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Efficiency of tree shelterbelts in wind erosion risk management: A case study in SE Hungary

M. Bartus, A. Farsang, J. Szatmári, D. Fejes and I. Puskás
Physical Geography and Geoinformatics, University of Szeged, Hungary

W ind erosion is a serious environmental problem attracting more and more attention in many parts of the world since it can cause soil loss, deterioration of soil structure, nutrient productivity losses and air pollution. Blowing soil can be serious safety hazard or costly disaster depending on the intensity and duration of windstorm. Consequently, nowadays wind erosion risk has increased due to intensification of extremity of climate change. Present work's aim is to evaluate the current protective effect of shelterbelt system in a studied sampling site and to model the impacts of wind erosion reduction as well as to create scenarios by Lombardy poplar (Populus nigra italica). Our sampling site (48 km²) situated in southern part of Hungarian Great Plain is a typical lowland. The shelterbelt types are optically classified during field measurements using photographs. The optical porosity is determined by an algorithm developed by us. The modelling of protective effect of shelterbelts are processed based on two models (WEPS, TEAM). According to the optically classification, shelterbelt types are divided into several categories (e.g. high forest, low forest, bush, bush-reed etc.). As a result of wind erosion scenarios, the wind erosion hazard mainly depends on the soil texture. The height and porosity of shelterbelts are decisive their effectiveness. Lombardy poplar can be successfully applied in wind erosion reduction. As main conclusion of this research, a landscape map with proper shelterbelts is formed in order to reduce the wind erosion hazard in land use management of our study site.

Biography

M. Bartus is a Ph.D. student of Doctoral School of Environmental Sciences in University of Szeged. His main research topic is the wind erosion and modelling.

bartus.mate@gmail.com

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