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*Innovative concepts and technologies for ECOlogically sustainable NUTRient management in agriculture aiming to prevent, mitigate and eliminate pollution in soils, water and air*



Partner: **Università degli studi di Torino (UNITO)**



**Department of Agricultural, Forest and Food Sciences (DISAFA)**



This project has received funding from the European Union's Horizon Programme (HORIZON-CL6-2022-ZEROPOLLUTION-01) under grant agreement No 101081858



*Innovative concepts and technologies for ECologically sustainable NUTRIent management in agriculture aiming to prevent, mitigate and eliminate pollution in soils, water and air*

**Università degli Studi di Torino (UNITO)** is one of the largest Italian Universities, with about 80.000 students, 3.900 employees (academic, administrative and technical staff), 1.800 post-graduate and post-doctoral research fellows.

OVERVIEW

Research and training are performed in **27 Departments**, encompassing all scientific disciplines.



UNITO participates in the ECONUTRI project with the **Department of Agricultural, Forestry and Food Sciences (DISAFA)**



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**Department of Agricultural, Forest and Food Sciences (DISAFA)** is located in a modern campus outside Turin. Its staff numbers about 200 academics and technicians, and is completed by more than 100 post-docs and PhD students.

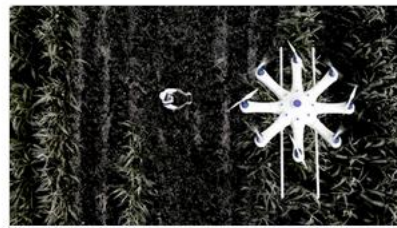
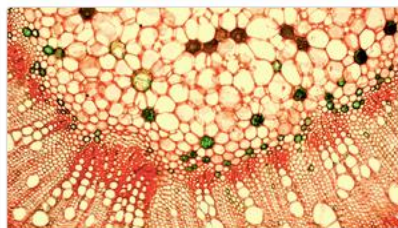
DISAFA





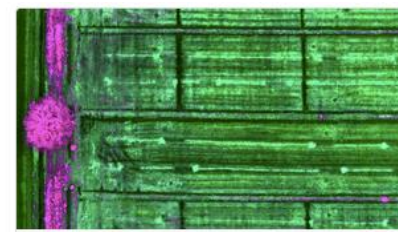
Research at DISAFA is both basic and applied and encompasses biological, chemical, ecological, technological and management aspects.

DISAFA



**DISAFA** harbors a wide array of laboratories (e.g., trace element and radioisotope lab, plant stress lab, cell culture lab, land sensing lab, agrometeo lab, crop protection lab, mechatronic lab, waste management lab), technical facilities, and environments for plant growth including a phenotyping platform and experimental fields.

DISAFA



People of UNITO/DISAFa involved in ECONUTRI belong to **three main groups**:

✓ the **Biogeochemical Lab team**

*[https://en.disafa.unito.it/do/home.pl/View?doc=/research/research\\_lines/groups/soil\\_resource/soil\\_biogeochemistry\\_and\\_fertility.html](https://en.disafa.unito.it/do/home.pl/View?doc=/research/research_lines/groups/soil_resource/soil_biogeochemistry_and_fertility.html)*

*<https://www.raer.unito.it/>*

✓ the **Plant Stress Lab team**

*[https://en.disafa.unito.it/do/home.pl/View?doc=/research/research\\_lines/groups/plant\\_genetics\\_physiology/integrated\\_approach\\_to\\_increase\\_multiple\\_and\\_combined\\_stress\\_tolerance\\_in\\_horticultural\\_crops.html](https://en.disafa.unito.it/do/home.pl/View?doc=/research/research_lines/groups/plant_genetics_physiology/integrated_approach_to_increase_multiple_and_combined_stress_tolerance_in_horticultural_crops.html)*

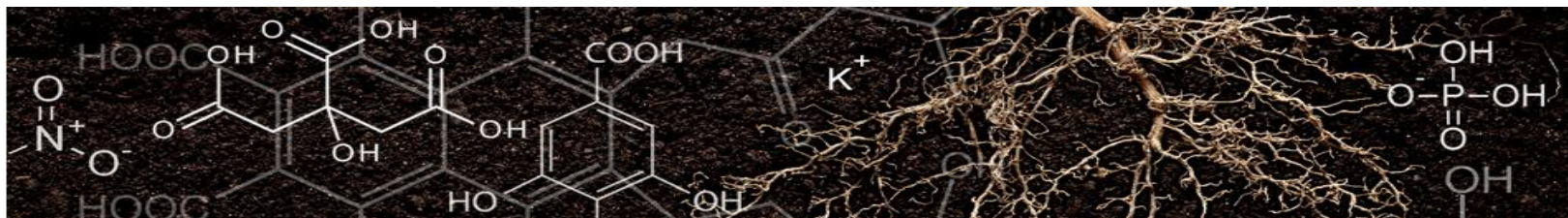
✓ the **Agro-zotechnical biomass management lab team**

*[https://en.disafa.unito.it/do/home.pl/View?doc=/research/research\\_lines/groups/engineering\\_ict\\_bioenergy/agro-zotechnical\\_biomass\\_management.html](https://en.disafa.unito.it/do/home.pl/View?doc=/research/research_lines/groups/engineering_ict_bioenergy/agro-zotechnical_biomass_management.html)*



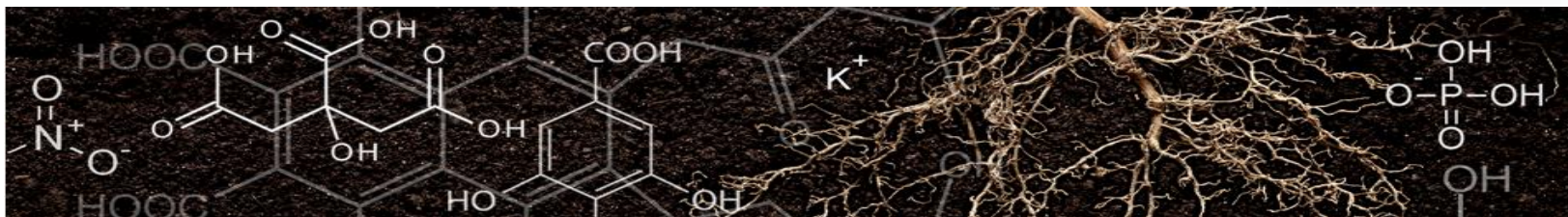
## Biogeochemical Lab team

- ✓ **Luisella Celi (lab team leader & WP2 leader):** expertise in soil processes that control carbon and nutrient cycling, recovery and losses, and availability to crops as affected by different agronomic management techniques.
- ✓ **Maria Martin (involved in WP2):** expertise in mechanisms regulating the biogeochemical cycling of nutrients (e.g., phosphorus) and contaminants (e.g., arsenic) in the soil-water-plant system, especially in rice agro-ecosystems.



## Biogeochemical Lab team

- ✓ **Michela Schiavon (involved in WP2):** expertise in plant nutrition, element-element interactions at the root-rhizosphere interface, beneficial elements, biostimulants and crop biofortification.
- ✓ **Daniel Said Pullicino (involved in WP4):** expertise in biogeochemical cycling of elements in soils, soil organic matter composition, stabilization and turnover, and the interactions between carbon, nitrogen, phosphorus and iron cycling in terrestrial ecosystems.





## Biogeochemical Lab team



## Plant stress Lab team

- ✓ **Andrea Schubert (Lab team leader, involved in WP3):** expertise in molecular processes activated by osmotic stress in crop plants and on the identification of marker genes to be exploited for the development of stress-resilient genotypes
- ✓ **Francesca Cardinale and Ivan Visentin (both involved in WP3):** expertise in Plant Physiology; main interest in strigolactones, with emphasis on their cell type/organ specificity and signalling under abiotic stresses, and on the receptor protein and downstream signalling events





## Plant stress Lab team





## Agro-zootechnical biomass management lab team

- ✓ **Elio Dinuccio (lab team leader, involved in WP2):** expertise in implementation of technologies for nutrient recovery and quantification of ammonia ( $\text{NH}_3$ ) emissions from manure management and with the development/testing of novel mitigation techniques



## Agro-zootechnical biomass management lab team





## Biogas Wipptal Plant





Scheme of WIPPTAL circular model

