Native Herbaceous Species for Climate-Resilient Urban Regeneration: The SERRA Project

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The SERRA project (Specie Erbacee tolleRanti per la Rigenerazione urbanA – Tolerant Herbaceous Species for Urban Regeneration) promotes urban ecological transition through the selection, production, and deployment of native herbaceous species from the Italian Mediterranean flora for the regeneration of marginal and degraded urban areas. The project aims to develop site-specific seed mixtures for restoration ecology interventions in urban environments subjected to multiple biotic and abiotic stressors, including urban heat islands, high relative humidity, and soil contamination.

Selected species are assessed for their adaptive capacity and tolerance to pollutants, with particular attention to heavy metals, as well as for the ecological functions they provide. These functions include enhancing urban biodiversity, supporting pollinator communities, and contributing to key regulatory ecosystem services. SERRA is fully aligned with the objectives of Spoke 5 of the National Biodiversity Future Center (NBFC), fostering innovative and integrated nature-based solutions for sustainable urban regeneration.

The project follows an integrated research and experimental development framework structured in several phases: selection of suitable Mediterranean herbaceous species, evaluation of contaminant tolerance, analysis of plant–pollinator interactions, and assessment of phenological patterns and growth performance under urban conditions. Expected outcomes include validated species lists and tailored seed mixtures designed for practical application in urban ecological restoration, developed in close collaboration with local nursery production chains.

Following the research phase, SERRA has progressed to operational implementation through cooperation with the Municipality of Cagliari, where selected urban sites have been identified for field application. Beyond delivering innovative seed mixtures, the project generates transferable knowledge aimed at strengthening local production systems and supporting the development of resilient, multifunctional urban green spaces in the context of climate change.