



Organic amendments differently tackle the stochastic assembly rules of urban vegetation communities

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Fertility recovery via organic amendments in urban soils can enhance community biodiversity and ecosystem functionality, potentially mitigating environmental filtering which induces the shift from niche-based communities to stochastic based community assemblies, likely the result of urban spatio-temporal heterogeneity. However, the specific contribution of different amendants to this process remains poorly understood. With a view to propose a sustainable management of urban green areas, we focused on the structural and functional complexities of herbaceous communities through the application of different amendants (biochar, vermicompost, vermicompost+biochar) in respect to mineral fertilizers and non-fertilized soils. The study was carried out in two urban areas in the Campania region (Southern Italy) subjected to different management strategies. Specifically, we investigated vegetation community at the structural level by identifying each species and evaluating its abundance (cover, dry mass, counts) and on a wide spectrum of functional traits, either literature-derived (biological forms, chorotype, etc.) or measured (chlorophylls, anthocyanins, etc.). Results showed significant changes of vegetation community biodiversity induced by amendments, considering the overall community abundance and at the functional level, but not at the structural level. Vermicompost and its combination with biochar represented the most promising treatments, whose effects were especially relevant in time and strongly site dependent. Findings highlight potential long-term effects of organic amendants in successfully countering urban environmental filtering by increasing functional community complexity.

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