Choosing trees with a liking for heavy metal

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Chiricahua National Monument, Arizona. Mixed woodland with Cupressus arizonica (conical crowns) and Quercus sp. CC1: Generic

Which species of trees should we be planting in the urban environment to best soak up pollutants containing toxic heavy metals? Stefanos

Tsiaras of Aristotle University of Thessaloniki and Theano Samara of the Forest Research Institute of Thessaloniki, in Greece, hope to answer this question. The team discusses the requirements of the urban environment in terms of arboreal planting in the International Journal of Sustainable Agricultural Management and Informatics.

The team has assessed five of the most common tree species found in green spaces in urban Greece—*Cupressus arizonica* (Arizona cypress), *Albizia julibrissin* (Persian silk tree), *Platanus orientalis* (Old world sycamore), *Celtis australis* (European nettle tree), and *Ligustrum japonicum* (wax-leaf privet). They used the PROMETHEE (Preference Ranking Organization METHod for Enrichment Evaluation) method to take into consideration various criteria and especially the sequestration of seven heavy metals: cadmium, chromium, copper, lead, manganese, nickel, and zinc.

"The best choice among the alternatives is *Cupressus arizonica*," the team reports. "Only one other tree species has a positive net flow [of heavy metals from its environment], *Albizia julibrissin*." They add that for the three tree species there is negative net flow of heavy metals. "The results are reasonable," the team suggests, "as the cypress is an evergreen species and it absorbs heavy metals during the whole year, in contrast to the deciduous tree species."

The selection of the beneficial species could have important implications for the "greening" of Thessaloniki, a densely populated city that lacks much urban greenery at the moment. "Forest policy planning for urban green is essential," the team suggests. In this particular case and elsewhere in the world with large traffic volumes, light and heavy industry, and few green spaces, the right trees can provide ecosystem services and improve the environment and the health of the citizens who live and work there.

More information: Stefanos Tsiaras et al. Selection of the most suitable tree species in urban areas based on their capability of capturing heavy metals: a forest policy approach, *International Journal of Sustainable Agricultural Management and Informatics* (2019). DOI: 10.1504/IJSAMI.2019.10022893

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