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SISV
2026 
59th congress
PALERMO

**Vegetation Science
for Sustainability
and Ecological
Transition**

BOOK OF ABSTRACT
Palermo, June 4–5–6 2026



**Università
degli Studi
di Palermo**



**Centro di Sostenibilità
e Transizione Ecologica**



**DIPARTIMENTO DI SCIENZE E TECNOLOGIE
BIOLOGICHE, CHIMICHE E FARMACOLOGICHE (STRENGTH)**



SISV 2026

59th congress
PALERMO

59th INTERNATIONAL CONGRESS
ITALIAN SOCIETY OF VEGETATION SCIENCE
Società Italiana di Scienza della Vegetazione (SISV)

Vegetation Science for Sustainability and Ecological Transition

Book of abstract

June 4–5, 2026

Botanical Garden of the University of Palermo
Via Lincoln 2, Palermo, Italy

June 6, 2026

Field trip to Parco della Favorita, Palermo



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15:30	Coffee break
16:00	Session 4 – Free session <i>Chairpersons: Daniele Viciani and Salvatore Pasta</i>
16:00	<u>Malavasi M.</u> , Maccioni A., Bagella S., Marignani M., Tillocca B., Lupinu G., Bartak V., Farris E. Charting Traditional Ecological Knowledge in Sardinia (Italy) via Plant Vernacular Names and Etymology
16:15	<u>Vincent B.</u> A rebel alliance? The relationship between association and alliance in phytosociology theory from the point of view of linguistics
16:30	<u>Preo S.M.</u> , Zendri E., Gnemmi M., Cairolì A., Buffa G., Della Bella A., Fantinato E. An indicator-based protocol for urban green infrastructure: assessing ecological networks to prioritize management strategies
16:45	<u>Candini E.</u> , Bonafede F., Vignodelli M., Sabatini F.M. Thirty years of natural succession in a restored urban green area, Bologna, Italy
17:00	<u>La Scala S.</u> , Di Leto Y., Scirè Calabrisotto L., Cosimi G., Carpintieri D., Badalamenti E., Gandolfi I., Federici E., Gallo G., Catania V., Quatrini P. Harnessing Mediterranean plant-microbiota systems for antipollution noise barriers
17:15	<u>Bazan G.</u> , Zuzolo D., Geraci A., Prigioniero A., Sgadari F., Tartaglia M., Guarino C., Schicchi R. Landscape fragmentation and floristic diversity in <i>Chamaerops humilis</i> communities of Sicily and Sardinia
17:30	<u>Porrovecchio M.</u> , Cambria S., <u>Bacilliere G.</u> , Puglisi M., Minissale P. The diversity of plant communities in agriphotovoltaic systems in Sicily
17:45	Closing ceremony
18:30	Scientific guided tour of the Botanical Garden of Palermo Led by Prof. Rosario Schicchi, Director of the Botanical Garden.

HARNESSING MEDITERRANEAN PLANT–MICROBIOTA SYSTEMS FOR ANTI-POLLUTION NOISE BARRIERS

La Scala S.¹, Di Leto Y.¹, Scirè Calabrisotto L.¹, Cosimi G.¹, Carpintieri D.¹, Badalamenti E.², Gandolfi I.³, Federici E.⁴, Gallo G.⁵, Catania V.¹, Quatrini P.¹

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Keywords: phylloremediation, plant microbiome, hydrocarbon biodegradation, urban air pollution

Mitigation of urban air pollution caused by vehicle and industrial activities is urgently needed to reduce harmful impacts on human health and ecosystems. In this context, plants are effective agents of pollution mitigation, acting as bioaccumulators of gaseous hydrocarbons and particulate matter (PM₁₀, PM_{2.5}) through stomatal uptake and leaf deposition. The phyllosphere microbiota (i.e., microbial communities on leaf surfaces) enhance air pollutants removal through adsorption and biodegradation, utilizing atmospheric contaminants as nutrient sources [1]. Beyond phyllosphere, every plant compartment hosts a dynamic microbiota that modulates plant physiology and fitness. Among the beneficial relationships, arbuscular mycorrhizal (AM) symbiosis, legume-nitrogen fixing symbiosis and plant growth-promoting (PGP) bacteria interactions are the most widespread. Based on these principles, the project ECORoads (funded under the PON Research and Innovation program and led by ANAS S.p.A.), aims to reduce noise and air pollution generated by vehicles through a multifunctional and bioengineered anti-noise road barrier, to be built in Sicily as a prototype. To this aim, local plant species inoculated with their microbial symbionts will be integrated into the core of the noise barrier and placed along the adjacent slope in a high-traffic road, near sensitive sites. The barrier will host a selection of Mediterranean plants characterized by specific functional traits: shrubs and small trees (e.g., *Myrtus communis*), nitrogen-fixing legume shrubs (e.g., *Anagyris foetida*, *Spartium junceum*), and aromatic plants (e.g., *Salvia rosmarinus*, *Thymus capitatus*). The adjacent slope will be also planted and reinforced with structural trees (e.g., *Fraxinus ornus* and *Quercus ilex*). The phyllosphere of the plants will be harnessed through the application of selected drought tolerant hydrocarbon-degrading actinobacteria [2]. To enhance plant survival and resistance against extreme environmental conditions of the barrier, each plant rhizosphere will be boosted through the inoculation of PGP microorganisms sourced from the MIRRI-UNIPA collection or provided by specialized collections. Moreover, the rhizosphere of Mediterranean legumes will be inoculated with indigenous, nitrogen-fixing rhizobia [3] and AM fungi that successfully promoted plant growth in anthropogenic soils [4]. Aromatic shrubs will be inoculated with AM fungi and PGP actinobacteria, whose efficacy was previously demonstrated on Mediterranean crops and aromatics [5]. Together, these specific microbial inoculants will enable the integrated system to function as an active biological filter, transforming traditional road barriers into a sustainable solution for air purification.

- 1) Franzetti A. et al., 2020. Plant-microorganisms interaction promotes removal of air pollutants in Milan (Italy) urban area. *Journal of Hazardous Materials*, 384.
- 2) Quatrini P. et al., 2008. Isolation of Gram-positive n-alkane degraders from a hydrocarbon-contaminated Mediterranean shoreline. *Journal of Applied Microbiology*, 104.
- 3) Cardinale M. et al., 2008. Diversity of rhizobia nodulating wild shrubs of Sicily and some neighbouring islands. *Arch Microbiol.*, 190.
- 4) Quatrini P. et al., 2003. Microbial Inoculants on Woody Legumes to Recover a Municipal Landfill Site. *Water, Air, & Soil Pollution: Focus* 3.
- 5) Faddetta T. et al., 2023. Bioactive Metabolite Survey of Actinobacteria Showing Plant Growth Promoting Traits to Develop Novel Biofertilizers. *Metabolites*, 13: 374.



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