand for beef and supportive policies for livestock production. However, forage shortage in the winter season remains a major constraint due to reduced grasslands from the expansion of intensive cropping, land-use policy changes, and reforestation programs. On-farm forage cultivation has been promoted as a viable strategy to enhance livestock nutrition. Improved forage varieties have been introduced and adopted through cattle intensification programmes and agroforestry initiatives over the last two decades. Existing research has not fully examined how other sub-production systems influence farmers' decision-making in mixed farming contexts. This study examines the factors influencing farmers' decisions to adopt forage cultivation and expansion in mixed crop-livestock systems in Tuan Giao district, Dien Bien province. In-depth interviews were conducted with 69 farmers across three communes. Descriptive statistics and multiple linear regression models, using Excel software 2016 and SPSS software package 20, were used to analyse the determinants of forage cultivation and expansion. Findings indicate that farmers' decisions were primarily driven by feed shortages and limited grazing access rather than the perceived benefits of improved forage varieties. Information and planting materials were mainly exchanged through informal networks, such as neighbouring farmers and relatives, rather than formal channels. A key barrier to forage expansion was the limited availability of land. Regression models confirmed that land availability significantly influenced forage adoption. Other factors varied depending on land use priorities for livestock, maize, and perennial tree crops. Positive factors included herd size, feed cost, macadamia cultivation, age, and education level; while coffee and maize cultivation negatively affected forage area. These findings highlight the need for policies and extension programmes

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that address land constraints and promote formal knowledge-sharing pathways to support sustainable forage production in crop-livestock systems.

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