African Ecology and Conservation (Environmental/Earth Science)

Community-led Afforestation Campaigns in Ethiopia's Semi-arid Regions: Evaluating Seedling Growth Rates and Strategic Expansion Over Four Years

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Abstract

Community-led afforestation campaigns have been implemented in Ethiopia's semi-arid regions to combat desertification and enhance biodiversity. A comprehensive literature search was conducted using databases such as PubMed and Web of Science. Studies were selected based on specific criteria related to semi-arid Ethiopia's climate and vegetation types. Seedling survival rates varied between 60% and 85%, with a notable trend towards higher growth in the second year post-planting, suggesting optimal conditions for early-stage tree establishment. The review identifies strategies such as soil preparation techniques and species selection that contributed to increased seedling success. However, there is variability across different regions and seasons. Future research should focus on replicating successful strategies in other semi-arid areas of Ethiopia while accounting for regional differences in climate and soil conditions. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African Geography, Desertification, Biodiversity Conservation, Community Engagement, Seedling Growth Models, Longitudinal Studies, Spatial Analysis*

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