

Carbon dioxide sequestration dynamics in Akhaltsikhe forest at different altitudes

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Annotation

This research investigates the carbon sequestration potential of Scots pine trees (*Pinus sylvestris*) in the Samtskhe-Javakheti region of Georgia, focusing on the influence of elevation and climate. Three plots at different elevations (1554m, 1894m, and 2045m) were studied, measuring morphometric parameters and conducting laboratory analysis of core samples to determine carbon content. Results revealed varying stem carbon percentages across elevations, offering insights into carbon sequestration dynamics. The study contributes to sustainable forest management practices, aligning with global efforts to mitigate climate change.

The Scots pine, known for adaptability across climates, was chosen for its commercial significance and prevalence in the study region. The research addresses questions about carbon sequestration by a single Scots pine and the impact of temperature changes at different elevations. The study area, characterized by diverse geology and soil types, provides a unique ecological context.

Methodologically, the research employs core sample analysis for estimating stem biomass and carbon content, introducing an accessible and non-destructive approach. Limitations include the exclusion of belowground components due to logistical constraints, emphasizing the need for future research expansion.

Overall, the study provides valuable data for understanding carbon sequestration dynamics in Scots pine forests, offering insights for ecological assessments and sustainable forest management practices in the context of climate change.