GENETIC-ENVIRONMENTAL CONTROLS OF THE TOLERANCE OF FOREST TREES TO INDUSTRIAL POLLUTION

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Summary

Genetic-environmental controls of the tolerance of forest trees to industrial pollution are discussed on the example of the Scots pine. Within the pine population under study, various responses to man-made stress were observed in individual specimens, which gave rise to the hypothesis about a genetic origin of the phenomenon. The research procedure was preceded by an assessment of the environmental conditions which focused especially on the pollution of the atmosphere and pedosphere as a background for estimating the level of variation and examining the genetic structure of specimens sensitive to, or tolerant of, the pollution. The analysis covered a pine population coming from natural forest regeneration growing in the zone of direct impact of pollution from the Miasteczko Śląskie Zinc Works. Two groups of trees were distinguished: S (sensitive) and T (tolerant), characterized by different genetic parameters. The observed tendencies (slower cell division rates, lower values of the mitotic index than in the control group, a high level of chromosomal aberrations) indicate a direct effect of the pollution on the genetic material of the trees.