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SOUND ABSORPTION DEPENDING ON LANDSCAPE PATTERN CHANGES IN A HIGHWAY

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Abstract

Noise is one of the inevitable environmental problems caused by the increasing population all over the world. There are various sources of noise that have physiological and psychological effects on people. One of these is traffic noise, which is especially effective in residential areas. This study aims to investigate the effect of different vegetation types on noise reduction in a highway model with heavy traffic. Six locations with dense planting along the highway in terms of plant groups and species density were selected, and the correlation of species density with noise analysis values was examined. For each location point, 2 points were assigned on the line, in front of and behind the vegetation, and measurements were made at 12 stations in total. Measurements were taken by performing fieldwork 5 times in different seasons and months and expressed as Leq differences. Since the vegetation types at the measurement points were not ordered, the species density analysis was determined in percentage (%) within the square areas of 100×100 meters in the existing field conditions. Mapping was completed using GIS to visualize the spatial spread of the noise measurement results, and zoning was done with interpolation to determine the noise contours and noise effect. According to all the findings obtained in this study, the leafy shrub or the tree group were found more effective in noise absorption than the coniferous species. Numerical calculations on maps suggest that plant community size and diversity can have a positive impact on noise reduction.

Key words: highway, landscape pattern, noise mapping, sound absorption, vegetation diversity

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