PHEN-ITALY INFRASTRUCTURES/INSTALLATIONS

Installation name	**FieldPhen - CREA-CI Field Phenotyping Platform**
Installation Location	Foggia, Italy
Installation Location (GPS coord.)	https://maps.app.goo.gl/JHh2vYfd8oAtW9PM9
Installation Category	– Open field
Traits analysed	Above ground
Environmental Manipulation applicable	– Water – Nutrients concentration – Microbial inoculants; long term experiments with different soil properties
Stress applicable	– Drought – Biotic stress – Nutrient (e.g. Nitrogen)
Max Capacity	1.000 plots
Status	Operational
Trait measurements	– Growth – Canopy – Structure and architecture – WUE – Stress indices – Plant diseases
Equipment and sensors	– RGB camera – Multispectral – UAV – Custom devices – Rain-out Shelter (from May 2024); – Hyperspectral (coming soon); – Phenomobile under renovation
References	Fania F. et al. (2024) Exploitation of RGB-derived indices from UAV imagery to estimate soil cover ability and related traits in durum wheat (in preparation) Centorame et al. (2024) An Overview of Machine Learning Applications on Plant 2 Phenotyping, with an Insight on Sunflowers. Under review, Agronomy 2024, 14, x. https://doi.org/10.3390/xxxxx

	Centorame et al. (2024) Hyperspectral Technology for Vegetation Indices and Correlation Models Applied to Sunflower Crops: A Systematic Review. Under review, Computer and Electronics in Agriculture
Description of the infrastructure/installation	FieldPhen at CREA-CI of Foggia is specialized in HT phenotyping of straw cereals under irrigation and rainfed. It has possibilities to run phenotyping experiments under contrasting water and soil conditions, enclosing trials with microbial consortia inoculations; and, enclosing different conditions of soil properties, in long-term organic agriculture, no tillage, and rotational experiments. The main equipments available are three UAVs, a DJI Phantom 4 PRO, equipped with a Sentera d 4K 5-bands multispectral and a 24mp RGB camera, a DJI Matrice 100 with an RGB - Zenmuse X5 sensor, and a Bluegrass with the Parrot Sequoia 4-band multispectral. It is under acquisition an hyperspectral camera for UAV. At the end of april 2024 will be available a rain-out shelter for row-planted trials. An experimental phenomobile is currently under redesign and renovation to a more solid phenorover. The standard experimental setup is based on 10 m2 replicated plots. Developed to support and innovate the process of plant (cereal) breeding, it is available for services of plant breeding / genotype selection for traits related to sustainable yield, resistance to pathogens, as to abiotic stresses; as well for testing the effects on phenotypes of agrochemicals and fertilizers, bio-based and microbial solutions.
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