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Comparison of Natural Regeneration in Natural Grassland and Pine Plantations across an Elevational Gradient in the Páramo Ecosystem of Southern Ecuador

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关键词	Andes; species richness; vegetation assemblage; plant cover; natural grassland; soil properties;
摘要	During the 1980s, reforestation programs using exotic species (Pinus spp.) were established in the páramo ecosystem of Ecuador. The aims of this study were: (1) to compare the natural regeneration between pine plantations (Pi) and natural grassland (NG) across an elevational gradient and (2) to identify the attributes of Pi and soil properties that were influencing herbaceous and woody plant composition and their plant cover. In total, six independent Pinus patula (Schltdl. & Cham. plantations (two per each elevation) were selected and distributed in an elevational range (3200–3400, 3400–3600, 3600–3800 m a.s.l.). Adjacent to Pi, plots in NG were established for recording natural regeneration. Both, namely the attributes and the soil samples, were measured in Pi. The results showed that natural regeneration differs significantly between both types of vegetation. As expected, NG holds more plant diversity than Pi; the elevational range showed a clear tendency that there was more herbaceous richness when elevation range increases, while the opposite was found for woody species. Moreover, attributes of Pi influenced herbaceous and woody vegetation, when saturated hydraulic conductivity (Ksat) in the soil, basal area (BA) and canopy density (CD) increased, herbaceous species richness and its cover decreseased; and when Ksat and the acidity in the soil increased, woody plants richness and its cover decreased. The plantations have facilitated the establishment of shade tolerant species. More studies are needed to evaluate if removal with adequate management of pine plantations can improve the restoration and conservation of the native vegetation of the páramo ecosystem.
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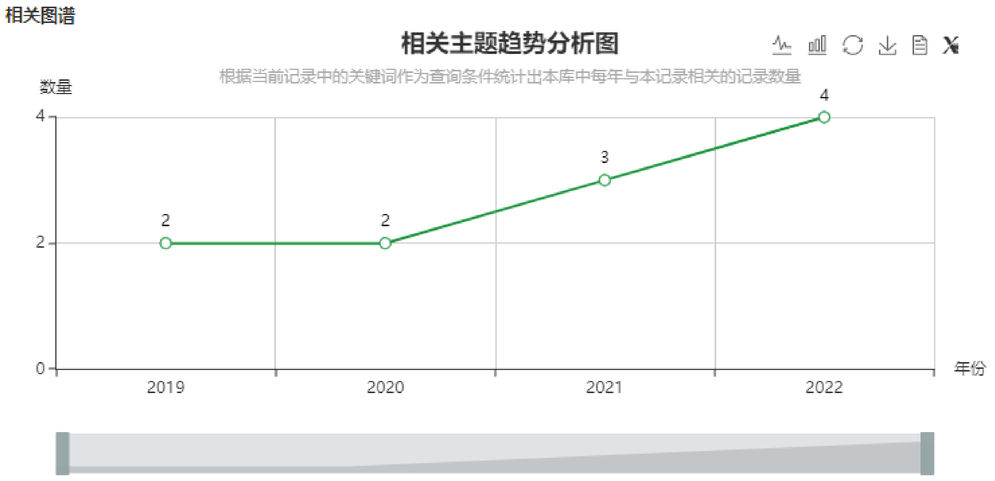

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