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**Enhancing Adoption of Soil Erosion Control Technologies Through Enactment of Landcare
Bylaws: Evidence From Mt. Elgon Highlands in Eastern Uganda**

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Enhancing Adoption of Soil Erosion Control Technologies Through Enactment of Landcare Bylaws: Evidence From Mt. Elgon Highlands in Eastern Uganda

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Introduction

Uganda is challenged with the task of increasing agricultural land productivity in its pursuit of agricultural-led economic growth. Land productivity is remarkably undermined by land degradation and highlands are the worst affected areas (MAAIF, 2010). Soil erosion and nutrient depletion account for about 85% of land degradation (NEMA, 2001) and therefore control of soil erosion is a prerequisite for increasing land productivity. While the National Agricultural Research System has generated technologies that can sustainably reduce soil erosion, most farmers have not adopted them. The low incidence of technology adoption has been partly attributed to lack of locally enacted bylaws, limited involvement of local communities in bylaws formulation and weak enforcement of penalties. This case study uses descriptive statistics to: measure the extent of involvement of local communities in bylaws formulation and implementation; determine the effect of local community involvement in bylaws formulation on adoption of technologies stipulated in the bylaws; and determine the effect of bylaws on technology adoption.

Study area, data and methods

- Case study of Kween district located in Mt. Elgon highlands in Eastern Uganda. Farmers in Kween district experience severe soil erosion and the local communities have formulated land-care bylaws to deal with this problem.
- Sources of data included a survey of 120 farmers, key informant interviews, focus group discussions and project documents of Kapchorwa District Land-care Chapter (KADLACC).
- A multi-stage sampling procedure involving both purposive and random sampling was used to draw the sample of 120 farmers.
- Data was analysed in STATA and Excel to generate descriptive statistics - frequencies, percentages, two-sample proportions test, 1-sided Fishers’ exact test and graphs.

Findings

Participation of local communities in formulation of land-care bylaws

- The level of local community involvement in formulation of the land-care bylaws was very low (slightly over 9%) and was dominated by men (90% of participants).
- The most commonly cited reason for not participating was “lack of information on the time when and venue where the bylaws formulations processes were being held” (about 60%) and “not invited to participate” (26%).
- Focusing on the participants only, findings indicate that the proportion of male participants was significantly higher than that of females ($z = 16.781$, $p = 0.00$).

Table 1: Attendance of bylaws formulation workshops by sex

Workshop participants	Percent (%) of participants by workshop		
	Capacity building & technical backstopping	Consultation on draft bylaws	Parish level consultation on NRM
All (n = 220)	30.45	18.18	14.55
Men (n = 198)	30.81	19.70	15.66
Women (n = 22)	27.27	4.55	4.55
<i>z</i>	5.52	6.30	5.51
<i>p</i>	0.00	0.00	0.00

Source: Kapchorwa District Land Care Chapter – Workshops attendance lists

- Local community involvement in all the three workshops was dominated by men and the statistics revealed that the differences in the levels of participation by sex were statistically significant at 1% (Table 1).
- Since sometimes men’s interests differ from those of women (Sanginga *et al.*, 2005), equal representation of both sexes in bylaws formulation processes is certainly vital.

Implementation of land-care bylaws

- In Kween district, land-care bylaws are supposed to be implemented through collective responsibility of local leaders, farmers, and the Bylaws Implementation Committee (BLIC).
- As the case was with involvement in bylaws formulation, majority (>64%, N = 70) of the members on the Bylaws Implementation Committee are men
 - Although the roles of the BLIC are well spelt out, individuals have not yet been assigned specific roles and neither have they been trained and empowered to perform their roles.

Findings continued

Adoption of soil erosion control technologies stipulated in the bylaws

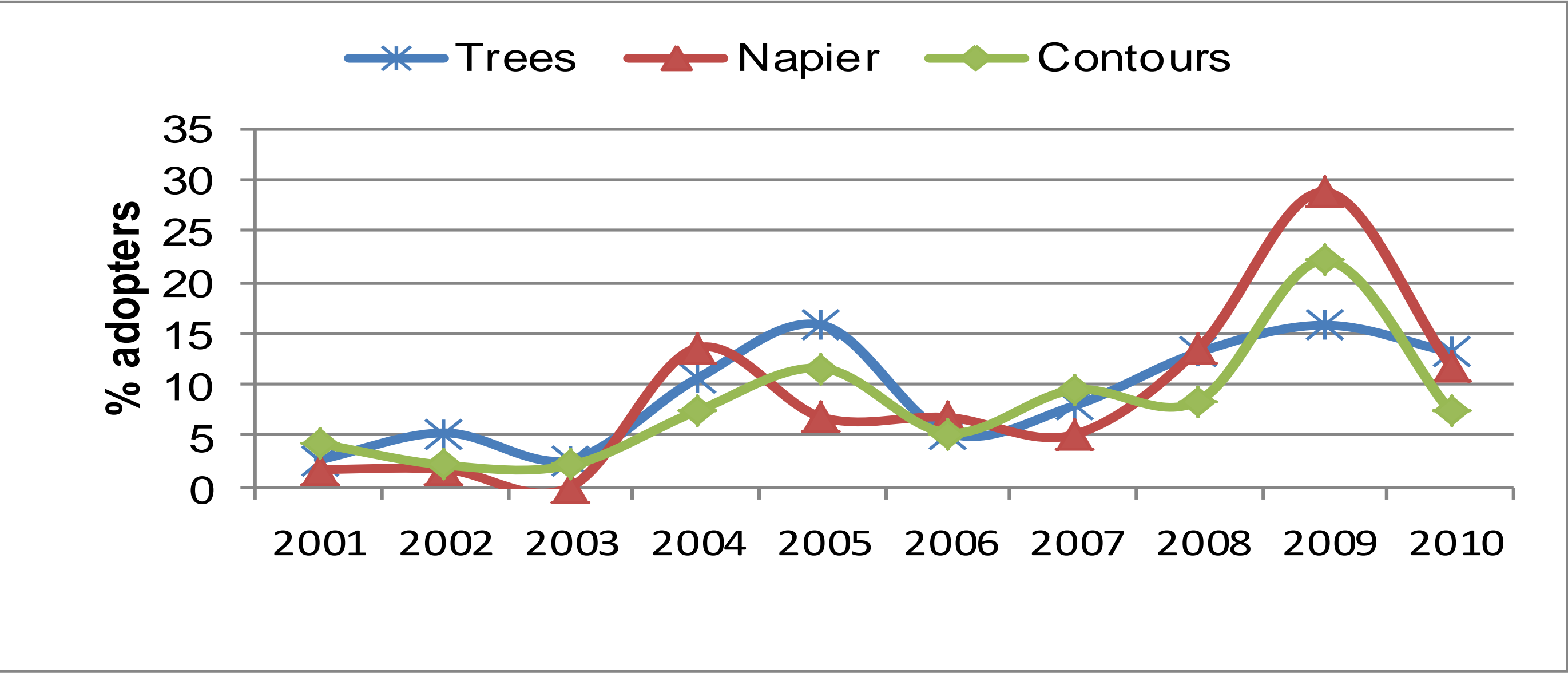
- Except for contours, at 5% level of significance there is sufficient statistical evidence indicating that involvement of local communities in formulation of bylaws increases adoption of technologies stipulated therein (Table 2).
- In terms of proportions, adoption of technologies stipulated in the bylaws is highest among farmers who were involved in the formulation of the bylaws – 34.6% higher for Napier grass and 32.8% higher for agro-forestry trees.

Table 2: Technology adoption (%) by participation in bylaws formulation

	Percentage (%) of adopters of SEC technologies		
	Contours	Napier grass	Agro-forest trees
Participants (n = 11)	81.82	81.82	63.64
Non-participants (n = 108)	83.33	47.22	30.84
Overall (n = 119)	83.19	50.42	33.61
1-sided Fishers’ exact	0.585	0.029	0.035

- While the above findings suggest a strong relationship between local community involvement in bylaws formulation and technology adoption, the mere presence of the bylaws equally stimulated technology adoption in Kween district.
- Figure 1 shows that although the percentage of adopters has been gradually increasing for the past 10 years (except for the year 2010), the highest incidences of adoption of the three technologies were recorded for the year 2009.
- In 2009, the land-care bylaws were passed and popularised through radio messages, meetings at village, parish and sub-county levels, and display of posters in some trading centres. Thus, the increased incidences of technology adoption is considered to have been an outcome of passing and popularising the bylaws.

Figure 1: Trends of adopting technologies stated in the bylaws



Conclusions & Recommendations

- Holding other factors constant, both bylaws and the involvement of local communities in their formulation increase the adoption of technologies stipulated in the bylaws.
- Adoption of technologies stipulated in the bylaws is highest among farmers who were involved in the formulation of the bylaws. The sharp increase in adoption levels of all technologies stipulated in the bylaws during the year (2009) - when the bylaws were passed and popularized, is an indication that bylaws increase technology adoption.
- Despite the importance of the bylaws, penalties for breaking them are yet to be enforced, partly due to inadequate capacity and empowerment of the Bylaws Implementation Committee (BLIC) to undertake their roles.
- Government of Uganda together with NGOs such as the African Highlands Initiative (AHI) and International Union of Conservation of Nature (IUCN) should provide technical support to the BLIC members to enable them execute their specific roles.
- Therefore, we recommend that other districts experiencing the challenge of land degradation should formulate bylaws that are specific and relevant to their socio-economic situation.

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