DISTRIBUTION OF MEDICINAL AND AROMATIC PLANTS (MAPS) ALONG ELEVATION GRADIENTS IN MYAGDI CENTRAL HIMALAYA, NEPAL

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Abstract

Altitude is a critical factor influencing vegetation composition, ecosystem properties, and soil nutrient availability. This study, conducted in the Central Himalaya's Myagdi area in Nepal, explores the distribution of medicinal and aromatic plants (MAPs) across an altitudinal range from 1800 m to 3800 m above sea level. A total of 50 species were identified, predominantly herbs (40), followed by shrubs (7), climbers (2), and ferns (1). The researchers employed square plots (n=69 of 25 m2) sampled at 100-meter intervals along the altitudinal gradient. Various factors such as slope aspect, disturbance levels, and habitat characteristics were recorded at each plot. Soil samples were collected using standard methods, and soil variables including pH, soil organic carbon (SOC), total nitrogen, potassium, and phosphorus were investigated. The findings indicated a decline in plant species abundance with increasing elevation, as determined by a linear model. The Kruskal-Wallis test revealed a significant correlation ($p < 0.05$) between habitat characteristics and slope aspect. However, there was no significant correlation ($p > 0.05$) between disturbance levels and MAP abundance. Soil pH exhibited a decreasing trend with elevation (4.5 to 6.5), while SOC increased with higher elevations, suggesting a positive relationship. Although species richness did not significantly correlate with SOC, total nitrogen showed a positive relationship with elevation. Available potassium exhibited a significant positive relationship with elevation, as did the correlation between plant abundance and potassium. Conversely, available phosphorus displayed a significant negative relationship with elevation, while a positive relationship was observed between plant number and phosphorus. The study underscores the intricate relationships between soil parameters, MAPs, and environmental factors along altitude gradients. Further research in different Himalayan regions will enhance our understanding of these interactions, contributing to broader insights into the impacts of altitude on vegetation and ecosystems.

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