# PHEN-ITALY INFRASTRUCTURES/INSTALLATIONS

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| **Installation name** | **INFRAVOL- Università di Napoli Federico II** |
| **Installation Location** | Napoli, Italy |
| **Installation Location (GPS coord.)** | https://maps.app.goo.gl/c1jHmYM8q7j5ZYmH7 |
| **Installation Category** | – Controlled conditions<br>– Growth Chamber |
| **Traits analysed** | Above ground |
| **Environmental Manipulation applicable** | – Temperature<br>– Water<br>– Light quality<br>– Volatile Organic Compounds |
| **Stress applicable** | – Drought<br>– Heat stress<br>– Light<br>– Biotic stress<br>– Pollution, salinity and nutrients |
| **Max Capacity** | small size experiments |
| **Status** | Operational |
| **Trait measurements** | – Growth<br>– Canopy<br>– WUE<br>– Stress indices<br>– Photosynthesis, Transpiration, Volatile Organic Compounds, Electron transport rate |
| **Equipment and sensors** | – IR<br>– Fluorescence<br>– VOC sensors |
| **References** | Monti M.M., I. Mancini, L. Gualtieri, G. Domingo, M. Beccaccioli, R. Bossa, M. Bracale, F. Loreto, M. Ruocco. 2023. Volatilome and proteome responses to Colletotrichum lindemuthianum infection in a moderately resistant and a susceptible bean genotype. Physiol. Plant. DOI: 10.1111/ppl.14044.<br><br>Russo A., J.B. Winkler, A. Ghirardo, S. Pollastri, M.M. Monti, M. Ruocco, J-P. Schnitzler, F. Loreto. 2024. Interaction with the entomopathogenic fungus Beauveria bassiana influences tomato phenome and promotes resistance to Botrytis cinerea infection. Front Plant Sci doi: 10.3389/fpls.2023.1309747. |

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| **Description of the infrastructure/installation** | Crop tolerance/resistance to both environmental stresses and pests is pivotal for agriculture system resilience to climatic changes, ensuring the transition to more sustainable practices, supporting the reduction of inputs such as pesticides and fertilizer treatments, improving efficient use of scarce natural resources (e.g. water) and overall sustaining yield. VOC are arising as an alphabet that is used by plants to communicate with friends and foes and that may be usefully employed as a main environment-friendly strategy of sustainable plant protection. The INFRA-VOL facility of Naples has new growth chambers equipped with VOC paths for effectively deliver VOC to target organisms, and state-of-art VOC identification facilities, including the ultra-fast and sensitive proton transfer reaction-time of flight-mass spectrometer (PTR-TOF-MS) allowing high-throughput analyses of volatilomes. A whole range of non-destructive instruments (infrared gas analyzers, fluorometers, CCD cameras) complementing INFRA-VOL for measurements of plant physiological status are also available. INFRA-VOL service access unit is based on the number of days as the sum of experiment length and final report delivery. The service is articulated in the following activities: Experiment design and planning based on request; Experiment management and data acquisition; Data elaboration and statistical analyses; Technical report elaboration and delivery. |
| **Contact person** | Francesco Loreto<br>francesco.loreto@unina.it<br>+39 3666709893 |
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