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Determinants of forage crops diversification among smallholder dairy farmers in Kenya

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Abstract

Smallholder dairy farmers in Kenya face feed shortages and poor-quality feeds, leading to low milk productivity. Napier grass monoculture dominates smallholder fodder systems, which increases vulnerability to pests, diseases, and climate stresses. Furthermore, the forage monoculture contributes to habitat destruction, soil degradation, and loss of biodiversity. Forage crop diversification is a promising pathway to enhancing feed availability and quality, improving livestock nutrition and productivity, restoring soil health, and fostering feed system resilience. However, the drivers of forage diversification in Kenya remain underexplored. This study addresses this gap using data from an endline survey conducted between October and November 2024 under the CGIAR Initiative on Sustainable Animal Productivity for Livelihoods, Nutrition, and Gender Inclusion (SAPLING). A sample of 658 dairy farmers who had planted at least one forage crop, drawn from seven dairy cooperatives in Uasin-Gishu, Nyandarua, and Kakamega counties was used for analysis. Data was analysed using descriptive statistics and a probit regression model. Results show that 57 % of the farmers practised forage crop diversification, while 43 % relied on forage monoculture. Probit analysis shows that social, economic and physical capital may increase the likelihood of diversification (secondary education or higher, $p = 0.008$; off-farm income, $p = 0.039$; and larger farm size, $p = 0.009$). Access to knowledge and technologies may also contribute to forage crop diversification (feeding extension services, $p = 0.022$; and use of artificial insemination, $p = 0.006$). In contrast, larger household size, $p = 0.037$; and receipt of free forage seeds, $p = 0.003$; negatively influence forage crop diversification, indicating that labour may not be a serious constraint, and that development interventions do not always lead to expected outcomes. Policymakers, research organisations and non-governmental organisations should consider the aspect of forage diversification when expanding feeding extension services, promoting the use of improved technologies such as artificial insemination, and supporting rural off-farm income initiatives. Moreover, they should revisit the design of free forage seeds or planting materials distribution programmes to encourage forage diversity rather than reinforcing monoculture systems.

Keywords: Determinants, diversification, forage crops, Kenya

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