Short communication

PLANTS IN URBAN AREAS AND LANDSCAPE

CONDITION OF LIME TREES GROWING IN CRACOW

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Abstract

City areas are known to be extremely difficult for tree growth. The major unfavourable factors are different forms of pollutants (gaseous and particulate matter), soil compaction (lack of water, oxygen and space for root growth) and urban heat island effect (enormously high temperatures during summer and high solar radiation due to material reflection). On the other hand, trees provide many ecosystem services and are indispensable in city structures. In view of that, selection of species tolerant to poor and severe growth conditions is especially important. Lime trees (*Tilia* sp.) are one of the most frequently planted species in Europe, recommended for street, parks and other urban areas. Although their tolerance to difficult conditions are different among species and still discussed.

The aim of the study was to compare condition of the lime trees species and choose the most resistant one for urban areas. The research was conducted in Krakow during the whole vegetative season, measurements were held once each month from April to October. Three young lime species, planted in the last 10 years in the city area were investigated: *Tilia cordata*, *Tilia tomentosa* and *Tilia* × *europea* 'Pallida'. There were four different stands for *T. tomentosa* and *Tilia* × *europea* 'Pallida' and two stands for *Tilia cordata*; from 3 to 20 trees in one stand. The condition of the trees was evaluated using chlorophyll *a* fluorescence parameters. The analysis of the measurements indicates the best performance for *Tilia tomentosa*. The received results suggest that this species is the best one for urban plantings and promise longer lifespan and more effective ecosystem services.

Keywords: JIP-test; city trees; chlorophyll a fluorescence; species selection; environmental stress

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