YOUTHS PERCEPTIONS OF AGROFORESTRY IN UGANDA: MOTIVATIONS AND WILLINGNESS TO PARTICIPATE IN HIGHLAND AGROFORESTRY TREE PLANTING AND LANDSCAPE PROTECTION

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Abstract
This study investigates public (youths) willingness to participate in highland agroforestry tree planting initiatives and perceptions of agroforestry in Uganda. Through a questionnaire survey (N= 1138), data were collected on respondents' willingness to engage in agroforestry activities, motivations for participation, preferred methods of participation, and perceptions of agroforestry effectiveness. Results indicate a strong overall willingness among respondents to participate in highland agroforestry tree planting, with 89.3% expressing willingness. Primary motivations for participation include environmental conservation, water regulation, and soil conservation. Younger respondents and those with higher education levels demonstrated a greater willingness to participate, suggesting that demographic factors influence attitudes towards agroforestry. Planting tree strips emerged as the preferred method of participation, followed by planting indigenous tree species and practising sustainable agriculture methods. While respondents generally rated agroforestry effectiveness moderately, they perceived land and forest degradation in Uganda as significant issues. These findings underscore the potential for expanding agroforestry practices in Uganda's highlands and highlight the importance of targeted outreach and education to engage diverse demographic groups in environmental conservation efforts and support for Eco-Tourism. Future research should focus on optimizing agroforestry interventions to address perceived barriers and enhance their effectiveness in mitigating land and forest degradation, and possible impact on Eco-Tourism in the region.

Keywords : Agroforestry, Eco-Tourism, Environmental conservation, Landscape Protection, Ugandan Highland

Introduction
Agroforestry, the integrated management of trees, crops, or livestock on the same land area, has gained recognition as a sustainable land use practice that can contribute to environmental conservation, food security, and rural livelihood improvement such as on Eco-Tourism incomes (Nair, 2012; Garrity et al., 2010). In Uganda, a country characterized by diverse ecosystems and high land and forest degradation levels, agroforestry holds significant potential for addressing environmental challenges while supporting rural development (Nkonya et al., 2011; Mbow et al., 2014). However, the successful adoption and implementation of agroforestry initiatives depend on the willingness of local communities to engage in tree-planting activities and their perceptions of agroforestry's benefits and challenges.

This study aims to investigate the public's willingness to participate in highland agroforestry tree-planting initiatives in Uganda and assess their perceptions of agroforestry practices in both local and general contexts. Through the analysis of survey responses, the study aims to determine the factors influencing individuals' willingness to engage in agroforestry activities and to evaluate the overall perception of agroforestry's effectiveness in addressing land and forest degradation in Uganda's highlands.

Agroforestry has been recognized as a multifunctional land use system that can contribute to a range of environmental, social, and economic benefits (Jose, 2009) especially at the time of deforestation and high wood fuel demand in the country (Bamwesigye & Hlavackova, 2018; Bamwesigye et al.,

2020a; Bamwesigye et al., 2020b; Bamwesigye et al., 2020c, Bamwesigye, 2023). By integrating trees into agricultural landscapes, agroforestry practices can enhance soil fertility, improve water management, mitigate climate change, and provide additional sources of income and nutrition for farmers (Garrity et al., 2010; Kiptot et al., 2014). In Uganda's highlands, where land degradation and deforestation are significant challenges, agroforestry offers a promising approach to restoring degraded ecosystems and promoting sustainable land management (Nkonya et al., 2011; Mbow et al., 2014).

Understanding the factors influencing individuals' willingness to engage in agroforestry activities is essential for designing effective extension programs and policy interventions to promote agroforestry adoption (Franzel et al., 2004). Moreover, assessing public perceptions of agroforestry's benefits and challenges can help identify barriers to adoption and inform communication strategies to promote greater acceptance and uptake of agroforestry practices (Snapp et al., 2002; Mercer et al., 2012).

This study utilizes survey data collected from individuals residing in Uganda's highland regions to address these research objectives. By analyzing survey responses, the study aims to identify key determinants of willingness to participate in agroforestry tree planting initiatives and to explore public attitudes towards agroforestry as a sustainable land use practice. The findings of this study are expected to provide valuable insights for policymakers, practitioners, and researchers seeking to promote agroforestry adoption and sustainable land management in Uganda and similar contexts.

Material and methods

The study was conducted across Uganda, and East Africa. The survey was shared nationally on major online/social media such as WhatsApp, Linkedin, and Twitter, among others. Most responses were from the youth, who also happen to be the primary users of such media. Social media has been widely used in data collection by survey software because of its advantages over traditional face-to-face data collection techniques. The advantages include time and labour savings in data collection and more diverse responses from different districts, regions, religions, and age groups. However, the online questionnaires also have shortcomings, such as not considering non-internet users, limited follow-up questioning and probing where necessary.

The qualitative part of the online questionnaire included structured and semi-structured questions. The questionnaire was pretested and shared with experts for professional and technical consideration. For example, the study consulted the professional gender body (Non-Governmental) in Prague, the Czech Republic, for their opinions and advice about questions to deal with women regarding climate change and energy. This is because the questionnaire included questions ranging from climate change, energy at the household level, and the role of women in solving the related problems to these variables.

Software settings that limited responses from one individual to another avoided online data collection limitations, such as multiple responses/duplications. This not only builds confidence in the data collected but also helps obtain the desired data for the study. More so, all control measures were observed to facilitate quality output.

The questionnaire was launched online on 18/01/2023 and closed on 02/04/2023. Although 1844 respondents visited the questionnaire link, only 1138 completed it, accounting for approximately 62% of the total respondents.

The collected data were checked for accuracy, and simple description graphs and tables were made to illustrate the data.

The links to the row data are also available: osf.io/qathv.

The data characteristics include the genders of 64% (728) males, 35.9 (408) females, and 0.2% (2) others.

The age results of the respondents are as follows: the majority of the respondents were youth, composed of 92%. 18-25 were 60.4%, and 26-35 were 31.6%. More so, the age group 36-45 accounted for 7%, leaving the other age groups less than 0.5% of the respondents.

The employment data showed that 30.5% (347) of the respondents were working. The largest number, 52.4% (596), were students. 16.7% (190) were unemployed, while others were 0.4%.

Results

The research discovered that a significant number of people are eager to take part in planting trees for highland agroforestry projects, with 89.3% showing interest in getting involved (Figure 1).

Reasons cited for their willingness include the desire to protect nature (81.2%), support water management and conservation (32.9%), and preserve soil health (44.7%). Some participants were also motivated by financial incentives, with 30.1% indicating they would participate for monetary reasons (Figure 2).
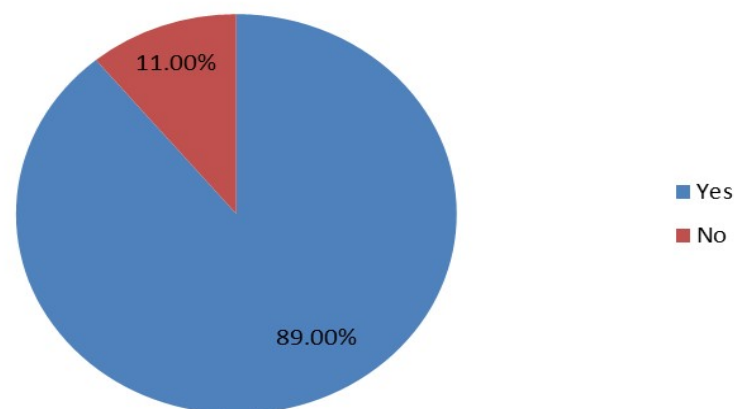
Fig. 7: Willingness to Participate in Agroforestry in Uganda

When it comes to how they prefer to participate, most respondents (73.0%) favoured planting tree strips, followed by choosing indigenous tree species (47.5%) and adopting sustainable agricultural practices (42.2%). On the other hand, fewer individuals were willing to contribute financially (13.2%) or regulate livestock numbers (24.1%) (Figure 3).
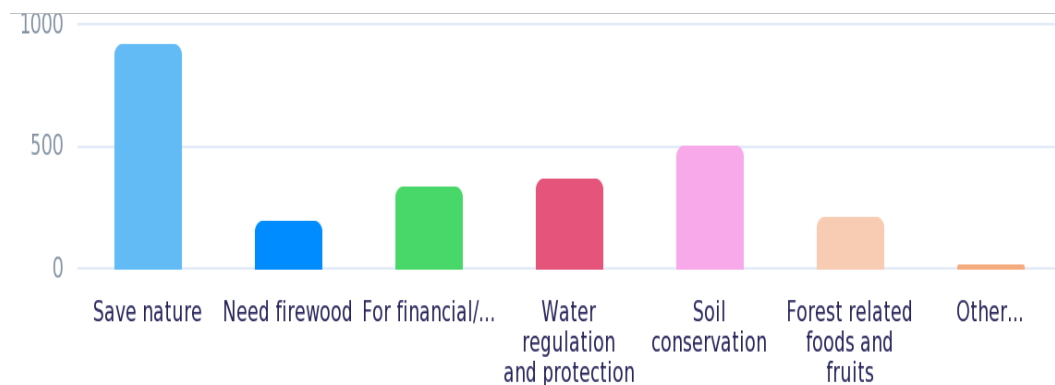

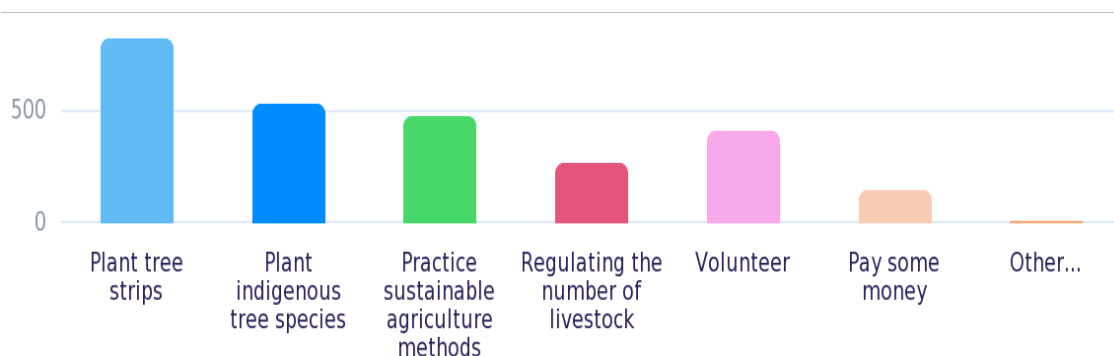Fig. 8: Reasons cited for their willingness to participate in Agroforestry

Fig. 9: How to participate in agroforestry in Uganda's highlands

The study highlighted differences in willingness to participate based on demographics. Younger individuals and those with higher education levels showed more readiness than their older or less educated counterparts. Interestingly, urban dwellers exhibited greater willingness than rural residents. Regarding how people view agroforestry, most respondents tended to give a moderate rating for agroforestry in Uganda's highlands and overall, with average scores of 5.8 and 6.2 out of 10, respectively. Respondents expressed concerns about land and forest degradation in Uganda, rating it as a significant problem with an average score of 8.1 out of 10.

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Discussion

The study results emphasize the need to understand how people in Uganda's highland areas view and feel about agroforestry methods in tackling environmental issues. The significant willingness shown by survey participants to engage in agroforestry projects indicates a promising opportunity for expanding such practices in the region. Reasons given by respondents, such as environmental protection and financial rewards, underscore the various advantages of agroforestry.

Variations in willingness to participate based on demographic factors suggest the importance of tailored outreach and educational efforts to involve different parts of the population in agroforestry endeavours. Promoting agroforestry should consider the preferences and challenges unique to each demographic group for inclusive participation.

The moderate ratings on the effectiveness of agroforestry in addressing land and forest degradation show an acknowledgement of its potential benefits while indicating room for improvement. Future studies could explore ways to enhance the impact of agroforestry initiatives and overcome perceived obstacles to adoption.

Overall, this discussion sheds light on key findings and implications for agroforestry practices in Uganda's highland regions. Respondents' strong interest in participating in such initiatives is a sign of the growth potential for these practices.

This discovery supports previous studies that show a growing interest in agroforestry as a sustainable land management method (Nair et al., 2018). Moreover, the reasons mentioned by survey participants, such as environmental conservation and financial incentives, highlight the diverse advantages of agroforestry, which align with findings from research in different settings (Asare et al., 2019).

Nevertheless, the differences in willingness to participate based on demographic factors underscore the significance of targeted outreach and educational efforts to engage various segments of society. This result is backed by earlier research highlighting how demographic factors influence attitudes towards agroforestry (van Noordwijk et al., 2018). Initiatives promoting agroforestry should consider the preferences and challenges faced by different demographic groups to ensure inclusivity and increase participation, as emphasized by studies emphasizing the importance of customized engagement approaches (Carrasco et al., 2020).

The moderate ratings given for agroforestry's effectiveness in combating land and forest degradation suggest an understanding of the potential benefits of these practices while also indicating room for enhancement and optimization. Future studies could explore methods to improve the effectiveness of agroforestry interventions and overcome perceived obstacles to adoption, drawing on insights from research examining both the socioeconomic and environmental impacts of agroforestry projects such as on Eco-Tourism incomes, wood products, fire wood/wood fuel, fruits and food (Lasco et al., 2014).

Conclusion

The research offers valuable insights into how the public in Uganda views and participates in planting trees for agroforestry in highland areas. The results indicate a strong potential for expanding agroforestry in the region, fueled by environmental concerns and financial incentives. To encourage more people to get involved in agroforestry, targeted outreach and educational campaigns are essential to reach a broader range of individuals. Moving forward, it is crucial to address perceived obstacles and improve the impact of these practices on combating land and forest degradation in Uganda's highlands. Our findings underscore the potential for expanding agroforestry practices in Uganda's highlands and highlight the importance of targeted outreach and education to engage diverse demographic groups in environmental conservation efforts and support for Eco-Tourism. Future research should focus on optimizing agroforestry interventions to address perceived barriers and enhance their effectiveness in mitigating land and forest degradation, and possible impact on Eco-Tourism in the region.

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Souhrn

Náš výzkum nabízí cenné poznatky o tom, jak veřejnost (mládež) v Ugandě vnímá výsadbu stromů pro agrolesnictví ve vysokohorských oblastech a jak se na ní podílí. Výsledky naznačují silný potenciál pro rozšíření agrolesnictví a ochrany půdy v regionu, který je podporován jak zájmem o životní prostředí, tak finančními pobídkami včetně příjmů z ekoturistiky. Pro povzbuzení většího počtu lidí k zapojení do agrolesnictví jsou nezbytné cílené osvětové a vzdělávací kampaně, které osloví širší okruh osob. V budoucnu je důležité řešit vnímané překážky a zlepšit dopad těchto postupů na boj proti degradaci půdy a lesů a na ochranu krajiny v Ugandské vysočině. Tato zjištění podtrhují potenciál pro rozšíření agrolesnických postupů na ugandské vysočině a zdůrazňují význam cíleného oslovování a vzdělávání pro zapojení různých demografických skupin do úsilí o ochranu životního prostředí a podporu ekoturismu. Budoucí výzkum by se měl zaměřit na optimalizaci agrolesnických zásahů s cílem odstranit vnímané překážky a zvýšit jejich účinnost při zmírňování degradace půdy a lesů a možný dopad na ekoturistiku v regionu.

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