

DEFOLIATION OF SCOTS PINE AND NORWAY SPRUCE UNDER ALKALINE DUST IMPACT AND ITS RELATIONSHIP WITH RADIAL INCREMENT

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Crown damages of 75–85-year-old Scots pine and Norway spruce within 3 km from the Kunda cement plant, North Estonia, under maximum reported pollution load of $1000\text{--}2700\text{ g m}^{-2}\text{ yr}^{-1}$ in 1985–1999 were assessed in connection with the radial increment of the trees. Strong damages of the trees and their mass dying indicated a long-term pollution load of more than $2\text{ kg m}^{-2}\text{ yr}^{-1}$, weak and moderate chronic damage of the trees aggravating over years indicated a pollution load of $1\text{--}2\text{ kg m}^{-2}\text{ yr}^{-1}$.

The relations between defoliation and radial increment in the area affected by the cement plant are not linear. A weak defoliation level (needle loss up to 25 %) influenced the radial increment slightly. Correlations were more evident on pine when more than a half of the trees were characterized by moderate and strong defoliation and the percentage of needle loss was thus at least 30–35 %. With a further increase in the defoliation level in the area of a heavier pollution load, the correlation with increment increased both in pines and spruces.