

Urban soil influence on the traits of Mediterranean native herbaceous species

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Abstract:

Native herbaceous plants have the potential for renaturalizing and recovering derelict soils, such as urban or anthropized soils. Ecological restoration following the establishment of a native wildflower meadow should lead to a reduction in management costs and to the preservation of native plant populations. This study was aimed at determining the ecological characteristics and the cultivation needs of 26 herbaceous species native to Italy and southern Europe in order to identify their landscape potential in low-maintenance conditions. The species were selected on the basis of their adaptation to unproductive soils in semi-natural and rural areas, and on their ornamental value. Mono-specific plots were set up in three different urban soils. Seed germination, seedling emergence, flowering dynamics, and plant growth were determined. The field establishment and biomass were affected by the physical and chemical characteristics of the soils. Soil texture slightly affected seedling emergence, whereas soil texture and the C and N contents affected plant growth, the number of flowers and the duration of flowering. *Dianthus carthusianorum*, *Verbascum blattaria*, *Matricaria chamomilla* and *Hypochoeris radicata* developed a higher biomass per plant in the soils with a low nutrient content, indicating their adaptability to infertile soils. *Daucus carota*, *Papaver rhoeas*, *Verbascum sinuatum*, *Coleostephus myconis* produced a higher biomass per plant in the most fertile soil, where they appeared to show a higher potential when competing with other species. The ecological characteristics shown by the native plants are extremely important in terms of combining seeds of different species to create and to maintain semi-natural herbaceous communities in low maintenance landscapes.

Keywords: autochthonous, soil texture, organic matter, plant biomass.

Topic: C. Urban soils and ecosystem services

Sub-topic: C2. Urban soils and plants

Presentation type: Poster

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