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FOREWORD

This volume reports the scientific production of the Department of Agricultural, Forestry, Food and Environmental Sciences (DAFE) for the two years 2024-2025. This catalogue is designed as a dynamic tool for disseminating research results and serves as a foundation for fostering dialogue with stakeholders and the global scientific community. This catalogue reflects the research activities carried out by seven areas of interdisciplinary research that work in synergy to respond to technological challenges: Forests and Wood, Bio-Environmental, Cropping Systems and Plant Protection, Plant Phenotyping, Animal Husbandry and Sustainability, Economics and Engineering, and Agri-Food Sciences, Technologies and Biotechnology. The research reveals a common thread: the ability to contextualize the unique characteristics of the Lucanian region and its neighboring areas within an international framework. Indeed, the findings presented here transcend regional boundaries and contribute to the global scientific discourse, thanks to high-profile publications. Some research activities focused on improving the environmental sustainability of production activities and the resilience of agri-food sector production proved particularly complex due to the context of international political and economic uncertainty; consequently, they required the development of technological and scientific solutions of particular interest, as they are scalable in relation to the relevant production contexts. The strong connection between research groups and businesses and stakeholders serves as a catalyst for internal scientific innovation, as it influences the generation of new knowledge, the implementation of Third Mission activities, and the constant updating of the educational offerings. Through this updating, DAFE reaffirms its role as a center of excellence in the regional and national scientific landscape, promoting a model based on knowledge, development, and technology transfer as the driving force behind the development of the Basilicata Region.

The Head of the Department
Prof. Giovanni Carlo Di Renzo

AdR

FORESTS AND WOOD

Coordinator Prof. Luigi Todaro

DESCRIPTION OF THE AREA'S RESEARCH ACTIVITIES

The research activity within the "Forests and Wood" research area is mainly aimed at studying the relationship between forests and the environment, with specific regard to the implications for the sustainable management of forests and the definition of methods to enhance wood production.

In particular, the following topics are being studied:

- Effects of global changes on the carbon balance and productivity of forests.
- Effects of climate change and aridity on Mediterranean forests.
- Processes of desertification and degradation of the territory: responses, mitigations, adaptations.
- Socio-ecological analysis and evaluation of forest systems.
- Advanced methods for the improvement and optimization of forest uses.
- Silvicultural management in areas with the presence of fir-beech-loricate pine.
- Effects of modification treatments on the properties (thermal, mechanical, chemical, physical parameters, etc.) of wood and panels.
- Wood diagnostics in sites of historical and artistic interest.
- Analysis and planning of urban and ornamental greenery, also in monumental complexes.

Publications of the Research Area
"Forests and wood"

Coordinator Prof. Luigi Todaro

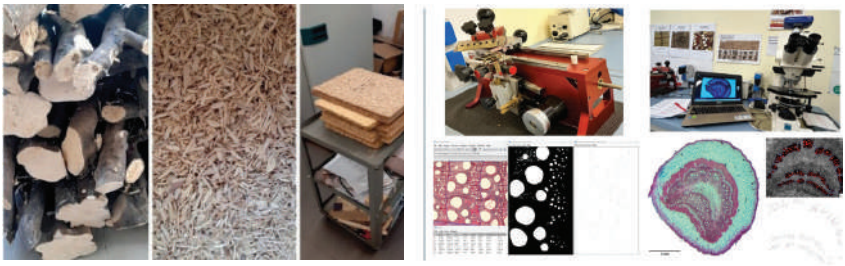
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AGRI-03/C Prof. Nicola Moretti, Prof. Luigi Todaro.

Keywords

Post-fire recolonization, precision forestry, dendroecology, forest dieback, old-growth forests, forest nursery, urban greenery, wood supply chain, wood and thermal insulation, wood diagnostics and cultural heritage



Publications

1. Boháč, V., Tiwari, R., Kristak, L., Réh, R., Hudec, J., Štofanik, V., Lo Giudice, V., and Todaro, L. (2024). The Influence of the Flatness of the Particleboard Composite Samples on the Accuracy of the Measurement of Thermal Properties by Pulse Transient Method. AIP Conference Proceedings, 3126 (1). DOI: 10.1063/5.0199232

2. Borghetti M., Bucci G. (2024). Twenty years later. Forest@ Journal of Silviculture and Forest Ecology, 21,8-9. DOI: https://doi.org/10.3832/efor0043-021

3. Borghetti M., Ferrara A., Moretti N., Nolè A., Pierangeli D., Ripullone F., Todaro L. (2024). Prendersi cura dei boschi di un'area interna nell'era del cambiamento climatico: il caso della Basilicata. Forest@ 21: 10-36. DOI: 10.3832/efor0042-021

4. Caballol M., Serradó F., Barnes I., Camarero J.J., Valeriano C., Colangelo M., Oliva J., (2024). Climate, host ontogeny and pathogen structural specificity determine forest disease distribution at a regional scale. Ecography, 2024. DOI: 10.1111/ecog.06974

5. Camarero, J.J., Sánchez-Miranda Á., Colangelo M., Matías L. (2024). Climatic drivers of cork growth depend on site aridity. Science of the Total Environment, 912. DOI: 10.1016/j.scitotenv.2023.169574

6. Camarero J. J., Gazol A., Valeriano C., Colangelo M., Rubio-Cuadrado Á. (2024). Growth Responses to Climate and Drought in Relict Cork Oak Populations as a Benchmark of the Species Tolerance. Forests, 15. DOI: 10.3390/f15010072

7. Camarero, J.J., Colangel M., Gazol A., Valeriano C., Ortega M.A., Silla F. (2024). Responses to drought of two Mediterranean ring-porous, deciduous species: Searching for climate smart trees and shrubs. Forest ecology and management, 572. DOI: 10.1016/j.foreco.2024.122282

8. Camarero, J. J., Colangelo M., Pecora G., Valeriano C. (2024). Using wood rings to determine age and climate constraints of grapevine (Vitis vinifera) radial growth. Iawa Journal, 1-20. DOI: 10.1163/22941932-bja10158

9. Camarero J. J., Gazol A., Colangelo M., Valeriano C. (2024). Growth, earlywood anatomy and wood nutrients respond to precipitation and

flow in semi-arid riparian tamarisk forests. Dendrochronologia, 86. DOI: 10.1016/j.dendro.2024.126234

10. Camarero, J.J., Serra-Maluquer X., Colangelo M., Gazol A., Pizarro M. (2024). Latewood intra-annual density fluctuations indicate wet summer conditions and enhanced canopy activity in a Mediterranean ring-porous oak. Iawa Journal, 45, 213-226. DOI: 10.1163/22941932-bja10141

11. Camarero J.J., Gazol A., Tamudo E., Moiseev P.A., Colangelo M., Valeriano C. (2024). Local and regional climatic constraints of shrub and tree growth near the treeline. Dendrochronologia, 88. DOI: 10.1016/j.dendro.2024.126256

12. Castellaneta M., Colangelo M., Colle G., Rita A., Ripullone F. (2024). SilvaCuore: a web-application to monitor the health status of Italian forests. iForest 17: 317-322. DOI: 10.3832/ifor4562-017

13. Colangelo M., Valeriano C., González de Andrés E., Pizarro M., Murria E., Camarero, J.J. (2024). Lack of management, land use changes, poor site conditions and drought contribute to the decline of old pollarded oaks. Dendrochronologia, 86. DOI: 10.1016/j.dendro.2024.126232

14. Cetera, P., Gindl-Altmutter, W., D'Auria, M., Turkulin, H.,Todaro, L. (2024). Native and TMT Chestnut Extractives as Hydrophobic and Photostabylizing Additives for Wood Surfaces. Forests, 15 (8). DOI: 10.3390/f15081358

15. Corleto, R., Gaff, M., Rezaei, F., Sethy, A.K., Németh, R., Valente, F., Ditommaso, G.,Todaro, L. (2024). Effect of moisture content levels on the quality of beech wood cut by CO2 laser. International Journal of Advanced Manufacturing Technology, 134 (1-2), pp. 159 – 169. DOI: 10.1007/s00170-024-14015-7

16. Mecca, M., Todaro, L., D'Auria, M., Italiano, S.S.P., Sofo, A., and Ripullone, F. (2024). Volatile Organic Compounds (VOCs) in Mediterranean Oak Forests of Hungarian Oak (Quercus frainetto Ten) Affected by Dieback Phenomena. Forests, 15 (6). DOI: 10.3390/f15061072

17. Ponticelli, M., Carlucci, V., Mecca, M., Todaro, L., Milella, L., and Russo, D. (2024). Extraction Optimization of Quercus cerris L. Wood Chips: A Comparative Study between Full Factorial Design (FFD) and Artificial Neural Network (ANN). (2024). Antioxidants, 13 (9). DOI: 10.3390/antiox13091115

18. Rezaei, F., Corleto, R., Lo Giudice, V., Bak, M., Németh, R., Niemz, P., Gaff, M.,Todaro, L. (2024). Water uptake and permeability in sapwood and heartwood of hydro-thermally proceed Turkey oak. Wood Material Science and Engineering, 19 (3),803 – 810. DOI: 10.1080/17480272.2024.2337151

19. Tamudo E., Gazol A., Valeriano C., González de Andrés E., Colangelo M., Camarero, J. J. (2024). Similar climate–growth relationships but divergent drought resilience strategies in coexisting Mediterranean shrubs. Journal of Ecology, 112, 1804-1817. DOI: 10.1111/1365-2745.14355

20. Tiwari, R., Boháč, V., Hrčka, R., Ma, A. Y., Gustavsson, M. K., Todaro, L., Kristak, L. (2024). Advancing sustainable practices: Transient plane source methodology for analyzing thermophysical properties and enhancement wood as a thermal insulator. Developments in the Built Environment, 20, 100539. DOI: 10.1016/j.dibe.2024.100539

21. Tiwari, R., Hrčka, R., Boháč, V., Réh, R., Lo Giudice, V., Todaro, L., Kristak, L. (2024). Investigation of Thermophysical parameters of Historical Fir Wood using Hot Disk Method under Room Ambience. AIP Conference Proceedings, 3126 (1). DOI: 10.1063/5.0197636

22. Treydte, K., Liu, L., Padrón, R.S., Martínez-Sancho, E., Babst, F., Frank, D.C., Gessler, A., Kahmen, A., Poulter, B., Seneviratne, S.I., Stegehuis, A.I., Wilson, R., Andreu-Hayles, L., Bale, R., Bednarz, Z., Boettger, T., Berninger, F., Büntgen, U., Daux, V., Dorado Liñán, I., Esper, J., Friedrich, M., Gagen, M., Grabner, M., Grudd, H., Gunnarsson, B.E., Gutiérrez, E., Hafner, P., Haupt, M., Hilasvuori, E., Heinrich, I., Helle, G., Jalkanen, R., Jungner, H., Kalela-Brundin, M., Kessler, A., Kirchhefer, A., Klesse, S., Krąpiec, M., Levanič, T., Leuenberger, M., Linderholm, H.W., McCarroll, D., Masson-Delmotte, V., Pawełczyk, S., Pazdur, A., Planells, O., Pukienė, R., Rinne-Garmston (Rinne), K.T., Robertson, I., Saracino, A., Saurer, M., Schleser, G.H., Seftigen, K., Siegwolf, R.T.W., Sonninen, E., Stiévenard, M., Szychowska-Krapiec, E., Szymaszek, M., Todaro, L., Waterhouse, J.S., Weigl-Kuska, M., Weigt, R.B., Wimmer, R., Woodley, E.J., Vitas, A., Young, G., Loader, N.J. (2024). Recent human-induced atmospheric drying across Europe unprecedented in the last 400 years. Nature Geoscience, 17 (1), 58 – 65. DOI: 10.1038/s41561-023-01335-8

23. Krilek, J., Čabalová, I., Výbohová, E., Mamoňová, M., Ťavodová, M., Melichercík, J., Gendek, A., Aniszewska, M., Todaro, L., and Lo Giudice, V. (2024). Assessment of the chipping process of beech (Fagus sylvatica L.) wood: knives wear, chemical and microscopic analysis of

wood. Wood Material Science and Engineering, 19 (2),473 – 484. DOI: 10.1080/17480272.2023.2259343

24. D'Antonio, P., Toscano, F., Moretti, N., De Iorio, N., & Fiorentino, C. (2024). Analysis of Chainsaw Emissions during Chestnut Wood Operations and Their Health Implications. Applied Sciences, 14(6), 2496. DOI: https://doi.org/10.3390/app14062496

25. Lo Giudice, V., Rita, A., and Todaro, L. (2024). Detection of the Aromatic Profile of Thermally Modified Wood Species. In European Conference on Wood Modification (pp. 130-137). Cham: Springer Nature Switzerland. DOI: 10.1007/978-3-031-99418-0_17

26. Bose A.K., Doležal J., Scherrer D., Altman J., Ziche D., Martínez-Sancho E., Bigler C., Bolte A., Colangelo M., Dorado-Liñán I. (2024). Revealing legacy effects of extreme droughts on tree growth of oaks across the Northern Hemisphere. Science of the Total Environment, 926. DOI: 10.1016/j.scitotenv.2024.172049

27. Dalmonech, D., Vangi, E., Chiesi, M., Chirici, G., Fibbi, L., Giannetti, F., Collalti, A. (2024). Regional estimates of gross primary production applying the Process-Based Model 3D-CMCC-FEM vs. Remote-Sensing multiple datasets. European Journal of Remote Sensing, 57(1). DOI: https://doi.org/10.1080/22797254.2023.230165

28. Gazol A., Valeriano C., Colangelo M., Ibáñez R., Valerio M., Rubio-Cuadrado Á., Camarero J. J. (2024). Growth of tree (Pinus sylvestris) and shrub (Amelanchier ovalis) species is constrained by drought with higher shrub sensitivity in dry sites. Science of the Total Environment, 918. DOI: 10.1016/j.scitotenv.2024.170539

29. González de Andrés E., Gazol A., Querejeta J.I., Colangelo M., Camarero J.J. (2024). Mistletoe-induced carbon, water and nutrient imbalances are imprinted on tree rings. Tree physiology, 44. DOI: 10.1093/treephys/tpae106

30. Italiano S. S. P., Camarero, J. J., Borghetti M., Colangelo M., Rita A., Ripullone F. (2024). Drought legacies in mixed Mediterranean forests: Analysing the effects of structural overshoot, functional traits and site factors. Science Of The Total Environment, 927, DOI: 10.1016/j.scitotenv.2024.172166

31. Mecca M., Todaro L., D'Auria M., Italiano S. S. P. Sofo, A., Ripullone, F. (2024). Volatile Organic Compounds (VOCs) in Mediterranean Oak Forests of Hungarian Oak (Quercus frainetto Ten) Affected by Dieback Phenomena. Forests, 15(6), 1072. DOI: https://doi.org/10.3390/f15061072

32. Rita A., Pericolo O., Tumajer J., Ripullone F., Gentilesca T., Saracino A., Borghetti M. (2024). Tip-to-base conduit widening remains consistent across cambial age and climates in Fagus sylvatica L. Tree Physiology, 44(7). DOI: https://doi.org/10.1093/treephys/tpae080

33. Castronuovo, R., Borghetti, M., Ferrara, A., Rita, A.,Nolè, A. (2025). Unveiling the drivers of riparian vegetation change in Mediterranean river systems via remote sensing. Journal of Forest Research, 1–10. DOI: https://doi.org/10.1080/13416979.2025.2590252

34. Colangelo M., Gazol A., Camarero, J. J., Borghetti M., Sánchez-Salguero0 R., Matias L., Castellaneta M., Nola P., Ripullone F. (2025). Earlywood vessel characteristics are early indicators of drought-induced decline in ring-porous oak species within the Mediterranean Basin. Science of the Total Environment, 980. DOI: 10.1016/j.scitotenv.2025.179565

35. Camarero J. J., Fernández-Cortés Á., Colangelo M. (2025). Cork-ring width responds to climate depending on local site dryness. Dendrochronologia, 91. DOI: 10.1016/j.dendro.2025.126339

36. Camarero, J. J-, Colangelo M., Gazol A., González de Andrés E., Valeriano C. (2025). Lower growth and production of latewood intra-annual density fluctuations due to drought-triggered forest die-off. Trees, Forests and People, 20. DOI: 10.1016/j.tfp.2025.100843
37. González de Andrés E., Gazol A., Colangelo M., Valeriano C. Cantero A., Camarero J. J. (2025). Recent declines in radial growth and wood density characterize dieback in European beech and pedunculate oak. Dendrochronologia, 90. DOI: 10.1016/j.dendro.2025.126300

38. Gazol A., Tamudo-Minguez E., Valeriano C., González de Andrés E., Colangelo M., & Camarero, J. J. (2025). A Standardized Framework to Estimate Drought-Induced Vulnerability and Its Temporal Variation in Woody Plants Based on Growth. Forests, 16(5), 760. DOI: https://doi.org/10.3390/f16050760

39. Camarero J.J., Fernández-Cortés A., Colangelo M. (2025). Cork-ring width responds to climate depending on local site dryness. Dendrochronologia, 91, 2025, 126339. DOI: https://doi.org/10.1016/j.dendro.2025.126339

40. Camarero J.J., López Sáez J.A., Rubio-Cuadrado Á., González de Andrés E., Colangelo M., Abel-Schaad D., Cachinero-Vivar A., Pérez-Priego Ó., Valeriano, C. (2025). The Relationships Between Climate and Growth in Six Tree Species Align with Their Hydrological Niches. Forests, 16(6), 1029. DOI: https://doi.org/10.3390/f16061029

41. Camarero J. J., Campelo F., Revilla de Lucas J., Colangelo M., Rubio-Cuadrado Á. (2025). Stem Heating Enhances Growth but Reduces Earlywood Lumen Size in Two Pine Species and a Ring-Porous Oak. Forests, 16(7), 1080. DOI: https://doi.org/10.3390/f16071080

42. García-García I., Horreo J.L., Méndez-Cea B., González de Andrés E., Gazol A., Colangelo M., Camarero J.J., Gallego F., Linares J.C. (2025). Modelling past and future demography of silver fir forests affected by dieback through genomic and dendroecological timelines. Science of the total environment 998: 180329. DOI: https://doi.org/10.1016/j.scitotenv.2025.180329

43. Camarero J.J., Gazol A., Colangelo M. (2025). Riparian field elm (Ulmus minor) is sensitive to drought, and fast-growing trees are susceptible to Dutch elm disease. Forest Ecology and Management, 594: 122948. DOI: https://doi.org/10.1016/j.foreco.2025.122948

44. Seddaiu S., Ruiu P.A., Piras G., Scanu B., Satta G.G.A., Lentini A., La Mela Veca D.S., Sidoti A., Castellaneta M., Colangelo M., Moretti N., Ripullone F., Tarasco E., Gravano E., Mocci E.M., Delle Donne A.G., Iacopetti G., Bettini D., Bussotti F., Pollastrini M. (2025). Vulnerabilità delle foreste mediterranee a eventi climatici estremi di ondate di calore e siccità: il caso del disseccamento del leccio (Quercus ilex L.) in Italia. FOREST@ 22: 56-65. DOI: 10.3832/efor4934-022

45. Adamčík, L., Lo Giudice, V., Todaro, L., Dudiak, M., and Kminiak, R. (2025). Surface roughness of thermally modified and unmodified selected wood species after sanding. European Journal of Wood and Wood Products, 83(3), 105. DOI: 10.1007/s00107-025-02260-w

46. Ružiak, I., Kristak, L., Adijans, I., Kubovský, I., Richvalská, J., Štefančin, L.,Todaro, L. (2025). Enhancing CO2 Laser Cutting Efficiency for Diverse Wood Species Using Artificial Neural Networks. Forests, 16(6), 881. DOI: 10.3390/f16060881

47. Corleto, R., Gaff, M., Sethy, A. K., Kelkar, B. U., Nemeth, R., Ditommaso, G.,Todaro, L., and Rezaei, F. (2025). Effects of CO2 laser parameters on quality of laser cut beech wood (Fagus sylvatica L) surface and extent of

heat affect zone. Journal of the Indian Academy of Wood Science, 22(1), 67-77. DOI: 10.1007/s13196-024-00361-2

48. Čabalová, I., Krilek, J., Bubeníková, T., Ružiak, I., Nemec, M., Lee, S. H., Todaro, L., and Lo Giudice, V. (2025). Utilization of waste tire and rubber from automobiles in the manufacturing of particleboards and evaluation of its properties. European Journal of Wood and Wood Products, 83(2), 67. DOI: 10.1007/s00107-025-02215-1

49. Bruno, M. R., Ponticelli, M., Sinisgalli, C., Milella, L., Todaro, L., Faraone, I. (2025). Natural Bioactive Compounds from Orchard Biomass Waste and Cosmetic Applications. Forests, 16(1), 79. DOI: 10.3390/f16010079

50. Borghetti, M. (2025). SISEF and Italian forest science: thirty years of shared progress. iForest-Biogeosciences and Forestry, 18(4), 194. DOI: https://doi.org/10.3832/ifor0039-018

51. Castronuovo, R., Giuzio, E., Moretti, N., Nolè, A. (2025). Application of the terrestrial laser scanner (TLS) for dendrometric analyses of a Douglas fir stand (Pseudotsuga menziesii [Mirb.] Franco) in Southern Italy. Forest@, 22(1),47-55. DOI: https://doi.org/10.3832/efor4790-022

AdR

BIO-ENVIRONMENTAL

Coordinator Prof. Adriano Sofo

DESCRIPTION OF THE AREA'S RESEARCH ACTIVITIES

The research activity within the "Bio-Environmental" research area aims to strengthen an integrated area that combines Agricultural Genetics, Agricultural Chemistry and Applied Botany, promoting innovative and sustainable approaches for agriculture, biodiversity protection and environmental biomonitoring. The aim is to improve crop adaptation and productivity, make the use of natural resources more efficient and contribute to the achievement of the sustainability goals set by Europe 2030.

Main research interests:

- Analysis of the genetic bases and phenotypic consequences of the adaptation of agricultural species to new environments and climatic conditions.
- Analysis of the root system architecture (RSA) in cereals and legumes.
- Exploration, collection, use and ex situ conservation of agricultural genetic resources of annual species, with particular reference to legumes, cereals and vegetable species.
- Establishment of intelligent collections of genetic resources of food legumes for European agri-food systems.
- Gene identification: study of identification of genes in order to identify genotypes that show favorable alleles for traits of interest and that can be used in the genetic improvement of varieties of agricultural species.

- Evolution and climatic and environmental changes of the genus Phaseoluse Lens for the analysis of the genetic bases and phenotypic consequences of adaptation to new environments and climatic conditions.
- Chemical analysis of nutrients in the soil and their interaction with plant genetics.
- Integration of biotechnology and chemical techniques for the improvement of agricultural practices.
- Environmental sustainability through the use of biopesticides and biostimulants: study of alternative solutions to the use of chemical pesticides, through the genetics of resistant plants and the use of natural biopesticides.
- Sustainable management of water resources and fertilizers.
- Physiological response mechanisms in plants to drought and salinity.
- Disease resistance and defenses against biotic stresses.
- Interactions between plant physiology and soil microbiome.
- Characterization of organic matter (soil, composting, biochar, hydrochar, etc.) and its functionality.
- Role of biochar in climate change mitigation: Exploring the potential of biochar in sequestering soil carbon in the long term, contributing to the reduction of greenhouse gas emissions.
- Analysis of biodiversity at the genetic, population and species level.
- Environmental and applied botany.
- Role of biodiversity conservation and management.

Publications of the Research Area
"Bio Environmental"

Coordinator Prof. Adriano Sofo

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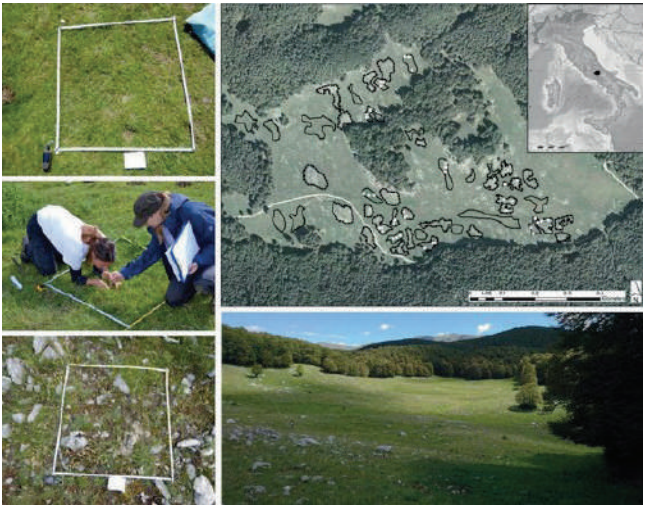
BIOS-01/C Dott.ssa Giovanna Potenza

Keywords

Plant-soil interactions, soil organic matter, biochar/ hydrochar, phytogeography, applied botany, biodiversity, crop genomics, marker-assisted breeding, genetic diversity, evolutionary adaption




Raphonticoides centaurium (L.) M.V. Agab. & Greuter



Publications

1. Sofo A., Dichio B., Elshafie H. S., Camele I., Calabritto M., Tomasi I., Mastroleo M., Xylogiannis E., D'Ippolito I., Mininni A. N. (2024). Enhancing soil properties through sustainable agronomic practices reduced the occurrence of kiwifruit vine decline syndrome. Soil Use and Management, 40 (2), e13052. DOI: 10.1111/sum.13052

2. Srikanth P., Maxton A., Masih S. A., Sofo A., Khan N. A. (2024). Isoprene: an antioxidant to guard plants against stress. International Journal of Plant Biology, 15 (1), 13. DOI: 10.3390/ijpb15010013

3. Thabit F. N., Negim O. I. A., Abdelrahman M. A. E., Scopa A., Moursy A. R. A. (2024). Using various models for predicting soil organic carbon based on DRIFT-FTIR and chemical analysis. Soil Systems, 8 (1), 22. DOI: 10.3390/soilsystems8010022

4. Toscano F., Fiorentino C., Capece N., Erra U., Travascia D., Scopa A., Drosos M., D'Antonio P. (2024). Unmanned aerial vehicle for precision agriculture: a review. IEEE Access, 12, 69188-69205. DOI: 10.1109/access.2024.3401018

5. Vitti A., Coviello L., Nuzzaci M., Vinci G., Deligiannakis Y., Giannakopoulos E., Ronga D., Piccolo A., Scopa A., Drosos M. (2024). Biostimulation of humic acids on Lepidium sativum L. regulated by their content of stable phenolic O-radicals. Chemical and Biological Technologies in Agriculture, 11 (1). DOI: 10.1186/s40538-024-00613w

6. Wodaje M., Fekadu E., Abiye W., Scopa A., Abdelrahman M. A. E., RA Moursy A. (2024). Optimizing sorghum (Sorghum bicolor) yields in northwestern ethiopia: a comprehensive study of key soil nutrient deficiencies. Egyptian Journal of Soil Science, 64 (4), 1617-1636. DOI: 10.21608/ejss.2024.304108.1812

7. Abdel Ekberzade B., Carrasco A. R., Izdebski A., Sofo A., Larsen A., Akinyemi F. O., Bruckman V. J., Baker N., Clark S., Hill C. (2024). GC insights: fostering transformative change for biodiversity restoration through transdisciplinary research. Geoscience Communication, 7, 57-61. DOI: 10.5194/gc-7-57-2024

8. Cortinovis G., Vincenzi L., Anderson R., Marturano G., Marsh J. I., Bayer P. E., Rocchetti L., Frascarelli G., Lanzavecchia G., Pieri A., Benazzo A., Bellucci E., Di Vittori V., Nanni L., Ferreira Fernández J. J., Rossato M., Aguilar O. M., Morrell P. L., Rodriguez M., Gioia T., Neumann K., Alvarez Diaz J. C., Gratias A., Klopp C., Bitocchi E., Geffroy V., Delledonne M., Edwards D., Papa R. (2024). Adaptive gene loss in the common bean pan-genome during range expansion and domestication. Nature Communications, 15 (1), 51032. DOI: 10.1038/s41467-024-51032-2

9. Pieri A., Beleggia R., Gioia T., Tong H., Di Vittori V., Frascarelli G., Bitocchi E., Nanni L., Bellucci E., Fiorani F., Pecchioni N., Marzario S., De Quattro C., Limongi A. R., De Vita P., Rossato M., Schurr U., David J. L., Nikoloski Z., Papa R. (2024). Transcriptomic response to nitrogen availability reveals signatures of adaptive plasticity during tetraploid wheat domestication. Plant Cell, 36 (9), 3809-3823. DOI: 10.1093/plcell/koae202

10. Abd-Elazem A. H., El-Sayed M. A., Fadl M. E., Zekari M., Selmy S. A. H., Drosos M., Scopa A., Moursy A. R. A. (2024). Estimating soil erodible fraction using multivariate regression and proximal sensing data in arid lands, south egypt. Soil Systems, 8 (2), 48. DOI: 10.3390/soilsystems8020048

11. Al Nadabi M. S., D'Antonio P., Fiorentino C., Scopa A., Shams E. M., Fadl M. E. (2024). Utilizing the google earth engine for agricultural drought conditions and hazard assessment using drought indices in the najd region, sultanate of oman. Remote Sensing, 16 (16), 2960. DOI: 10.3390/rs16162960

12. Cassi F., Scopa A. (2024). The development of soil science in Basilicata. In: Soil Science in Italy. Springer ed., 193-206. DOI: 10.1007/978-3-031-52744-9

13. Hou H., Ji J., Lan X., Drosos M., Liu X., Lv Z., Liu Y., Cheng Z., Zhou W. (2024). Organic fertilizers as partial substitutes for chemical fertilizers enhance nitrogen immobilization and optimize nitrogen fate in paddy soils. Agriculture, 14 (12), 2300. DOI: 10.3390/agriculture14122300

14. Jing J., Chen S., Wang Y., Zhao Z., Liu C., Liu Z., Xia S., Bian R., Liu X., Cheng K., Zhang X., Li L., Zheng J., Drosos M., Joseph S., Pan G. (2024). Organic and inorganic composition of three typical pyrolytic liquids and their effect on capsicum growth with foliar fertilization. Journal of Agricultural Resources and Environment. DOI: 10.13254/j.jare.2023.0606

15. Darwish M. H., Megahed H. A., Sayed A. G., Abdalla O., Scopa A., Hassan S. H. A. (2024). Hydro-Geochemistry and water quality index assessment in the Dakhla oasis, egypt. Hydrology, 11 (10), 160. DOI: 10.3390/hydrology11100160

16. Elshafie H. S. M., Camele I., Sofo A. (2024). Plant essential oil with biological activity II. MDPI ed., 1-292. DOI: 10.3390/books978-3-7258-0380-4

17. Fadl M. E., Elfadl D. M. A., Hussien E. A. A., Zekari M., Shams E. M., Drosos M., Scopa A., Megahed H. A. (2024). Irrigation water quality assessment in Egyptian arid lands, utilizing irrigation water quality index and Geo-Spatial techniques. Sustainability, 16 (14), 6259. DOI: 10.3390/su16146259

18. Fadl M. E., Sayed Y. A., El-Desoky A. I., Shams E. M., Zekari M., Abdelsamie E. A., Drosos M., Scopa A. (2024). Irrigation practices and their effects on soil quality and soil characteristics in arid lands: a comprehensive geomatic analysis. Soil Systems, 8 (2), 52. DOI: 10.3390/soilsystems8020052

19. Fatahi B., Sorkheh K., Sofo A. (2024). Deciphering the possible role of RNA-helicase genes mechanism in response to abiotic stresses in rapeseed (Brassica napus L.). BMC Plant Biology, 24, 206. DOI: 10.1186/s12870-024-04893-0

20. Gantait A., Masih S. A., Addesso R., Maxton A., Sofo A. (2024). Glucosinolates mediated regulation of enzymatic activity in response to oxidative stress in brassica spp. Plants, 13 (23), 3422. DOI: 10.3390/plants13233422

21. Gautam H., Khan S., Nidhi N., Sofo A., Khan N. A. (2024). Appraisal of the role of gaseous signaling molecules in thermo-tolerance mechanisms in plants. Plants, 13 (6), 791. DOI: 10.3390/plants13060791

22. Gupta S., Kumar D., Aziz A., Abdelrahman M. A. E., Mustafa A. A., Scopa A., Radice R. P., Drosos M., Moursy A. R. A. (2024). Nanoecology: exploring engineered nanoparticles' impact on soil ecosystem health and biodiversity. Egyptian Journal of Soil Science, 64 (4), 1637-1655. DOI: 10.21608/ejss.2024.304704.1814

23. Khan S., Saify S., Sofo A., Khan N. A. (2024). The mechanisms of melatonin action in shielding photosynthesis during heat stress. Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources, 19 (1), 1-16. DOI: 10.1079/cabireviews.2024.0027

24. Khan S., Alvi A. F., Fatma M., Al-Hashimi A., Sofo A., Khan N. A. (2024). Relative effects of melatonin and hydrogen sulfide treatments in mitigating

salt damage in wheat. Frontiers in Plant Science, 15, 1-22. DOI: 10.3389/fpls.2024.1406092

25. Mohamed I., Farid I. M., Siam H. S., Abbas M. H. H., Tolba M., Mahmoud S. A., Abbas H. H., Abdelhafez A. A., Elkelish A., Scopa A., Drosos M., Abdelrahman M. A. E., Bassouny M. A. (2024). A brief investigation on the prospective of co-composted biochar as a fertilizer for zucchini plants cultivated in arid sandy soil. Open Agriculture, 9 (1), 20220322. DOI: 10.1515/opag-2022-0322

26. Mohamed I., Habbak A. K. E., Abbas M. H., Scopa A., Drosos M., Abdelrahman M. A. E., Bassouny M. A. (2024). Rice straw biochar and NPK minerals for sustainable crop production in arid soils: a case study on maize wheat cropping system. CABI Agriculture abd Bioscience, 5, 91. DOI: 10.1186/s43170-024-00289-0

27. Mecca M., Todaro L., D'Auria M., Italiano S. S. P., Sofo A., Ripullone F. (2024). Volatile organic compounds (VOCs) in mediterranean oak forests of hungarian oak (Quercus frainetto ten) affected by dieback phenomena. Forests, 15 (6), 1072. DOI: 10.3390/f15061072

28. Piccolo A., Drosos M. (2024). The supramolecular structure of soil humeome and the significance of humification. Advances in Agronomy, 188, 405-455. DOI: 10.1016/bs.agron.2024.06.006

29. Piccolo A., Drosos M., Nuzzo A., Cozzolino V., Scopa A. (2024). Enhanced washing of polycyclic aromatic hydrocarbons from contaminated soils by the empowered surfactant properties of de novo o-alkylated humic matter. Environmental Science and Pollution Research International, 31 (11), 16995-17004. DOI: 10.1007/s11356-024-32292-3

30. Prasad Mondal B., Sekhon B. S., Banerjee K., Sharma S., Setia R. K., Das B., Dutta S., Bhattacharya R., Abdelrahman M. A. E., Scopa A., Drosos M., Moursy A. R. A. (2024). Spatial variability of soil microbiological properties under different land use systems. African Journal of Agricultural Research, 20 (9), 825-839. DOI: 10.5897/AJAR2024.16720

31. Bartolucci F., Peruzzi L., Galasso G., Alessandrini A., Ardenghi N. M. G., Bacchetta G., Banfi E., Barberis G., Bernardo L., Bouvet D., Bovio M., Calvia G., Castello M., Cecchi L., Del Guacchio E., Domina G., Fascetti S., Gallo L., Gottschlich G., Guarino R., Gubellini L., Hofmann N., Iberite M., Jiménez-Mejías P., Longo D., Marchetti D., Martini F., Masin R. R., Medagli P., Peccenini S., Prosser F., Roma-Marzio F., Rosati L., Santangelo A.,

Scoppola A., Selvaggi A., Selvi F., Soldano A., Stinca A., Wagensommer R. P., Wilhalm T., Conti F. (2024). A second update to the checklist of the vascular flora native to Italy. Plant Biosystems, 158 (2), 219-296. DOI: 10.1080/11263504.2024.2320126

32. Bitella G., Bochicchio R., Castronuovo D., Lovelli S., Mercurio G., Rivelli A. R., Rosati L., D'Antonio P., Casiero P., Laghetti G., Amato M., Rossi R. (2024). Monitoring plant height and spatial distribution of biometrics with a low-cost proximal platform. Plants, 13 (8), 1085. DOI: 10.3390/plants13081085

33. Cancellieri L., Sperandii M. G., Rosati L., Bellisario B., Franceschini C., Aleffi M., Bartolucci F., Becker T., Belonovskaya E., Berastegi A., Biurrun I., Brunetti M., Bückle C., Che R., Conti F., Dembicz I., Fanni S., Fantinato E., Frank D., Frattaroli A. R., Garcia-mijangos I., Guglielmino A., Janišová M., Maestri S., Magnes M., Potenza G., Primi R., Sobolev N., Tsarevskaya N., Vacca A., Dengler J., Filibeck G. (2024). Drivers of vascular plant, bryophyte and lichen richness in grasslands along a precipitation gradient (central apennines, italy). Journal of Vegetation Science, 35 (5). DOI: 10.1111/jvs.13305

34. Galasso G., Conti F., Peruzzi L., Alessandrini A., Ardenghi N. M. G., Bacchetta G., Banfi E., Barberis G., Bernardo L., Bouvet D., Bovio M., Castello M., Cecchi L., Del Guacchio E., Domina G., Fascetti S., Gallo L., Guarino R., Gubellini L., Guiggi A., Hofmann N., Iberite M., Jiménez-Mejías P., Longo D., Marchetti D., Martini F., Masin R. R., Medagli P., Musarella C. M., Peccenini S., Podda L., Prosser F., Roma-Marzio F., Rosati L., Santangelo A., Scoppola A., Selvaggi A., Selvi F., Soldano A., Stinca A., Wagensommer R. P., Wilhalm T., Bartolucci F. (2024). A second update to the checklist of the vascular flora alien to Italy. Plant Biosystems, 158 (2), 297-340. DOI: 10.1080/11263504.2024.2320129

35. Gori B., Dalla Vecchia A., Amoruso M., Pezzi G., Brundu G., Ceschin S., Pelella E., Alessandrini A., Amadei L., Andreatta S., Ardenghi N. M. G., Armiraglio S., Bagella S., Bolpagni R., Bonini I., Bouvet D., Brancaleoni L., Buccheri M., Buffa G., Chiarucci A., Cogoni A., Domina G., Forte L., Guarino R., Gubellini L., Guglielmone L., Hofmann N., Iberite M., Lastrucci L., Lucchese F., Marcucci R., Mei G., Mossetti U., Nascimbene J., Passalacqua N. G., Peccenini S., Prosser F., Repetto G., Rinaldi G., Romani E., Rosati L., Santangelo A., Scoppola A., Spampinato G., Stinca A., Tavano M., Caruso F. T., Vangelisti R., Venanzoni R., Vidali M., Wilhalm T., Zonca F., Buldrini F., Lambertini C. (2024). Invasion trends of aquatic Ludwigia hexapetala and L. peploides subsp. montevidensis (Onagraceae) in italy based on herbarium

records and global datasets. Management of Biological Invasions, 15 (3), 313-336. DOI: 10.3391/mbi.2024.15.3.02

36. Musarella C. M., Laface V. L. A., Angiolini C., Bacchetta G., Bajona E., Banfi E., Barone G., Biscotti N., Bonsanto D., Calvia G., Cambria S., Capuano A., Caruso G., Crisafulli A., Del Guacchio E., Di Gristina E., Domina G., Fanfarillo E., Fascetti S., Fiaschi T., Galasso G., Mascia F., Mazzacuva G., Mei G., Minissale P., Motti R., Perrino E. V., Picone R. M., Pinzani L., Podda L., Potenza G., Rosati L., Stinca A., Tavilla G., Villano C., Wagensommer R. P., Spampinato G. (2024). New alien plant taxa for Italy and Europe: an update. Plants, 13 (5), 620. DOI: 10.3390/plants13050620

37. Ravera S., Vizzini A., Puglisi M., Totti C., Angiolini C., Azzella M. M., Bacilliere G., Boccardo F., Bonini I., von Brackel W., Brusa G., Cavallaro V., Cancellieri L., Cannucci S., Cantonati M., De Giuseppe A. B., Di Nuzzo L., Dovana F., Fanfarillo E., Fiaschi T., Filibeck G., Francesconi L., Gheza G., Giordani P., Guttová A., Hafellner J., Isocrono D., Malíček J., Mayrhofer H., Miraglia G., Nascimbene J., Nimis P. L., Ongaro S., Pandeli G., Paoli L., Passalacqua N. G., Pinault P., Pistocchi C., Potenza G., Prosser F., Puntillo D., Puntillo M., Rosati L., Sicoli G., Tiburtini M., Tretiach M., Zedda L. (2024). Notulae to the italian flora of algae, bryophytes, fungi and lichens: 17. Italian Botanist, 17, 23-41. DOI: 10.3897/italianbotanist.17.123283

38. Tardella F. M., Pennesi R., Ballelli S., Cancellieri L., Caruso G., Falcinelli F., Fascetti S., Galasso G., Gigante D., Laface V. L. A., Lattanzi E., Lavezzo P., Musarella C. M., Pinzani L., Quattrini G., Rosati L., Spada F., Stinca A., Tilia A., Catorci A. (2024). Contribution to the floristic knowledge of Mount Pennino massif (Umbria-Marche Apennines, central Italy). Italian Botanist, 18, 1-11. DOI: 10.3897/italianbotanist.18.128215

39. Sarneel J., Hefting M., Sandén T., van den Hoogen J., Routh D., Adhikari B., Alatalo J., Aleksanyan A., Alsafran M., Althuizen I., Atkins J., Augusto L., Aurela M., Azarov A., Barrio I., Bejarano M., Benham S., Bezler N., Björnsdóttir K., Bolinder M., Carbognani M., Cazzolla Gatti R., Chelli S., Chistotin M., Christiansen C., Courtois P., Crowther T., Dechoum M., Duddigan S., Egerton-Warburton L., Elumeeva T., Fanin N., Fantappiè M., Fares S., Fernandes G., Filippova N., Fliessbach A., Fuentes D., Godoy R., Grünwald T., Guzmán G., Hawes J., Hero J., Hess L., Hogendoorn K., Høye T., Jans W., Jónsdóttir I., Keller S., Kuz`menko N., Laudon H., Lembrechts J., Li J., Limousin J., Lukin S., Marín C., Marques R., Mcdaniel M., Meek Q., Merzlaya G., Michelsen A., Montagnani L., Mueller P., Murugan R., Myers-Smith I., Nolte S., Ochoa-Hueso R., Okafor B., Okorkov V., Onipchenko V., Orozco M., Parkhurst T., Peres C., Petit Bon M., Petraglia A., Pingel M.,

Rebmann C., Scheffers B., Scholes M., Sheffer E., Shevtsova L., Smith S., Sofo A., Stevenson P., Strouhalová B., Sundsdal A., Sühs R., Tamene M., Thomas H., Tolunay D., Tomaselli M., Tresch S., Tucker D., Ulyshen M., Valdecantos A., Vanguelova E., Yahdjian L., Yumashev X., Keuskamp J. (2024). Reading tea leaves worldwide: decoupled drivers of initial litter decomposition mass-loss rate and stabilization. Ecology Letters, 27 (5), 1-14. DOI: 10.1111/ele.14415

40. Sayed Y. A., Ali A. M., Ibrahim M. F., Fadl M. E., Casucci C., Drosos M., Scopa A., Al-Sayed H. M. (2024). Impact of poultry manure-derived biochar and bio-fertilizer application to boost production of black cumin plants (Nigella sativa L.) grown on sandy loam soil. Agriculture, 14 (10), 1801. DOI: 10.3390/agriculture14101801

41. Abdelrhman A. A., Abdel-Fattah I. M., Mostafa M. O., Fadl M. E., Drosos M., Scopa A. (2025). Optimizing drip irrigation and nitrogen fertilization for sustainable wheat production in arid soils: Water–Nitrogen use efficiency. Water, 17 (18), 2708. DOI: 10.3390/w17182708
42. Abdelrhman A. A., Sayed Y. A., Fadl M. E., Casucci C., Drosos M., Scopa A., Moftah H. (2025). Impact of aggregate-associated carbon on soil mechanical properties: stability and compaction indices in pomegranate orchards of different ages. Soil Systems, 9 (1), 20. DOI: 10.3390/soilsystems9010020

43. Addesso R., Araniti F., Bloise A., Mininni A. N., Dichio B., López-González D., Elshafie H. S., Ellerbrock R. H., Schnee L. S., Filser J., Sileo D., Sofo A. (2025). Soil organic matter quality in an olive orchard differently managed for 21 years: insights into its distribution through soil aggregates and depth. Agriculture, Ecosystems & Environment, 380, 109388. DOI: 10.1016/j.agee.2024.109388

44. Rashvand M., Nikzadfar M., Laveglia S., Mirmohammadrezaei H., Bozorgi A., Paterna G., Matera A., Gioia T., Altieri G., Di Renzo G. C., Genovese F. (2025). Advancing legume quality assessment through machine learning: current trends and future directions. Journal of Food Composition and Analysis, 142 (10), 107532. DOI: 10.1016/j.jfca.2025.107532

45. Rashvand M., Paterna G., Laveglia S., Zhang H., Shenfield A., Gioia T., Altieri G., Di Renzo G. C., Genovese F. (2025). Quality detection of common beans flour using hyperspectral imaging technology: potential of machine learning and deep learning. Journal of Food Composition and Analysis, 142 (10), 107424. DOI: 10.1016/j.jfca.2025.107424

46. Rocchetti L., Frimpong A. K., Di Vittori V., Santamarina C., Pieri A., Tosoroni A., Papalini S., Francioni F., Musari E., Bellucci E., Nanni L., Marzario S., Logozzo G., Gioia T., Bett K., Arlotti G., Silvestri M., Papa R., Bitocchi E. (2025). Newly-identified lentil genotypes adapted to mediterranean agro-ecosystems. Biorxiv, 2025.07.10.664142. DOI: 10.1101/2025.07.10.664142

47. Wright D. M., Neupane S., Shirtliffe S., Gioia T., Logozzo G., Marzario S., Nielsen K. M. E., Bett K. E. (2025). Dissecting lentil crop growth in contrasting environments using digital imaging and genome-wide association studies. Plant Phenome Journal, 8 (1), e70040. DOI: 10.1002/ppj2.70040

48. Abd El-Hamid S. M., Aziz S. W., Mohamed A. A., El-gedamy M. S., Salem A. E., Mohammed S. F., Zordok W. A., Sofo A., Sabry M. A., Sadeek S. A., Elshafie H. S. (2025). Structural, spectroscopic, and docking analysis of N,O-Donor ligand metal complex nanoparticles with hypolipidemic effects via lipoprotein lipase activation in High-Fat diet mice. Chemistry & Biodiversity, 22 (5), e202403003. DOI: 10.1002/cbdv.202403003

49. Chauhan I., Abdel Rahman M. A. E., Scopa A., Mangat A., Kumar A. (2025). Managing livestock manure. n: Smart Technologies for Sustainable Livestock Systems. Taylor & Francis ed., 35-52. DOI: 10.1201/9781003527114-3

50. Cicco N., Candido V., Coluzzi R., Imbrenda V., Lanfredi M., Larocca M., Lorusso A., Benelli C., Sofo A. (2025). Revitalizing marginal areas of Basilicata (southern Italy) with saffron: a strategy approach mixing alternative cultivation system and land suitability analysis. Land, 14 (4), 902. DOI: 10.3390/land14040902

51. D'Antonio P., Fiorentino C., Abdelrahman M. A. E., Sannino M., Scalcione E., Lacertosa G., Modugno F., Marsico A., Donvito A. R., Conceicao L. A., Drosos M., Scopa A. (2025). Modeling climatic, terrain and soil factors using AHP in GIS for grapevines suitability assessment. Sustainable Development, 33 (1), 970-991. DOI: 10.1002/sd.3136

52. Dichio C., Sofo A., Yaghoubi Khanghahi M., Crecchio C., Addesso R. (2025). Physiological and biochemical mechanisms of waterlogging tolerance in plants. Physiologia Plantarum, 177 (6), e70663. DOI: 10.1111/ppl.70663

53. El-Komy M. S., Abuzaid A. S., Fadl M. E., Drosos M., Scopa A., Abdel-Hai M. S. (2025). Spatiotemporal variations affect DTPA-extractable heavy metals in coastal salt-affected soils of arid regions. Soil Systems, 9 (1), 26. DOI: 10.3390/soilsystems9010026

54. Hoque M. M., Saha B. K., Scopa A., Drosos M. (2025). Biochar in agriculture: a review on sources, production, and composites related to soil fertility, crop productivity, and environmental sustainability. C, 11 (3), 50. DOI: 10.3390/c11030050

55. Kaamoush M. I. A., Scopa A., Drosos M., El-Zeiny A. M. (2025). Environmental impact of Irgarol 1051, a biocide, on marine microalgae metabolism: a case study of chlorella salina and dunaliella bardawil. Journal of Marine Science and Engineering, 13 (4), 695. DOI: 10.3390/jmse13040695

56. Khattab M. I., Fadl M. E., Megahed H. A., Saleem A. M., El-Saadawy O., Drosos M., Scopa A., Selim M. K. (2025). Evaluation of the soil conservation service curve number (SCS-CN) method for flash flood runoff estimation in arid regions: a case study of central eastern desert, egypt. Hydrology, 12 (3), 54. DOI: 10.3390/hydrology12030054

57. Lin Q., Chen S., Feng X., Thammavongsa S., Cheng K., Zhang X., Bian R., Liu X., Wang Y., Drosos M., Zheng J., Lianqing L., Pan G. (2025). Lithological impact on topsoil organic carbon storage of karst forest soils shaped by aggregate pool complexity and their molecular composition. Applied Soil Ecology. DOI: 10.1016/j.apsoil.2024.105800

58. Liu C., Shang S., Wang C., Tian J., Zhang L., Liu X., Bian R., He Q., Zhang F., Chen L., Drosos M., Azeem M., Li L., Shan S., Pan G. (2025). Biochar amendment increases peanut production through improvement of extracellular enzyme activities and microbial community composition in replanted field. Plants, 14 (6), 922. DOI: 10.3390/plants14060922

59. Marzella A., Campanale M., Scrascia M., Pazzani C., Sofo A., Mandrelli L., Calabrese A. (2025). Bio-composts, soil microbial community, antimicrobial resistance: an ex-situ pilot study. Ecological Engineering & Environmental Technology, 26 (10), 300-316. DOI: 10.12912/27197050/210516

60. Mastroleo M., Ceccarelli A., Sofo A., Dichio B., Mininni A. N., Green S., Scotti C., Bergamaschi V., Donati I. (2025). An innovative and multidisciplinary approach to face kiwifruit vine decline syndrome (KVDS). Acta Horticulturae, 1431, 487-496. DOI: 10.17660/actahortic.2025.1431.63

61. Megahed H. A., Farrag A. E. A., Mohamed A. A., Darwish M. H., Abdelrahman M. A. E., El-Bagoury H., D'Antonio P., Scopa A., Saad M. A. A. (2025). GIS-based modeling and analytical approaches for groundwater quality suitability for different purposes in the egyptian nile valley, a case study in wadi qena. Frontiers in Water, 7, 1502169. DOI: 10.3389/

frwa.2025.1502169

62. Muzammal Hoque M., Iannelli V., Padula F., Radice R. P., Kumar Saha B., Martelli G., Scopa A., Drosos M. (2025). Microalgae: green engines for achieving carbon sequestration, circular economy, and environmental Sustainability—A review based on last ten years of research. Bioengineering, 12 (9), 909. DOI: 10.3390/bioengineering12090909

63. Pavana Praneetha T., Masih S. A., Addesso R., Maxton A., Sofo A. (2025). Brassicaceae isothiocyanate-mediated alleviation of soil-borne diseases. Plants, 14 (8), 1200. DOI: 10.3390/plants14081200

64. Piccolo A., Drosos M. (2025). The essential role of humified organic matter in preserving soil health. In: Chemical and Biological Technologies in Agriculture. Springer ed., 12 (21). DOI: 10.1186/s40538-025-00730-0

65. Radice R. P., Iannelli V., Padula F., De Fabrizio V., Drosos M., Scopa A., Martelli G. (2025). The potential role of microalgal antioxidant molecules on the microbiota-gut axis in inflammatory bowel diseases. Biomolecules, 15 (11), 1535. DOI: 10.3390/biom15111535

66. Sarneel J. M., Atkins J. W., Augusto L., Barel J. M., Duddigan S., Fanin N., Hefting M. M., Lembrechts J. J., Marín C., Mcdaniel M. D., Montagnani L., Parkhurst T., Petit Bon M., Sofo A., Keuskamp J. A. (2025). The assumptions of the tea bag index and their implications: a reply to Mori 2025. Ecology Letters, 28 (4), e70117. DOI: 10.1111/ele.70117

67. Savy D., Mazzei P., Nebbioso A., Drosos M., Nuzzo A., Cozzolino V., Spaccini R., Piccolo A. (2025). Molecular characterization of humic substances and humic-like substances (HULIS) from biomass. In: Analytical Techniques and Methods for Biomass. Springer ed., 89-118. DOI: 10.1007/978-3-031-89138-0_4

68. Sofo A., Dichio B., Mininni A. N., Tomasi I., Scotti C., Green S., Tuzio A. C., Laterza D., Di Biase R., Calabritto M., De Virgilio C., Manzari C., Xylogiannis E., Donati I., Mastroleo M. (2025). A new systemic approach for promoting soil and plant health in actinidia chinensis var. chinensis orchards to face kiwifruit vine decline syndrome (KVDS). Acta Horticulturae, 1431, 17-24. DOI: 10.17660/actahortic.2025.1431.3

69. Wu J., Li Z., Li Y., Liu J., Liu C., Chai Y., Ai C., Hussain Q., Drosos M., Shan S. (2025). Effects of rice straw biochar application rates on soil aggregate biogeochemistry and linkages to microbial community structure and

enzyme activities. Soil & Tillage Research, 252, 106589. DOI: 10.1016/j.still.2025.106589

70. Wu J., Zhou B., Li Z., Liu C., Li Y., Wang Y., Zhao N., Wang Z., Chai Y., Scopa A., Drosos M., Rajput V. D., Shan S. (2025). Biochar promoted soil organic carbon accumulation and aggregate stability by increasing the content of organic complex metal oxides in paddy soil. Soil & Tillage Research, 254, 106713. DOI: 10.1016/j.still.2025.106713

71. Xiong L., Drosos M., Jiao M., Sun J., Li G., He L., Li F., Liu C., Scopa A., Xia W., Shao C., Liu Z. (2025). Heavy metal contamination threats carbon sequestration of paddy soils with an attenuated microbial anabolism. Geoderma, 461, 117486. DOI: 10.1016/j.geoderma.2025.117486

72. Yaghoubi Khanghahi M., Abdelgawad H., Curci M., Garrigues R., Korany S. M., Alsherif E. A., Verbruggen E., Spagnuolo M., Addesso R., Sofo A., Beemster G. T. S., Crecchio C. (2025). Transcriptomic, biochemical, and microbiome assessments into drought and salinity tolerance in durum wheat mediated by plant growth-promoting bacteria. Physiology and Molecular Biology of Plants, 31 (12), 2121-2143. DOI: 10.1007/s12298-025-01686-z

73. Yang Z., Liu W., Fan X., Gao H., Xu X., Liu C., Chai Y., Zhang M., Drosos M., Shan S. (2025). The molecular composition of soil organic matter is regulated by bacterial community under biochar application. Geoderma, 457, 117308. DOI: 10.1016/j.geoderma.2025.117308

74. Freschi P., Fascetti S., Riga F., Zaccaroni M., Giannini F., Langella E., Cosentino C. (2025). Feeding behavior of the european brown hare (Lepus europaeus, leu2 haplotype) on pianosa island: insights into the absence of trophic competition. Veterinary Sciences, 12 (6), 546. DOI: 10.3390/vetsci12060546

AdR

CROPPING SYSTEMS AND PLANT PROTECTION

Coordinator Prof. Stella Lovelli

DESCRIPTION OF THE AREA'S RESEARCH ACTIVITIES

The research activity of the "Crop Systems and Plant Protection" research area synergistically integrates the skills of the agronomic area and plant pathology, with the aim of developing sustainable, resilient cropping systems capable of responding to the environmental and production challenges of modern agriculture. Research activities range from agro-ecosystem management to plant protection, including innovative approaches to improve production quality, resource efficiency and crop protection.

In particular, professors and researchers in the agronomic sector focus on:

- Study of agro-ecosystems and plant-environment and soil-plant interactions.
- Analysis of the ecophysiology of herbaceous crops in response to abiotic stresses.
- Development of sustainable irrigation models.
- Assessment of the effects of climate change on cropping systems.
- Study of the adaptability, in the Mediterranean environment, of sweetening plants alternative to sucrose.
- Characterization of secondary plant metabolites.
- Precision agriculture applications.
- Production of biomass for energy and industrial purposes.

- Floricultural research on turfs, sustainable control of phytoparasitic nematodes and enhancement of ornamental spontaneous geophytes.
- Study of the epidemiological and pathogenetic aspects of plant diseases.
- Identification and morphological and molecular characterization of viruses, fungi, bacteria and phytoplasmas.
- Analysis of plant-pathogen interaction mechanisms.
- Isolation and characterization of bioactive secondary metabolites with potential use as biophytopharmaceuticals.
- Study of rhizosphere and phyllosphere bacteria as possible antagonistic agents (PGPR).
- Research on signalling mechanisms in plant-pathogen-antagonist interactions.
- Evaluation of the effectiveness of essential oils and composted biomass in biological defense.
- Study of crop resistance to biotic agents.
- Application of biocontrol agents, including Trichoderma spp.

Publications of the Research Area
"Plant Phenotyping"

Coordinator Prof.ssa Stella Lovelli

Professors:

AGRI-02/A Prof. Michele Perniola, Prof.ssa Mariana Amato, Prof.ssa Anna Rita Rivelli, Prof.ssa Stella Lovelli, Dott. Daniele De Rosa

AGRI-02/B Prof. Vincenzo Candido

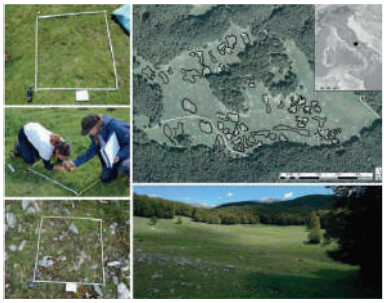
AGRI-05/A Prof.ssa Donatella Battaglia, Prof. Paolo Fanti

AGRI-05/B Prof. Ippolito Natale Camele, Dott. Hazem. S. Elshafie, Prof. Aniello Crescenzi

Keywords

Agroecosystems, ecophysiology, sustainable irrigation, climate change, precision agriculture, carbon farming, secondary metabolites, plant pathology, biocontrol, biological control





Publications

1. Akram M.Z, Rivelli A.R., Libutti A., Liu F., Andreasen C. (2024). Mitigation of Drought Stress for Quinoa (Chenopodium quinoa Willd.) Varieties Using Woodchip Biochar-Amended Soil. Plants, 13(16), 2279, 1-19. DOI: https://doi.org/10.3390/plants13162279

2. Akram M.Z., Libutti A., Rivelli AR. (2024). Drought Stress in Quinoa: Effects, Responsive Mechanisms, and Management through Biochar Amended Soil: A Review. Agriculture, 14(8), 1418, 1-25. DOI: https://doi.org/10.3390/agriculture14081418

3. Altieri G., Wiman N.G., Santoro F., Amato M., Celano G. (2024) Assessment of leaf water potential and stomatal conductance as early signs of stress in young hazelnut tree in Willamette valley. Scientia Horticulturae 327, 112817. DOI: https://doi.org/10.1016/j.scienta.2023.112817

4. Tathode M. S., Bonomo M. G., Zappavigna S., Mang S. M., Bocchetti M., Camele I., Caraglia M. Salzano G. (2024). Whole-genome analysis suggests probiotic potential and safety properties of Pediococcus pentosaceus DSPZPP1, a promising LAB strain isolated from traditional fermented sausages of Basilicata region (Southern Italy). Front. Microbiol. 15:1268216. DOI: 10.3389/fmicb.2024.1268216

5. Elshafie H. S., Camele I., Sofo A. (2024). Book - Plant Essential Oil with Biological Activity II. Plants, 12, 3616. DOI: 10.3390/books978-3-7258-0380-4

6. Gruľová D., Baranová B., Francolino R., Elshafie H. S., Kiššová Z., Glovaťáková A., De Martino L., Amato G., Martino M., Caputo L., Polito F., Manna F., Camele I., Tkáčiková Ľ., De Feo V. (2024). Exploring the Diverse Biological Properties of Cannabidiol: A Focus on Plant Growth Stimulation. Chem. Biodiversity, e202400274. DOI: 10.1002/cbdv.202400274

7. Bitella, G.; Bochicchio, R.; Castronuovo, D.; Lovelli, S.; Mercurio, G.; Rivelli, A.R.; Rosati, L.; D'Antonio, P.; Casiero, P.; Laghetti, G., M. Amato, Rossi R. (2024). Monitoring Plant Height and Spatial Distribution of Biometrics with a Low-Cost Proximal Platform. Plants 13, 1085. DOI: https://doi.org/10.3390/plants13081085

8. Rossi R., Bochicchio, R., Labella R., Amato M., De Vita P. (2024). Phenotyping Seedling Root Biometry of Two Contrasting Bread Wheat Cultivars under Nutrient Deficiency and Drought Stress. Agronomy. 14(4):775. DOI: https:// doi.org/10.3390/agronomy14040775

9. Labella, R., Bochicchio, R., Addesso, R., Labella, D., Franco, A., Falabella, P., Amato, M. (2024). Germination behavior and Geographical Information System – based phenotyping of root hairs to evaluate effects of different sources of black soldier fly (Hermetia illucens) larval frass on herbaceous crops. Plants 13, 230. DOI: https://doi.org/10.3390/plants13020230

10. Sofo A., Dichio B., Elshafie H. S., Camele I., Calabritto M., Tomasi I., Mastroleo M., Xylogiannis E., D'Ippolito I., Mininni A. N. (2024). Enhancing soil properties through sustainable agronomic practices reduced the occurrence of kiwifruit Vine Decline Syndrome. Soil Use Manage. 40: e13052. DOI: 10.1111/sum.13052

11. Geppert C., Da Cruz M., Alma A., Andretta L., Anfora G., Battaglia D., Burgio G., Caccavo V., Chiesa S.G., Cinquatti F., Cocco A., Costi E., D'Isita I., Duso C., Garonna A.P., Germinara G.S., Lo Bue P., Lucchi A., Maistrello L., Mannu R., Marchesini E., Masetti A., Mazzon L., Mori N., Ortis G., Peri E., Pescara G., Prazaru S.C., Ragone G., Rigamonti I.E., Rosi M.C., Rotundo G., Sacchetti P., Savoldelli S., Suma P., Tamburini G., Tropea Garzia G., Marini L. (2024). Climate and landscape composition explain agronomic practices, pesticide use and grape yield in vineyards across Italy. Agricultural Systems, 215,103853. DOI: https://doi.org/10.1016/j.agsy.2024.103853

12. Battaglia D., Mang S.M., Caccavo V., Fanti P., Forlano P. (2024). The Belowground–Aboveground Interactions of Zucchini: The Effects of Trichoderma afroharzianum Strain T22 on the Population and Behavior of the Aphid Aphis gossypii Glover and Its Endoparasitoid Aphidius colemani Viereck. Insects, 15 (9), 690.
DOI: https://doi.org/10.3390/insects15090690

13. Mohamed A. A., Sadeek S. A., Rashid N. G., Elshafie H. S., Camele I. (2024). Synthesis, Characterization and Evaluation of the Antimicrobial and Herbicidal Activities of Some Transition Metal Ions Complexes with the Tranexamic Acid. Chem. Biodiversity 2024, e202301970. DOI: 10.1002/cbdv.202301970

14. Elshafie H. S., Mang S. M., Camele I. (2024). Blended formulations of oregano-sage essential oils: antimicrobial, phytotoxic, and anti-quorum sensing investigations. Journal of Biological Research 2024; 97:11999.

DOI: 10.4081/jbr.2024.11999

15. Mang S. M., Marcone C., Camele I. (2024). Fungal diversity in chestnut galls induced by Dryocosmus kuriphilus from Basilicata Region (Southern Italy). Ann. For. Res. 67(1): 115-130, 2024. DOI: 10.15287/afr.2024.3690

16. Ayed A., Caputo L., De Feo V., Elshafie H. S., Fratianni F., Nazzaro F., Hamrouni L., Amri I., Mabrouk Y., Camele I., Polito F. (2024). Antimicrobial, anti-enzymatic and antioxidant activities of essential oils from some Tunisian Eucalyptus species. Heliyon 10 (2024) e34518. DOI: 10.1016/j.heliyon.2024.e34518

17. Camele I., Mohamed A. A., Ibrahim Amira A., Elshafie H. S. (2024). Biochemical Characterization and Disease Control Efficacy of Pleurotus eryngii-Derived Chitosan—An In Vivo Study Against Monilinia laxa, the Causal Agent of Plum Brown Rot. Plants, 13, 2598. DOI: 10.3390/plants13182598

18. De Rosa, Daniele, Cristiano Ballabio, Emanuele Lugato, Matteo Fasiolo, Arwyn Jones, and Panos Panagos."Soil organic carbon stocks in European croplands and grasslands: How much have we lost in the past decade? (2024). Global Change Biology 30, 1: e16992. DOI: https://doi.org/10.1111/gcb.16992

19. Fiorentini M., Schillaci C., Denora M., Zenobi S., Deligios P.A., Orsini R., Santilocchi R., Perniola M., Montanarella L., Ledda L. (2024). A machine learning modeling framework for Triticum turgidum subsp. durum Desf. yield forecasting in Italy. Agronomy Journal, 116:1050-1070. DOI: 10.1002/agj2.21279

20. Fiorentini M., Schillaci C., Denora M., Zenobi S., Deligios P.A., Santilocchi R., Perniola M., Ledda L., Orsini R. (2024). Fertilization and soil-management machine-learning-based sustainable agronomic prescriptions for durum wheat in Italy. Precision Agriculture, 25(6), 2853-2880. DOI: 10.1007/s11119-024-10153-w

21. Rivelli A.R., Akram M.Z., Libutti A. (2024). Woody Biochar Rate and Water Shortage Impact on Early Growth Stages of Chenopodium quinoa Willd. Agronomy, 14(1), 53, 1-16. DOI: https://doi.org/10.3390/agronomy14010053

22. Akram M.Z., Libutti A., Rivelli AR. (2024). Enhancing Vegetative Growth of Quinoa and Soil Properties under Water Shortage through Targeted

Organic Amendments. Biology and Life Science Forum, 30(1), 4, 1-6. DOI: https://doi.org/10.3390/IOCAG2023-16532

23. Trotta, V., Russo, D., Rivelli, A.R., Battaglia D., Bufo S.A., Caccavo V., Forlano P., Lelario F., Milella L., Montinaro L., Scrano L., Brienza M. (2024). Wastewater irrigation and Trichoderma colonization in tomato plants: effects on plant traits, antioxidant activity, and performance of the insect pest Macrosiphum euphorbiae. Environmental Science Pollution Researcher, 31(12), 18887–18899. DOI: https://doi.org/10.1007/s11356-024-32407-w

24. Rivelli A.R., Castronuovo D., La Gatta B., Liberatore M.T., Libutti A. (2024). Qualitative Characteristics and Functional Properties of Cherry Tomato under Soilless Culture Depending on Rootstock Variety, Harvesting Time and Bunch Portion. Foods, 13(10), 1450, 1-18. DOI: https://doi.org/10.3390/foods13101450

25. Feeney, C. J., Bentley L., De Rosa D., Panos P., Bridget A. Emmett, A. T., Robinson D.A. (2024). Benchmarking soil organic carbon (SOC) concentration provides more robust soil health assessment than the SOC/clay ratio at European scale. Science of the Total Environment. DOI: https://doi.org/10.1016/j.scitotenv.2024.175642

26. Panos P., De Rosa D., Liakos L., Labouyrie M., Borrelli P., Ballabi C. (2024). Soil bulk density assessment in Europe. Agriculture, Ecosystems & Environment 364:108907. DOI: https://doi.org/10.1016/j.agee.2024.108907

27. Panagos, Panos, Nils Broothaerts, Cristiano Ballabio, Alberto Orgiazzi, Daniele De Rosa, Pasquale Borrelli, Leonidas Liakos et al (2024). How the EU Soil Observatory is providing solid science for healthy soils. European Journal of Soil Science 75, 3 e13507. DOI: https://doi.org/10.1111/ejss.13507

28. Petraglia, T., Latronico, T., Pepe, A., Crescenzi, A., Liuzzi, G. M., Rossano, R. (2024). Increased Antioxidant Performance of Lignin by Biodegradation Obtained from an Extract of the Mushroom Pleurotus eryngii. Molecules, 29(23), 5575. DOI: https://doi.org/10.3390/molecules29235575

29. Polito F., De Martino L., Mirabile G., Venturella G., Gargano M. L., De Feo V., E. Hazem S., Camele I. (2024). Composition and antimicrobial activity of hydroalcoholic extracts of Pleurotus eryngii var. ferulae and P.eryngii var. elaeoselini. Front. Chem. 12:1498787. DOI: 10.3389/fchem.2024.1498787

30. Satriani A., Belviso C., Lovelli S., Di Prima S., Coppola A., Hassan S.B.M., Rivelli A.R., Comegna A. (2024). Impact of a synthetic zeolite mixed with soils of different pedological characteristics on soil physical quality indices. Geoderma, 451, 117084, 1-14. DOI: https://doi.org/10.1016/j.geoderma.2024.117084

31. Trotta V., Fanti P., Rosamilia R., Battaglia D. (2024). An Evaluation of the Effects of Delayed Parasitism on Daily and Lifetime Fecundity of Aphidius ervi Haliday. Insects, 16 (1), 3. DOI: https://doi.org/10.3390/insects16010003

32. Trotta V., Forlano P., Caccavo V., Fanti P., Battaglia D. (2024). Transgenerational plasticity in aphids reared in a poor-resource environment. Current Research in Insect Science, 5, 100081. DOI: https://doi.org/10.1016/j.cris.2024.100081

33. Mang S. M., Marcone C., Marcone M., Malvasi G., Chira D., Chira F., Maxim A., Camele I. (2025). Molecular characterization of Cryphonectria parasitica isolates from Basilicata region (Southern Italy) and mycovirus identification. Journal of Biological Research, 98: 12459. DOI: 10.4081/jbr.2024.12459

34. Mang S. M., Camele I., Palmieri C., Marcone C. (2025). A Novel Strawberry Disease Associated with Leaf Spot, Crown Rot, and Root Rot Caused by Neopestalotiopsis rosae in Italy. Journal of Phytopathology, 2025; 173: e70071 1. DOI: 10.1111/jph.70071

35. El-Beltagi H. S., Osman A., Sitohy M., Almutairi H. H., Eldesouky E., Abbas E., Ismail A. M., Elshafie H. S., Camele I. (2025). Biocontrol effect of ginger glycoprotein and essential oil against Vicia faba damping-off caused by Fusarium solani and Rhizoctonia solani. Kuwait Journal of Science, 52, 100437. DOI: 10.1016/j.kjs.2025.100437

36. Cherif M. C., Boughendjioua H., Caputo L., Camele I., Tahraoui T., De Feo V., Elshafie H. S. (2025). FTIR Characterization and Bioactivity Assessment of Cinnamomum camphora Essential Oil: Antioxidant, Anti-Enzymatic, and Antifungal Properties Against Phytopathogens. Chemistry&Biodiversity, 0: e00720. DOI: 10.1002/cbdv.202500720

37. Amato G., Adiletta V., De Martino L., Elshafie H. S., Camele I., Francolino R., Caputo L., De Feo V. (2025). Eco-Sustainable management of weeds and phytopathogens using Achillea millefolium essential oil. Industrial Crops & Products 235 (2025) 121799. DOI: 10.1016/j.indcrop.2025.121799

38. Hamad G. M., Abdo N. M., Abd Ellatif S. A., Elshafie H. S., Razik E. S. A, El-Sheikh M. H., Kabeil S. S.A., Abou-Alella S. A., Abd Elaziz A. I., Saad M. A., Alkenani N. A., Camele I. (2025). Essential Oils from Olea europaea and Cyperus esculentus Exhibit Promising Therapeutic Effect against Alzheimer's Disease in a Rat Model. Current Pharmaceutical Biotechnology; Issue 3, Volume 27, 363-375. DOI: 10.2174/0113892010343085250226111914

39. Sharifi-Rad M., Camele I., Pohl P., Mohanta Y. K., Elshafie H. S. (2025). Comparative analysis of solvent and advanced extraction techniques for optimizing phytochemical yield and bioactivity of Matthiola ovatifolia (Boiss.) Aerial parts. Scientific Reports, 15:39978. DOI: org/10.1038/s41598-025-23565-z

40. Petraglia, T., Latronico, T., Liuzzi, G. M., Fanigliulo, A., Crescenzi, A., & Rossano, R. (2025). Hydrolytic Enzymes in the Secretome of the Mushrooms P. eryngii and P. ostreatus: A Comparison Between the Two Species. Molecules, 30(12), 2505. DOI: 10.3390/molecules30122505

41. Timo Breure, Daniele De Rosa, Panos Panagos, Francesca Cotrufo, Arwyn Jones, and Emanuele Lugat (2025). Revisiting the soil carbon saturation concept to inform a risk index in European agricultural soils. Nature Communications 16, 1: 2538.
DOI: https://doi.org/10.1038/s41467-025-57355-y

42. Campbell, Grant A., Pete Smith, Nils Broothaerts, Panos Panagos, Arwyn Jones, Cristiano Ballabio, Daniele De Rosa et al. "Continental Scale Soil Monitoring: A Proposed Multi-Scale Framing of Soil Quality (2025). European Journal of Soil Science 76, 4: e70174. DOI: https://doi.org/10.1111/ejss.70174

43. Kirkby R., Johannes F., De Rosa D., Timothy J. C., David W. R., Peter R. G. (2025). Hybrid pathways of denitrification drive N2O but not N2 emissions from an acid-sulphate sugarcane soil. Biology and Fertility of Soils 61, 3: 559-573. DOI: https://doi.org/10.1007/s00374-023-01783-9

44. Lomonaco, G., Labella, R., Bochicchio, R., Franco, A., Addesso, R., Falabella, P., Amato, M. (2025). Establishment of barley (Hordeum vulgare L.) seedlings is affected by application of frass from Hermetia illucens. Discov Sustain 6, 157. DOI: https://doi.org/10.1007/s43621-025-00863-0

45. Akram, M.Z., Libutti, A., Andreasen, C., Liu F., Rivelli A.R. (2025). Woody Biochar Differently Influences Plant Water Status and Growth of Five Quinoa (Chenopodium Quinoa Willd.) Varieties Under Water Stress. Journal of Soil Science and Plant Nutrition, 25(2), 5140-5156. DOI: https://doi.org/10.1007/s42729-025-02453-5

46. Akram M.Z., Liu F., Rivelli A.R., Libutti A., Andreasen C. (2025). Unlocking Drought Tolerance in Quinoa Varieties: Insights from Biochar-Amended Soil on Root and Stomatal Adaptations. Journal of Soil Science and Plant Nutrition, 25(3), 7588-7599. DOI: https://doi.org/10.1007/s42729-025-02615-5

47. Satriani, A., Lovelli, S., Belviso, C., Comegna, A. (2025). Effect of waste-derived synthetic zeolite on soil hydraulic properties and soil water storage parameters in sandy-loam soils. Catena, 259, 109395. DOI: https://doi.org/10.1016/j.catena.2025.109395

48. Satriani, A., Castronuovo, D., Comegna, A., Cardone, L., Candido, V., Lovelli, S. (2025). Chabazite and seaweed extract effects on lettuce water relations and growth. Scientia Horticulturae, 349, 114260. DOI: https://doi.org/10.1016/j.scienta.2025.114260

49. Polito F., Denora M., Casiello D., Casiero P., Cardone L., Candido V., Perniola M., De Feo V., Paolombo V., Delfine S. (2025). Effect of Plant Density on Artemisia annua L. Biomass and Essential Oil Yield and its Weed Seed Germination Suppression. Agriculture, 15(13), 1330. DOI:10.3390/agriculture15131330

50. Gatta G., Carucci F., Gagliardi A., Perniola M., Denora M., De Mastro F., Brunetti G., Murgolo S., De Ceglie C., Pollice A., Giuliani M.M. (2025). Possible accumulation of emerging contaminants of concern in treated wastewater on the soil-plant system of a processing tomato-wheat succession. Agricultural Water Management, 308, 109305. DOI: 10.1016/j.agwat.2025.109305

51. Denora M., Mehmeti A., Casiello D., Casiero P., Melone D.M., Cardone L., Mazzei P., Ronga D., De Falco E., Perniola M. (2025). Durum wheat-vetch intercropping in Mediterranean agroecological systems: effects on yield, nitrogen balance, and farm profitability. Italian Journal of Agronomy, 20(3), 100045. DOI: 10.1016/j.ijagro.2025.100045

52. Amato G., Cardone L., Cicco N., Denora M., Perniola M., Casiello D., De Martino L., De Feo V., Candido V. (2024). Morphological traits, yield,

antioxidant activity and essential oil composition of oregano as affected by biostimulant foliar applications. Industrial Crops and Products, 222(119702), 1-11. DOI: 10.1016/j.indcrop.2024.119702

53. Castronuovo D., Cardone L., Pandolfo M.M., Candido V. (2024). Germination analysis of tassel hyacinth [Muscari comosum (L.) Mill.] seeds: first results. ACTA HORTICULTURAE, 1398, 19-25. DOI: 10.17660/ActaHortic.2024.1398.4

54. Castronuovo D., Cardone L., Candido V. (2024). Effects of Pre-Germinative Treatments and Temperatures on Tassel Hyacinth [Muscari comosum (L.) Mill.] Seeds. Agronomy, 1481), 1-11. DOI: 10.3390/agronomy14010225. pp.1-11

55. Cicco N., Castronuovo D., Candido V. (2024). Antioxidant Activity, Total Phenolic Content and Morphological Traits in 1 to 4-Year-Old Muscari comosum Bulbs Cultivated in Three Growing Environments. Agriculture, 14(2), 1-12. DOI: 10.3390/agriculture14020178

56. Denora M., Mehmeti A., Candido V., Brunetti G., De Mastro F., Murgolo S., De Ceglie C., Gatta G., Giuliani M.M., Fiorentino C., Perniola M. (2024). Fate of emerging contaminants in the soil-plant system: a study on durum wheat irrigated with treated municipal wastewater. Frontiers in Soil Science, 4, 1448016. DOI: 10.3389/fsoil.2024.1448016

57. Mehmeti A., Candido V., Canaj K., Castronuovo D., Perniola M., D'Antonio P., Cardone L. (2024). Energy, Environmental, and Economic Sustainability of Saffron Cultivation: Insights from the First European (Italian) Case Study. Sustainability, 16(3), 1179. DOI: 10.3390/su16031179

58. Cardone L., Castronuovo D., Denora M., Candido V. (2025). Low temperature exposure of garlic cloves: Effects on growth and yield of non-bolting and bolting genotypes. Italian Journal of Agronomy, 20(4), 100056. DOI: 10.1016/j.ijagro.2025.100056

59. Cardone L., Polito F., Denora M., Casiello D., Castronuovo D., Cicco N., Perniola M., De Feo V., Candido V. (2025). Effects of Biostimulant Foliar Applications on Morphological Traits, Yield, Antioxidant Capacity, and Essential Oil Composition of Thymus vulgaris L. Under Field Conditions. Agronomy, 15(2), 442. DOI: 10.3390/agronomy15020442

60. Cicco N., Candido V., Coluzzi R., Imbrenda V., Lanfredi M., Larocca M., Lorusso A., Benelli C., Sofo A. (2025). Revitalizing Marginal Areas of Basilicata (Southern Italy) with Saffron: A Strategy Approach Mixing Alternative Cultivation System and Land Suitability Analysis. Land, 14, 902. DOI: 10.3390/land14040902

61. Caccavo V., Brienza M., Semitsoglou-Tsiapou S., Buttiglieri G., Rosamilia R., Fanti P., Battaglia D., Trotta V. (2025). Impact of irrigation with fipronil-contaminated waters on zucchini plants and their main insect pest, Aphis gossypii. Journal of Environmental Sciences, 158, 598-609. DOI: https://doi.org/10.1016/j.jes.2025.02.005

AdR

PLANT PHENOTYPING

Coordinator Prof. Giuseppe Montanaro

DESCRIPTION OF THE AREA'S RESEARCH ACTIVITIES

The "Plant Phenotyping" research area brings together the skills dedicated to the development and application of advanced methodologies for the measurement and monitoring of plant phenotypes on a proximal scale. The aim is to quickly and accurately obtain detailed information on the structure, functionality and response of plants to environmental conditions. The Plant Phenotyping approach is based on an integrated sequence of processes that starts from the analysis of the physiological problems of the plant, continues with the use of sensors and data acquisition technologies, and ends with the processing of information useful for the characterization of phenotypic traits.

The research activities allow to identify tools and strategies for adapting plants to limiting environmental conditions, providing rapid indicators (proxies) for the estimation of qualitative and physiological parameters.

UNIBAS is a partner of Phen-Italy, a Joint Research Unit that represents the Italian node of EMPHASIS – European Infrastructure for multi-scale Plant Phenomics and Simulation for Food Security in a Changing Climate. Participation in this European infrastructure makes it possible to promote and coordinate national research in the field of Plant Phenotyping, facilitate the access of the scientific community to advanced infrastructures and skills and enhance the return on national investments through the involvement of strategic stakeholders.

The main lines of activity include:

- Opment and application of proximal measurement methodologies for the characterization of plant phenotypes.
- Use of optical, thermal and multispectral sensors for non-destructive monitoring of plants.
- Acquisition and processing of large amounts of phenotypic data.
- Analysis of the structural, physiological and functional traits of plants.
- Evaluation of the adaptive responses of crops to environmental stresses.

Publications of the Research Area
"Plant Phenotyping"

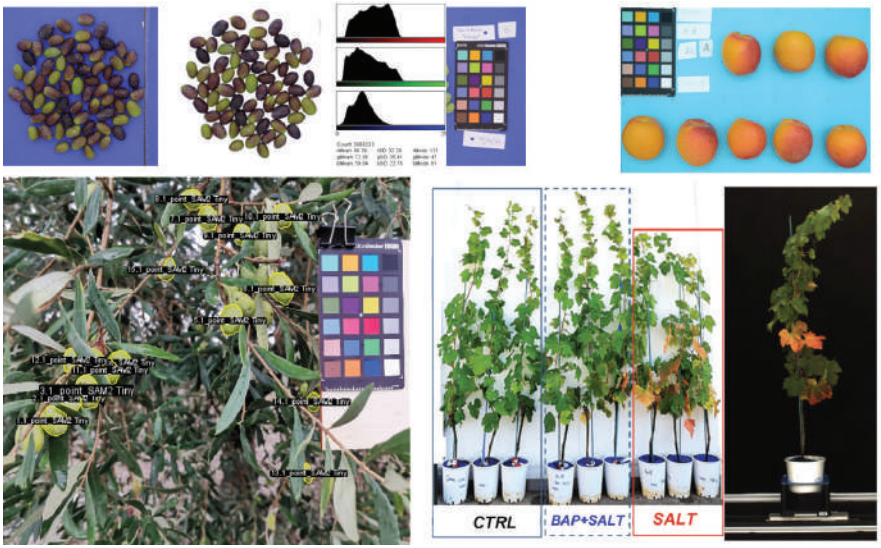
Coordinator Prof. Giuseppe Montanaro

Professors:

AGRI-03/A Prof. Vitale Nuzzo, Prof. Giuseppe Montanaro, Prof. ssa Alba Nicoletta Mininni, Dott. Antonio Carlomagno, Prof. Bartolomeo Dichio

Keywords

High-throughput phenotyping, proximal sensing, non-destructive imaging, image segmentation, multi-sensor fusion, abiotic stress characterization, feature extraction and dimensionality reduction, GxExM interactions



Publications

1. Montanaro G., A. Carlomagno, A. Petrozza, F. Cellini, I. Manolikaki, G. Koubouris, Nuzzo V. (2024). Predicting oil accumulation by fruit image processing and linear models in traditional and super high-density olive cultivars. Front. Plant Sci. - Crop and Product Physiology. DOI: 10.3389/fpls.2024.1456800

2. Montanaro G., Briglia N., Petrozza A., Carlomagno A., Rustioni L., Cellini F., Nuzzo V. (2024). Image-based sensing of salt stress in grapevine. OENO One, 58(1). DOI: https://doi.org/10.20870/oeno-one.2024.58.1.7757

3. Dinu D.G., Nuzzo V., Gestri G., Montanaro G., Rustioni L. (2024). Image-based appraisal of woody starch reserves in grapevine. Agricultural Research 13(1):182–187. DOI: https://doi.org/10.1007/s40003-023-00680-9

4. Sofo A., Dichio B., Elshafie H. S., Camele I., Calabritto M., Tomasi I., Mastroleo M., Xylogiannis E., D'Ippolito I., Mininni A. N. (2024). Enhancing soil properties through sustainable agronomic practices reduced the occurrence of kiwifruit vine decline syndrome. Soil Use and Management, 40 (2), e13052. DOI: 10.1111/sum.13052

5. Addesso R., Araniti F., Bloise A., Mininni A. N., Dichio B., López-González D., Elshafie H. S., Ellerbrock R. H., Schnee L. S., Filser J., Sileo D., Sofo A. (2025). Soil organic matter quality in an olive orchard differently managed for 21 years: insights into its distribution through soil aggregates and depth. Agriculture, Ecosystems & Environment, 380, 109388. DOI: 10.1016/j.agee.2024.109388

6. Montanaro G., Carlomagno A., Giorio P., Petrozza A., Cellini F., Nuzzo V. (2025). Are leaf chlorophyll fluorescence and Dark Green stressor-specific fingerprints in grapevine under drought or salt stress? A reanalysis study. Plant Stress, 100948. DOI: 10.1016/j.stress.2025.100948

7. Di Biase, R., Calabritto, M., Mininni, A.N., Montanaro G., B. Dichio. (2025). Microtensiometer-based trunk water potential as a plant water status indicator in kiwifruit under different soil water availability. Irrig Science. DOI: https://doi.org/10.1007/s00271-025-01020-1

8. Dichio C., Sofo A., Yaghoubi Khanghahi M., Crecchio C., Addesso R. (2025). Physiological and biochemical mechanisms of waterlogging tolerance in plants. Physiologia Plantarum, 177 (6), e70663. DOI: 10.1111/ppl.70663

9. Calabritto, M., Mininni, A.N., Di Biase, R., Petrozza, A., Summerer, S., Cellini, F. and Dichio, B. (2025). Physiological and image-based phenotyping assessment of waterlogging responses of three kiwifruit rootstocks and grafting combinations. Front. Plant Sci. 16:1499432. DOI: 10.3389/fpls.2025.1499432

10. Mastroleo M., Ceccarelli A., Sofo A., Dichio B., Mininni A. N., Green S., Scotti C., Bergamaschi V., Donati I. (2025). An innovative and multidisciplinary approach to face kiwifruit vine decline syndrome (KVDS). Acta Horticulturae, 1431, 487-496. DOI: 10.17660/actahortic.2025.1431.63

11. Sofo A., Dichio B., Mininni A. N., Tomasi I., Scotti C., Green S., Tuzio A. C., Laterza D., Di Biase R., Calabritto M., De Virgilio C., Manzari C., Xylogiannis E., Donati I., Mastroleo M. (2025). A new systemic approach for promoting soil and plant health in actinidia chinensis var. chinensis orchards to face kiwifruit vine decline syndrome (KVDS). Acta Horticulturae, 1431, 17-24. DOI: 10.17660/actahortic.2025.1431.3

AdR

ANIMAL HUSBANDRY AND SUSTAINABILITY

Coordinator Prof.ssa Adriana Carmen Di Trana

DESCRIPTION OF THE AREA'S RESEARCH ACTIVITIES

The research activity of the area focuses on the analysis and optimization of the livestock system, with a particular focus on sustainability. The investigations range from genetic improvement and animal nutrition and feeding to production quality, farm management, and biodiversity conservation, with the aim of promoting sustainable livestock practices.

The current Research Areas are summarized in:

- Environmental sustainability and carbon neutrality.
- Enhancement of animal resources and ecosystem services.
- Identification of genetic markers associated with the qualitative characteristics of milk (cow's, goat's, donkeys) and pork.
- Study of the interaction between animal genotype and nutrition.
- Standardization and enhancement of autochthonous genetic types (pigs, sheep, goats).
- Analysis of genetic and environmental factors influencing lipid quality in products of animal origin.
- Evaluation of the lactoprotein polymorphism in native cattle and goat breeds.
- Animal nutrition and feed: effect of alternative food sources on the quality of meat and eggs.
- Evaluation of the nutritional and nutraceutical quality of honeys from Southern Italy.
- Precision feeding in the buffalo species, with a focus on optimizing the use of nitrogen.

- Precision feeding strategies for the increase of the polyphenolic fraction in plasma, milk and cheese.
- Evaluation and improvement of the oxidative status of the animals in production in relation to the feed administered.
- Livestock management and sustainability.
- Study of silvo-pastoral agroforestry systems.
- Research and evaluation of new processes and products of animal origin for the enhancement of livestock biodiversity.
- Analysis of systems and inputs for the improvement of the sustainability of farms.
- Assessment of the environmental sustainability of livestock production systems.
- Analysis and evaluation of the applicability of precision animal husbandry in extensive systems.
- Innovative technologies as a tool for the evaluation of the biomass available on natural Mediterranean pastures.
- Animal welfare and product quality: promotion of animal welfare-friendly farming systems (dairy cattle, buffaloes).
- Sensory analysis of products of animal origin.
- Development of a new health index for cheeses.
- Biodiversity and land management: investigation of the suitability of the territory for wildlife and interactions with extensive farms.
- Conservation of trophic niches of species with high conservation value.
- Sustainable management of biodiversity.
- Analysis and strategies for the enhancement and promotion of traditional and typical agricultural products of animal origin.

Publications of the Research Area
"Animal Husbandry and Sustainability"

Coordinator Prof.ssa Adriana Carmen Di Trana

Professors:

AGRI/09/A Prof.ssa Paola Di Gregorio

AGRI/09/B Prof.ssa Adriana Carmen Di Trana, Prof. Corrado Pacelli

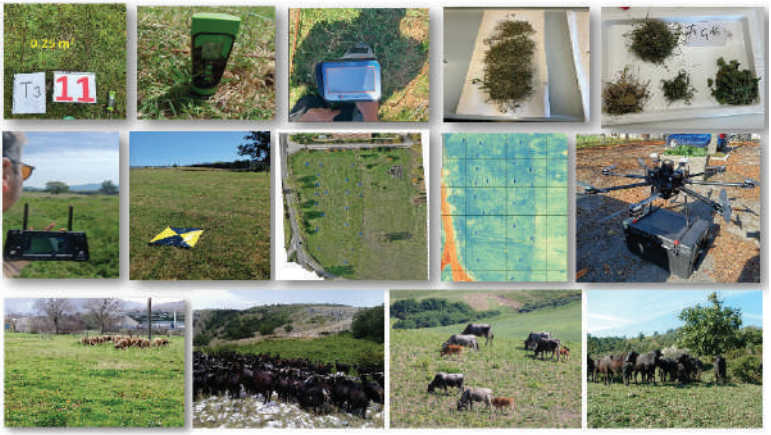
AGRI-09/C Prof.ssa Ada Braghieri, Prof.ssa Anna Maria Perna, Prof. Carlo Cosentino, Prof. Pierangelo Freschi, Dott. Emilio Sabia

MVET- 01/A Dott.ssa Emilia Langella

Keywords

Associated markers autochthonous genetic types, animal nutrition and production quality, Precision feeding, Production sustainability, Production efficiency, Sensory evaluation of products, Animal welfare, Ecosystem services, Wildlife management, Orexin




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Publications

1. Sabia E., Braghieri A., Pacelli C., Di Trana A., Coppola A. (2024). Perception of Ecosystem Services from Podolian Farming System in Marginal Areas of Southern Italy. Agriculture, Volume 14, 1, art. 28. DOI: https://doi.org/10.3390/agriculture14010028

2. Sabia E., Zanon T., Braghieri A., Pacelli C., Angere V., Gauly M. (2024). Effect of slaughter age on environmental efficiency on beef cattle in marginal area including soil carbon sequestration: A case of study in Italian Alpine area. Science of Total Environmental, 918, 170798. DOI: https://doi.org/10.1016/j.scitotenv.2024.170798

3. Mota-Rojas, D., Napolitano,F., Chay-Canul, A., Ghezzi, M., Braghieri, A., Domínguez-Oliva, A., Bragaglio, A., Álvarez-Macías, A., Olmos-Hernández, A., De Rosa, G., García-Herrera, R., Lendez, P., Pacelli, C., Bertoni, A., Barile, V.L. (2024). Anatomy and Physiology of Water Buffalo Mammary Glands: An Anatomofunctional Comparison with Dairy Cattle. Animals 2024, 14, 1066. DOI: https://doi.org/10.3390/ani14071066

4. Tarricone, S., Colonna, M. A., Freschi, P., Cosentino, C., La Gioia, G., Carbonara, C., Ragni, M. (2024). The presence of microplastics in the gastrointestinal tracts of song thrushes (Turdus philomelos) wintering in Apulia (Southern Italy) - Preliminary results. Animals, 14(14), 2050. DOI: https://doi.org/10.3390/ani14142050

5. Freschi, P., Cosentino, C., Mallia, E., & Trocchi, V. (2024). Fertility of the European Brown Hare across plain, hill and mountain environments in the Italian Peninsula. Animals, 14(24), 3690. DOI: https://doi.org/10.3390/ani14243690

6. Costagliola A., Montano L., Langella E., Lombardi R., Squillacioti C., Mirabella N., Liguori G. (2024). A Comparative Analysis of Orexins in the Physio-Pathological Processes of the Male Genital Tract: New Challenges? A Review. Veterinary Sciences ,11,131. DOI: https://doi.org/10.3390/vetsci11030131

7. Grassi, G., Di Gregorio, P., Capasso, G., Rando, A., Perna, A. M. (2024). Effect of dietary supplementation with rumen-protected amino acids, lysine and methionine, on the performance of Comisana ewes and on the growth of their lambs. Animal Science Journal, 95(1), e70018. DOI: 10.1111/asj.70018

8. Grassi, G., Di Gregorio, P., Rando, A., & Perna, A. M. (2024). Quality and sensorial evaluation of beef burgers added with Sicilian sumac (Rhus coriaria L). Heliyon, 10(5). DOI: https://doi.org/10.1016/j.heliyon.2024.e26848

9. Radice, R. P., Grassi, G., Capasso, G., Montagnuolo, E., Aiello, D., Perna, A. M., Martelli, G. (2024). Five mutated genotypes of Haematococcus pluvialis useful for crude oil wastewater bioremediation. Algal Research, 83, 103693. DOI: 10.1016/j.algal.2024.103693

10. Radice, R. P., Grassi, G., Capasso, G., Montagnuolo, E., Aiello, D., Perna, A. M., Martelli, G. (2024). Five mutated genotypes of Haematococcus pluvialis useful for crude oil wastewater bioremediation. Algal Research, 83, 103693. DOI: 10.1016/j.algal.2024.103693Sabia E., Pacelli C., Di Trana A., Coppola A., Cosentino C., Freschi P., Paolino R., Braghieri A. (2025). Carbon neutrality and beef production in the marginal areas: A case study of Podolian cattle system. Agricultural Systems, 230, 104451. DOI: https://doi.org/10.1016/j.agsy.2025.104451

11. Sabia E., Braghieri A., Vignozzi L., Paolino R., Cosentino C., Di Trana A., Pacelli C. (2025). Carbon Footprint of By-Product Concentrate Feed: A Case Study. Environments, 12, 42. DOI: https://doi.org/10.3390/environments12020042

12. Paolino R., Di Trana A., Coppola A., Sabia E., Riviezzi A.M., Vignozzi L., Claps S., Caparra P., Pacelli C., Braghieri A. (2025). May the Extensive Farming System of Small Ruminants Be Smart? Agriculture, Volume 15, 9, 929. DOI: https://doi.org/10.3390/agriculture15090929

13. Di Gregorio P., Grassi G., Perna A.M., Sabia E., Langella E., Di Trana A., Braghieri A. (2025). Genes involved in lipid, carbohydrate and protein metabolic processes located in QTL regions affecting pork meat flavor. Gene, 965, 149679. DOI: https://doi.org/10.1016/j.gene.2025.149679

14. Sabia E., Fichter G., Gauly M., Triatmojo A., Zanon T. (2025). Environmental efficiency and carbon sequestration potential of organic vs. conventional Simmental dairy farming systems in Mountain regions: a case study. Italian J. Animal Science, 24 (1), 2197-2210. DOI: https://doi.org/10.1080/1828051X.2025.2566719

15. Serrapica, F., Lambiase, C., Masucci, F., Braghieri, A., Lorenzo, J.M., Di Francia, A. (2025). Feed-grade hempseed as alternative protein source in organic broilers diet: Growth performance, carcass characteristics and

meat quality. Journal of Agriculture and Food Research, 21, 101860. DOI: DOI: https://doi.org/10.1016/j.jafr.2025.101860.Q1

16. Cosentino, C., Paolino, R., Tarricone, S., Valentini, V., Ragni, M., & Freschi, P. (2025). Cosmetics industry as a promising opportunity for donkey breeding: Consumer acceptability of a cosmetic cream based on milk from the Martina franca breed. Journal of Animal & Plant Sciences, 35(2), 584–591. DOI: https://doi.org/10.36899/JAPS.2025.2.0049

17. Freschi, P., Fascetti, S., Riga, F., Zaccaroni, M., Giannini, F., Langella, E., & Cosentino, C. (2025). Feeding behaviour of the European Brown Hare (Lepus europaeus, Leu2 Haplotype) on Pianosa Island: Insights into the absence of trophic competition. Veterinary Sciences, 12(6), 546. DOI: https://doi.org/10.3390/vetsci12060546

18. Rossa M., Serrano E., Carvalho J., Fernandez N., Lopez-Olvera J.R., Garel M., Santos J.P.V., Ramanzin M., Anderwald P., Freschi P., Bartolomé J., Lavın S., & AlbanellID E. (2025). Predicting fiber content in herbivore fecal samples using a multispecies NIRS model. PLOS ONE, 20(1), e0317145. DOI: https://doi.org/10.1371/journal.pone.0317145

19. Notarangelo S.; Lombardi R., Lombardi M.; Liguori G., Taurchini M., Sperandeo M., Specchiulli L., Conte P., Checola F.; Langella, E. Antonio Giordano A., Bava R., Ruga S. (2025). The New Frontier in Small-Cell Lung Cancer: Can Atezolizumab Ensure Enduring Stability? Scientia Pharmaceutica. 93, 29. DOI: https://doi.org/10.3390/scipharm93030029

20. Grassi, G.; Perna, A.M. (2025). Effect of Heavy Metal Contamination on Caciotta Cheese Made from Buffalo Milk. Appl. Sci. 2025, 15, 11881. DOI: https://doi.org/10.3390/app152211881

21. Grassi, G., Franco, A., Scieuzo, C., Capasso, G., Lomonaco, G., Salvia, R., Perna A.M., Falabella, P. (2025). Bioactive Compounds in Breast Meat of Broiler Chickens Fed with Black Soldier Fly Wholemeal. Applied Sciences, 15(13), 7132. DOI: https://doi.org/10.3390/app15137132

22. Grassi G, Capasso G, Cillo A, Miedico O, Pompa C, Nardelli V, Perna A.M (2025). Effect of Altitude on Polyphenol Content, Antioxidant Activity and Multi-Element Composition of Wildflower Honey. Applied Sciences. DOI: https://doi.org/10.3390/app15063255

AdR

ECONOMICS AND ENGINEERING

Coordinator Prof. Alessandro Comegna

DESCRIPTION OF THE AREA'S RESEARCH ACTIVITIES

The research area integrates economic and engineering skills to analyze and sustainably manage natural resources, rural territory and agro-forestry systems, through advanced models, innovative technologies and interdisciplinary approaches.

Activities include:

- Analysis of economic and territorial development.
- Territorial and agri-food marketing.
- Rural land planning.
- Spatial models of ecosystem services and natural resources.
- Multi-criteria analysis and input-output models (SAMs) for policy sustainability
- Evaluation of territorial well-being (beyond GDP).
- Environmental, forestry and agri-food governance and certifications.
- Analysis of the forestry and agri-food sectors.
- Impacts of climate policies and change on natural resources.
- Agro-energy, renewable energy supply chains and governance models.
- Sustainable management of resources in rural areas.
- Quality of agri-food products and perception along the supply chain.

- Agricultural and agro-forestry machinery and mechanization.
- Plants for the management of agricultural and forestry residues.
- Technologies for urban greenery and conservation agriculture.
- GIS applied to cultivation processes.
- Safety and ergonomics on agricultural and forestry sites.
- Interaction between machines and rural landscape.
- Agricultural and forestry hydraulics.
- Hydrology of basins and erosion processes.
- Hydraulic-forestry and collection works.
- Integrated management of river basins.
- Management of water resources in agroforestry systems.
- Irrigation, drainage and farm water schemes.
- Criteria for the sustainable management of territorial water resources.
- Design and management of rural structures and infrastructures.
- Building materials, architectural types and climate control systems.
- Buildings for animal breeding (housing, manure, air quality).
- Structures for the protection of crops (glass, plastics) and their production impact.
- Relationship between rural buildings, environment and landscape.

Publications of the Research Area **"Economics and Engineering"**

Coordinator Prof. Alessandro Comegna

Professors:

AGRI-04/A Prof. Alessandro Comegna, Dott.Hassan Awada

AGRI-01/A Prof. Severino Romano, Prof. Mario Cozzi, Prof.ssa Adele Coppola, Prof. Mauro Viccaro

AGRI-04/B Prof.ssa Paola D'Antonio, Prof.ssa Costanza Fiorentino

AGRI-04/C Prof. Pietro Picuno, Prof. Salvatore Margiotta, Dott. Vincenzo De Luca, Dott.ssa Dina Statuto

Keywords

Circular economy, sustainability of agri-food systems, ecological transition, solute transport, development of IoT-based sensors, precision agriculture, agricultural digitalization, materials and structures for agriculture, biomass and circular economy, territory, landscape and rural planning



Publications

1. Sabia, E., Braghieri, A., Pacelli, C., Di Trana, A., Coppola, A. (2024). Perception of Ecosystem Services from Podolian Farming System in Marginal Areas of Southern Italy. Agriculture, Volume 14, Issue 1, 28. DOI: https://doi.org/10.3390/agriculture14010028

2. Vastola, A., Romano, S., Cozzi, M., Viccaro, M. (2024). Are Consumers Ready to Consider Insect-Based Foods as a Sustainable Food Choice? An Application of the Extended Protection Motivation Theory to Italian Consumers. Agriculture (Switzerland), 14 (12). DOI: https://doi.org/10.3390/agriculture14122232

3. D'Angelo, M.C., Coppola, A., Genovese, F., Simeone, S., Romano, S., Cozzi, M., Viccaro, M. (2024). Italian Youth and Food Waste: An Application of an Extended Theory of Planned Behavior Model. Springer Proceedings in Business and Economics, pp. 225-230. DOI: https://doi.org/10.1007/978-3-031-65168-7_37

4. Leo, S.D., Tortorella, M.M., Fortes, P., Viccaro, M., Cozzi, M., Romano, S., Cosmi, C. (2024). The TIMES Land-WEF model: An integrated analysis of the agricultural system of the Basilicata Region (Southern Italy). Energy Nexus, 15. DOI: https://doi.org/10.1016/j.nexus.2024.100315

5. Viccaro, M., Romano, S., Rosalia, I., Cozzi, M. (2024). Searching for the Profitability of Energy Crops: An Agroecological–Economic Land Use Suitability (AE-landUSE) Model. Environments - MDPI, 11 (5). DOI: https://doi.org/10.3390/environments11050091

6. Castellini, M., Prima, S.D., Giglio, L., ... Rinaldi, M., Iovino, M. (2024). Applying a Comprehensive Model for Single-Ring Infiltration: Assessment of Temporal Changes in Saturated Hydraulic Conductivity and Physical Soil Properties, Water Switzerland, 16(20). DOI: https://doi.org/10.3390/w16202950

7. Leite, P.A.M., Di Prima, S., Schmidt, L.M., Wilcox, B.P. (2024). A simple infiltrometer automated with a user-friendly pressure datalogger, Vadose Zone Journal, 23(5). DOI: https://doi.org/10.1002/vzj2.20366

8. Talukder, R., Plaza-Bonilla, D., Cantero-Martínez, C., Di Prima, S., Lampurlanés, J. (2024). Spatio-temporal variation of surface soil hydraulic properties under different tillage and maize-based crop sequences in a

Mediterranean area, Plant and Soil, 500(1-2). DOI: https://doi.org/10.1007/s11104-022-05758-x

9. Rocchi, B., Viccaro, M., Sturla, G. (2024). An input-output hydro-economic model to assess the economic pressure on water resources. Bio-based and Applied Economics 13 (2), pp. 203-217. DOI: https://doi.org/10.36253/bae-14957

10. Coppola, A., Zucaro, R., Baralla, S., Satta, M.,, Ruberto, M., Comegna, A., Dragonetti, G., Hassan, S. (2024). Monitoring and Modelling Fluxes of Water and Nutrients to Surface Drainage Network From Irrigated Agricultural Fields in a Hydraulically Reclaimed Coastal Area, Ecohydrology, 17(8). DOI: https://doi.org/10.1002/eco.2723

11. Satriani, A., Belviso, C., Lovelli, S., Di Prima, S., Coppola, A., Shawcat B.M.H., Rivelli, A.R., Comegna, A. (2024). Impact of a synthetic zeolite mixed with soils of different pedological characteristics on soil physical quality indices, Geoderma, 451. DOI: https://doi.org/10.1016/j.geoderma.2024.117084

12. Di Prima, S., Fernandes, G., Burguet, M., Lassabatere, L., Comegna, A. (2024). Assessing Soil Physical Quality in a Layered Agricultural Soil: A Comprehensive Approach Using Infiltration Experiments and Time-Lapse Ground-Penetrating Radar Surveys, Applied Sciences (Switzerland), 14(20). DOI: https://doi.org/10.3390/app14209268

13. Comegna, A., Hassan, S.B.M., Coppola, A. (2024). Development and Application of an IoT-Based System for Soil Water Status Monitoring in a Soil Profile, Sensors, 24(9). DOI: https://doi.org/10.3390/s24092725

14. Hassan, S.B.M., Dragonetti, G., Comegna, A., Lamaddalena, N., Coppola, A. (2024). Analyzing the role of soil and vegetation spatial variability in modelling hydrological processes for irrigation optimization at large scale, Irrigation Science, 42(2), 249-267. DOI: https://doi.org/10.1007/s00271-023-00882-7

15. Colonna, R., Genzano, N., Ciancia, E., Filizzola, C., Fiorentino, C., D'Antonio, P., Tramutoli, V. (2024). A Method to Determine the Optimal Period for Field-Scale Yield Prediction Using Sentinel-2 Vegetation Indices. Land, 13, 1818.
DOI: https://doi.org/10.3390/land13111818

16. Fiorentino, C., Abdel Rahman, M.A.E., D'Antonio, P., Toscano, F., Sannino, M., Abate, N., Conte, D., Lasaponara, R., Masini, N. (2024). Space-to-tree:

Architectural framework for real-time monitoring of pines in natural and historical park. Letter, 7. DOI: https://doi.org/10.1002/itl2.574

17. Al Nadabi, M.S., D'Antonio, P., Fiorentino, C., Scopa, A., Shams, E.M., Fadl, M.E. (2024). Utilizing the Google Earth Engine for Agricultural Drought Conditions and Hazard Assessment Using Drought Indices in the Najd Region, Sultanate of Oman. Remote Sens., 16, 2960. DOI: https://doi.org/10.3390/rs16162960

18. Bitella, G., Bochicchio, R., Castronuovo, D., Lovelli, S., Mercurio, G., Rivelli, A.R., Rosati, L., D'Antonio, P., Casiero, P., Laghetti, G., et al. (2024). Monitoring Plant Height and Spatial Distribution of Biometrics with a Low-Cost Proximal Platform. Plants, 13, 1085. DOI: https://doi.org/10.3390/plants13081085

19. D'Antonio, P., Toscano, F., Moretti, N., De Iorio, N., Fiorentino, C. (2024). Analysis of Chainsaw Emissions during Chestnut Wood Operations and Their Health Implications. Appl. Sci., 14, 2496. DOI: https://doi.org/10.3390/app14062496

20. Hitouri, S., Mohajane, M., Lahsaini, M., Ali, S.A., Setargie, T.A., Tripathi, G., D'Antonio, P., Singh, S.K., Varasano, A. (2024). Flood Susceptibility Mapping Using SAR Data and Machine Learning Algorithms in a Small Watershed in Northwestern Morocco. Remote Sens., 16, 858. https://doi.org/10.3390/rs16050858

21. Mehmeti, A., Candido, V., Canaj, K., Castronuovo, D., Perniola, M., D'Antonio, P., Cardone, L. (2024). Energy, Environmental, and Economic Sustainability of Saffron Cultivation: Insights from the First European (Italian) Case Study. Sustainability, 16, 1179. DOI: https://doi.org/10.3390/su16031179

22. Toscano, F., Fiorentino, C., Capece, N., Erra, U., Travascia, D., Scopa, A., Drosos, M., D'antonio, P. (2024). Unmanned Aerial Vehicle for Precision Agriculture: A Review, Survey. DOI: https://doi.org/12,10.1109/ACCESS.2024.3401018

23. Puglisi, R., Margiotta, S., Statuto, D., Picuno, P. (2024). Agroecology implemented through biosystems Engineering techniques for rural landscape protection. Proceedings of the Conference on: "Public Recreation and Landscape Protection- with environment hand in hand!", Křtiny (Czech Republic), 13-15 May 2024, 9-13.
DOI: https://doi.org/10.11118/978-80-7509-963-1-0009

24. Statuto, D., Puglisi, R., Margiotta, S., Picuno, P. (2024). Implementing multi-temporal cartography into a GIS for analyzing rural landscape and protecting forest heritage. Proceedings of the Conference on: "Public Recreation and Landscape Protection - with environment hand in hand!", Křtiny (Czech Republic), 13-15 May 2024, 173-177. DOI: https://doi.org/10.11118/978-80-7509-963-1-0173

25. Godosi, Z., Picuno, P. (2024). The requalification of ancient roads for public recreation. Proceedings of the Conference on: Public Recreation and Landscape Protection- with environment hand in hand!, Křtiny (Czech Republic), 13-15 May 2024, 173-177. DOI: https://doi.org/10.11118/978-80-7509-963-1-0338

26. Khenata, M., Dehbi, A., Belfedal, A., Harmel, M., Aouinet, M., Alsalme, A., Picuno, P. (2024). A comprehensive examination of physical characteristic of ternary halide perovskites AgXBr3 (X= Ca, Sr, and Ba) towards optoelectronic and photovoltaic applications. Physica B: Condensed Matter, 688, 416126. DOI: https://doi.org/10.1016/j.physb.2024.416126

27. Djakhdane, K., Dehbi, A., Aouinet, M., Picuno, P., Rakrak, K., Meliani, M.H. (2024). Experimental creep test sensibility of mechanical properties of LDPE films used as greenhouse roof. Structural Integrity and Life, 24 (1): 93-97. DOI: 10.69644/ivk-2024-01-0093

28. Picuno, C., Godosi, Z., Santagata, G., Picuno, P. (2024). Degradation of Low-Density Polyethylene Greenhouse Film Aged in Contact with Agrochemicals. Applied Sciences, 14, 10809, 1-16. DOI: https://doi.org/10.3390/app142310809

29. Picuno, P., Statuto, D., Misano, G., Nolè, A., Ripullone, F. (2024). Integrating Geographical Data with Vegetational Surveys for Developing a Management Plan in an Area with High Environmental Value. Lecture Notes in Civil Engineering, 586, 1097-1104. DOI: https://doi.org/10.1007/978-3-031-84212-2_135

30. Puglisi, R., Statuto, D., Margiotta, S., Picuno, P. (2024). Sustainable Rural Buildings for Implementing the Agroecology Concept at Territorial and Landscape Level in the Mediterranean Area. Lecture Notes in Civil Engineering, 586, 1081-1088. ISSN 2366-2557. DOI: https://doi.org/10.1007/978-3-031-84212-2_133

31. Puglisi, R., Starace, G., Lippolis, M., Picuno, P. (2024). Analysis of Spectroradiometric and Mechanical Characteristics of a New Generation of

Anti-rain Agrotextiles. Lecture Notes in Civil Engineering, 586, 1024-1031. DOI: https://doi.org/10.1007/978-3-031-84212-2_126

32. Statuto, D., Baptista, F., Fitas da Cruz, V., Rico, J. Carlos, Coelho, D., Picuno, P. (2024). Use GIS Tools for Biomass Management: A Case Study for Portugal Within the TANGO-Circular Project. Lecture Notes on Multidisciplinary Industrial Engineering, F4026, 156-166. DOI: https://doi.org/10.1007/978-3-031-80330-7_17

33. Giadrossich, F., Murgia, I., Guastini, E., Ganga, A., Di Prima, S., Chessa, L., Lovreglio, R., Scotti, R. (2025). FAIR-Compliant Database for Soil Erosion Studies: The Marganai Forest Experiment Scientific Data, 12, 561. DOI: https://doi.org/10.1038/s41597-025-04797-0

34. Fernandes, G., Di Prima, S., Lipeme Kouyi, G., Nicklason, C., Lassabatere, L. (2025) A novel method to assess the infiltration and filtration functions of urban soils, Vadose Zone Journal, 24(6). DOI: https://doi.org/10.1002/vzj2.70050

35. Basset, C., Abou Najm, M., Angulo-Jaramillo, Bagarello, V., Di Prima, S., Iovino, M., Lassabatère, L., Stewart, R. (2025). Review of conceptual and empirical approaches to characterize infiltration, Vadose Zone Journal, 24(1). DOI: https://doi.org/10.1002/vzj2.20393

36. Satriani, A., Lovelli, S., Belviso, C., Comegna, A. (2025). Effect of waste-derived synthetic zeolite on soil hydraulic properties and soil water storage parameters in sandy-loam soils, Catena, 259. DOI: https://doi.org/10.1016/j.catena.2025.109395

37. Comegna, A., Hassan, S.B.M., Coppola, A. (2025). Recent Technological Upgrades to the SHYPROM IoT-Based System for Monitoring Soil Water Status, Sensors, 25(16). DOI: https://doi.org/10.3390/s25164934

38. Satriani, A., Castronuovo, D., Comegna, A.,Candido, V., Lovelli, S. (2025). Chabazite and seaweed extract effects on lettuce water relations and growth, 349. DOI: https://doi.org/10.1016/j.scienta.2025.114260

39. Comegna, A., Di Prima, S., Hassan, S.B.M., Coppola, A. (2025). A Novel Time Domain Reflectometry (TDR) System for Water Content Estimation in Soils: Development and Application, 25(4). DOI: https://doi.org/10.3390/s25041099

40. Di Prima, S., Stewart, R.D., Abou Najm, M.R., Comegna, A., Lassabatere, L. (2025). Modeling water infiltration into soil under fractional wettability conditions, 647, DOI: https://doi.org/10.1016/j.jhydrol.2024.132309

41. Silva, L., Barbosa, S., Carita,T., D'Antonio, P., Cebola Lidon,F., Conceição, L.A. (2025). Reflectance-based assessment of nitrogen status in ryegrass and mixed ryegrass-clover intercropping fodder crops, Smart Agricultural Technology, 11. DOI: https://doi.org/10.1016/j.atech.2025.101046

42. Silva, L., Barbosa, S., Lidón, F.C., Maçãs, B., Faugno, S., Sannino, M., Serrano, J., D'Antonio, P., Fiorentino, C., Cellini, F. (2025). Optimising Legume Integration, Nitrogen Fertilisation, and Irrigation in Semi-Arid Forage Systems, Nitrogen, 6, 44. DOI: https://doi.org/10.3390/nitrogen6020044

43. Toscano, F., Fiorentino, C., Santana, L.S., Magalhães, R.R., Albiero, D., Tomáš, Ř., Klocová, M., D'Antonio, P. (2025). Recent Developments and Future Prospects in the Integration of Machine Learning in Mechanised Systems for Autonomous Spraying: A Brief Review. AgriEngineering, 7, 142. DOI: https://doi.org/10.3390/agriengineering7050142

44. Fiorentino, C., D'Antonio, P., Toscano, F., Capece, N., Conceição, L.A., Scalcione, E., Modugno, F., Sannino, M., Colonna, R., Lacetra, E. (2025). Smart Sensors and Artificial Intelligence Driven Alert System for Optimizing Red Peppers Drying in Southern Italy. Sustainability, 17, 1682. DOI: https://doi.org/10.3390/su17041682

45. Conceição, L.A., Silva, L., Dias, S., Maçãs, B., Sousa, A.M.O., Fiorentino, C., D'Antonio, P., Barbosa, S., Faugno, S. (2025). Optimizing Herbicide Use in Fodder Crops with Low-Cost Remote Sensing and Variable Rate Technology, Appl. Sci., 15, 1979. DOI: https://doi.org/10.3390/app15041979

46. D'Antonio, P., Fiorentino, C., AbdelRahman, M.A.E., Sannino, M., Scalcione, E., Lacertosa, G., Modugno, F., Marsico, A., Donvito, A.R., Conceiçao,L.A., Drosos, M., Scopa, A. (2025). Modeling climatic, terrain and soil factors using AHP in GIS for grapevines suitability assessment. Sustainable Development, 33, 970-991. DOI: https://doi.org/10.1002/sd.3136

47. Megahed, H.A., Farrag, A.E.H.A., Mohamed, A.A., Darwish, M.H., Abdel Rahman, M.A.E., El-Bagoury, H., D'Antonio, P., Scopa, A., Saad, M.A.A. (2025). GIS-based modeling and analytical approaches for groundwater quality suitability for different purposes in the Egyptian Nile Valley, a case study in Wadi Qena, Front. Water, 7. DOI: https://doi.org/10.3389/

frwa.2025.1502169

48. Puglisi, R., Castellano, S., Starace, G., Lippolis, M., Blanco, I., Scarascia-Mugnozza, G., Picuno, P. (2025). Experimental setup to evaluate the water permeability index of agricultural nets. Proceedings of the International Symposium on Protected Cultivation, Nettings and Screens for Mild Climates, Athens (Greece), October 2024. Acta Horticulturae 1437, 355-362. DOI: https://doi.org/10.17660/ActaHortic.2025.1437.46

49. Statuto, D., Margiotta, S., Picuno, P. (2025). Interconnecting karst dolines with high ecological value through tourist routes for enhancing public recreation. Proceedings of the Conference on: Public Recreation and Landscape Protection - with respect hand in hand, Křtiny (Czech Republic), 155-159. DOI: https://doi.org/10.11118/978-80-7701-025-2/0155

50. Martellotta, A.M.N., Castellano, S., Blanco, I., Mastronardi, G., Picuno, P., Puglisi, R., Scarascia-Mugnozza, G. (2025). Standard Procedures Proposal of Laboratory Experimental Tests Assessment for Water Permeability of Anti-Rain Agricultural Nets. Horticulturae, 11(10):1253. DOI: https://doi.org/10.3390/horticulturae11101253

51. Mastronardi, G., Puglisi, R., Castellano, S., Picuno, P., Martellotta, A.M.N., Scarascia-Mugnozza, G., Blanco I. (2025). Experimental Evaluation of Anti-Rain Agricultural Nets: Structural Parameters and Functional Efficiency. Agriculture, 15(21):2194. DOI: https://doi.org/10.3390/agriculture15212194

AdR

Agri-Food Science, Technology and Biotechnology

Coordinator Prof.ssa Fernanda Galgano

DESCRIPTION OF THE AREA'S RESEARCH ACTIVITIES

The research topics of the area embrace different disciplinary areas, related to food science and technology, with reference to the technological, plant, microbiological, biotechnological, chemical-physical, sensory aspects, involved in the management of agri-food supply chains, starting from raw materials, including the development of new products and new processes, with a particular level of in-depth study in one or more of the sub-sectors of Technology, Microbiology, Food Biotechnology, Food Engineering and Plant Engineering.

In particular, the members of the Research area carry out multidisciplinary research involving:

- Study of food microbiomes.
- Definition and evaluation of processes for the production of fermented foods.
- Development of biotechnological processes for the production of ingredients using microorganisms.
- Assessment of the suitability of raw materials and abiotic factors in food processing.
- Analysis of technological and biotechnological processes of production, conservation and conditioning.
- Evaluation of agri-food products with chemical, physical and sensory techniques.
- Choice, sizing and optimization of machines and systems for quality food production.

- Development of innovative technologies and new food products.
- Application of advanced analytical techniques.
- Design of plants and processes according to the principles of "One Health" and Food Transition.
- Reduction and enhancement of food waste.
- Adoption of low environmental impact technologies for a more sustainable food system.

Publications of the Research Area "Agri-Food Science, Technology and Biotechnology"

Coordinator Prof.ssa Fernanda Galgano

Professors:

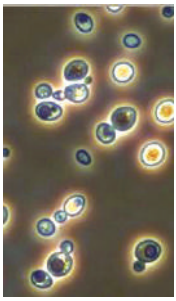
AGRI-04/B Prof. Giovanni Carlo Di Renzo, Prof. Giuseppe Altieri, Prof. Francesco Genovese

AGRI-07/A Prof.ssa Fernanda Galgano, Prof. Nicola Condelli

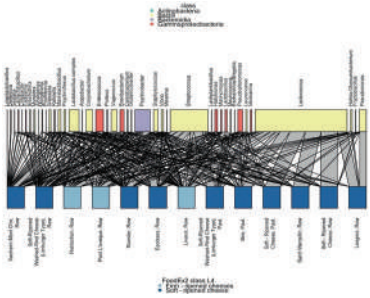
AGRI-08/A Prof. Eugenio Parente, Prof.ssa Angela Capece, Prof.ssa Annamaria Ricciardi, Prof.ssa Teresa Zotta

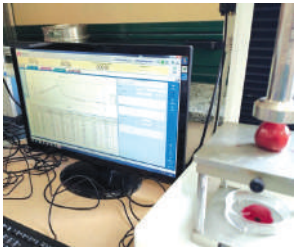
Keywords

Functional foods, automation, bioinformatics, food packaging, quality control and process optimisation, microbial ecology, industrial and fermentation microbiology, recovery and valorisation of by-products, food safety and preservation, food processing















Publications

1. Sportiello, L., Tolve, R., Galgano, F., Giarola, M., Musollini, S., Favati, F. (2024). Optimizing carotenoids NaHDES extraction for enhancing spreadable chocolate nutritional value. Food Bioscience, 62: 105109. DOI: 10.1016/j.fbio.2024.105109

2. Malvano, F., Muccio, E., Galgano, F., Marra, F., Albanese, D. (2024). Design of a high protein, no added sugar pistachio spread using oleogel as fat replacer. LWT-Food Science and Technology, 198:115993. DOI: 10.1016/j.lwt.2024.115993

3. Guarnieri, A., Triunfo, M., Ianniciello, D., Tedesco, F., Salvia, R., Scieuzo, C., Schmitt, E., Capece, A., Falabella, P. (2024) Insect-derived chitosan, a biopolymer for the increased shelf life of white and red grapes. International Journal of Biological Macromolecules 275, 133149. DOI: https://doi.org/10.1016/j.ijbiomac.2024.133149

4. Siesto, G., Pietrafesa,R., Alberico, G., Tedesco, F., Cardinale, M., Romano, P., Capece, A. (2024). Culturable yeast community associated with grape must and honeybees sampled from apiaries located in the vineyards. Journal of Applied Microbiology, 135, 7. DOI: https://doi.org/10.1093/jambio/lxae160

5. Tedesco, F., Pietrafesa, R., Siesto, G., Siesto, G., Scieuzo, C., Salvia, R., Falabella, P., Capece, A. (2024). Antimicrobial Activity of Chitosan from Different Sources Against Non-Saccharomyces Wine Yeasts as a Tool for Producing Low-Sulphite Wine. Beverages, 10(4), 105. DOI: https://doi.org/10.3390/beverages10040105

6. Sportiello, L., Favati, F., Zanoni, M., Cazzaniga, S., Condelli, N., Marchesi, E., Tolve, R. (2024). Potential of microalgae biomass as carotenoids source using natural deep eutectic solvents. Future Foods, 10, 100418. DOI: https://doi.org/10.1016/j.fufo.2024.100418

7. Moretti, M., Tartaglia, J., Accotto, G.P., Beato, M.S., Bernini, B.,Bevivino, A., Boniotti, M.B., Budroni, M., Buzzini, B., Carrara, S., Cerino, F., Cocuzza, C.E., Comunian, R., Cosentino, S., d'Acierno, A., De Dea, P., Garzoli, L., Gullo, M., Lampis, S., Moretti, A., Natale, A., Perrone, G., Persiani, A.M., Perugini, I., Pitti, M., Poli, A., Pollio, A., Reale, A., Ricciardi, A., Sbrana, C., Selbmann, L., Settanni, L., Tosi, S., Turchetti, B., Visconti, P., Zotti, M., Varese, G.C. (2024). Treasures of Italian Microbial Culture Collections: an

overview of preserved biological resources, offered services and know-how, and management. Sustainability, 16, 3777.
DOI: https://doi.org/10.3390/su16093777

8. Parente, E., Ricciardi, A. (2024). Shelf-life definition and predictive approaches-modeling strategies for an effective control of food spoilage. In: "The Microbiological quality of Food - Foodborne Spoilers" Second Edition, Edited by Bevilacqua A., Corbo M.R. Sinigaglia M. Elsevier, Cap 15 pagg 321-364. DOI: https://doi.org/10.1016/C2020-0-04507-X

9. Parente, E., Ricciardi, A. (2024). A comprehensive view of food microbiota: introducing FoodMicrobionet v5. Foods, 13, 1689.
DOI: https://doi.org/10.3390/foods13111689

10. Giavalisco, M., Lavanga, E., Ricciardi, A., Zotta, T. (2024). Starter Cultures for the Production of Fermented Table Olives: Current Status and Future Perspectives. Fermentation, 10(7), 351. DOI: https://doi.org/10.3390/fermentation10070351.

11. Nikzadfar, M., Rashvand, M., Zhang, H., Shenfield, A., Genovese, F., Altieri, G.,Di Renzo, G. C. (2024). Hyperspectral imaging aiding artificial intelligence: A reliable approach for food qualification and safety. Applied Sciences, 14(21), 9821. DOI: 10.1016/j.jfca.2025.107424

12. Laveglia, S., Altieri, G., Genovese, F., Matera, A., Di Renzo, G. C. (2024). Advances in sustainable crop management: integrating precision agriculture and proximal sensing. AgriEngineering, 6(3), 3084-3120.
DOI: https://doi.org/10.3390/agriengineering6030177

13. Rashvand, M., Matera, A., Altieri, G., Genovese, F., Nikzadfar, M., Feyissa, A. H., Di Renzo, G. C. (2024). Effect of dielectric barrier discharge cold plasma on the bio-nanocomposite film and its potential to preserve the quality of strawberry under modified atmosphere packaging. Food and Bioprocess Technology, 17(5), 1247-1264. DOI: https://doi.org/10.1007/s11947-023-03196-w

14. Matera, A., Altieri, G., Genovese, F., Scarano, L., Genovese, G., Pinto, P.,Di Renzo, G. C. (2024). Impact of the pre-harvest biocontrol agent and post-harvest massive modified atmosphere packaging application on organic table grape (cv.'Allison') quality during storage. Applied Sciences, 14(7), 2871. DOI: https://doi.org/10.3390/app14072871

15. Altieri, G., Avaei, M. R., Matera, A., Genovese, F., Verrastro, V., Admane, N.,Di Renzo, G. C. (2024). Non-Destructive Early Detection of Drosophila Suzukii Infestation in Sweet Cherries (cv Sweet Heart) Based on Innovative Management of Spectrophotometric Multilinear Correlation Models. Applied Sciences, 15(1), 197. DOI: https://doi.org/10.3390/app15010197

16. Tornese, I., Matera, A., Rashvand, M., Genovese, F. (2024). Use of probes and sensors in agriculture—current trends and future prospects on intelligent monitoring of soil moisture and nutrients. AgriEngineering, 6(4), 4154-4181. DOI: https://doi.org/10.3390/agriengineering6040234

17. Lomonaco, A., Galgano, F., Condelli, N., Paganon,i C., Mecca, L.C., Di Cairano, M. (2025). Influence of processing on the technological and sensory quality of bread: an overview. Italian Journal of Food Science, 3753:53–79. DOI: 10.15586/ijfs. v37i3.2941

18. Di Cairano, M., Condelli, N., Lomonaco, A., Galgano, F. (2025). Agri-Food by products as ingredients: exploring purchase intentions among a sample of italian consumers. Foods, 14(15), 2664. DOI: 0.3390/foods14152664

19. Sportiello, L., Tolve, R., Galgano, F., Favati, F. (2025). Enhanced NaHDESs Extraction of Carotenoids from Pepper By-products: A Sustainable Approach. European Food Research and Technology, 251: 915–924. DOI: 10.1007/s00217-025-04680-7

20. Malvano, F., Condurso, C., Galgano, F., Miller, A., Condelli, N., Albanese, D. (2025). Enzymatic Hydrolysis of Hemp Seed Cake Flour: Impact on Technological Properties. Chemical Engineering Transactions, p. 1-6. DOI: https://doi.org/10.3303/CET25118001

21. Malvano, F., Condurso, C., Galgano, F., Longo, R., Albanese, D., Procentese, A. (2025). Exploring deep eutectic solvents and enzyme-based hydrolysis for hemp seed flour valorization. LWT, 238, 118856. DOI: https://doi.org/10.1016/j.lwt.2025.118856

22. Ricciardi, A., Arroyo López, F. N., Giavalisco, M., Pietrafesa, R., Parente, E. (2025). Determining the core bacterial and fungal genera in table olive fermentations. International Journal of Food Microbiology, 442: 11344. DOI: https://doi.org/10.1016/j.ijfoodmicro.2025.111344

23. Powell, I. B., Zotta, T., Parente, E. (2025). Starter cultures: general aspects. Chap. 8 Vol. 1 in: P.F. Fox, P.L.H. McSweeney, P. Cotter and D.W.

Everett, eds. Cheese: chemistry, physics, microbiology, 5° edition, Elsevier Publishers, London, pp 215-243, ISBN 978-0-443-23693-8. https://doi.org/10.1016/B978-0-443-15956-5.00037-3

24. Caporusso, A., Casiello, M., De Leo, V., Perna, A., Catucci, L., D'Accolti, L., Capece, A., De Bari, I. (2025). Low impact methods for microbial lipids production for third generation biofuels and biobased polyurethanes, Journal of Environmental Chemical Engineering, 13, 4, 117375. DOI: https://doi.org/10.1016/j.jece.2025.117375

25. Tedesco, F., Biundo, A., Caporusso, A., Pisano, I., Siesto, G., Pietrafesa,R., Abry, C., Hervé, A., Falabella, P., Capece, A. (2025). Chitosan-based strategies as eco-friendly solutions for controlling Brettanomyces bruxellensis contamination in wine production. Frontiers in Microbiology 16,1631987. DOI: 10.3389/fmicb.2025.1631987

26. Granchi, L., Patrignani, F., Bianco, A., Braschi, G., Budroni, M., Canonico,, L., Capece, A., Cauzzi, A., Ciani, M., Chinnici, F., Civa, V., Cocolin, L., Domizio, P., Englezos, V., Francesca, N., Gerardi, C., Grieco, F., Lanciotti, R., Mangani, S., Montanini, C., Naselli, V., Perpetuini, G., Pietrafesa, R., Racioppo, A., Siesto, G., Tofalo, R., Bevilacqua, A., Romano, P. (2025). Comparison between Metschnikowia pulcherrima and Torulaspora delbrueckii used in sequential wine fermentations with Saccharomyces cerevisiae. Frontiers in Microbiology 16:1590561.
DOI: 10.3389/fmicb.2025.1590561

27. Ferrocino I, Ferrara M, Garello M, Turchetti B, Andreolli M, Arena MP, Alduina R, Aloi F, Bevivino A, Bruno E, Capozzi V, Coronas R, De Vero L, Di Renzo T, Franzetti A, Gaglio R, Gallo G, Gullo M, Guarcello R, Giavalisco M, Lampis S, Mugnai G, Quatrini P, Reale A, Sbarra F, Sannino C, Spadaro D, Tatangelo V, Visca A, Zara G, Zotta T, Varese GC, Cocolin L. (2025). Standardizing microbiome research: interlaboratory validation of SOPs for sample preparation and DNA extraction from food and environmental ecosystems. Environmental Microbiome, 21,14.
DOI: 10.1186/s40793-025-00833-z

28. Rashvand, M., Dehkharghanian, N., Nikzadfar, M., Javed, T., Luke, L. P., O'Brien, A., Zhang, H. (2025). Machine Learning-Driven Optimization for Digital Transformation in Non-thermal Food Processing. Food and Bioprocess Technology, 1-34. DOI: 10.1007/s11947-025-04078-z

29. Altieri, G., Laveglia, S., Rashvand, M., Genovese, F., Matera, A., Mininni, A. N.,Di Renzo, G. C. (2025). Portable NIR Spectroscopy Combined with Machine Learning for Kiwi Ripeness Classification: An Approach to Precision Farming. Applied Sciences, 15(11), 6233. DOI: https://doi.org/10.3390/app15116233

30. Rashvand, M., Nikzadfar, M., Laveglia, S., Bozorgi, A., Paterna, G., Matera, A.,Genovese, F. (2025). Advancing legume quality assessment through machine learning: Current trends and future directions. Journal of Food Composition and Analysis, 107532. DOI: 10.1016/j.jfca.2025.107532.

31. Laveglia, S., Altieri, G., Genovese, F., Matera, A., Scarano, L. Di Renzo, G. C. (2025). Development of a Short-Range Multispectral Camera Calibration Method for Geometric Image Correction and Health Assessment of Baby Crops in Greenhouses. Applied Sciences, 15(6), 2893. DOI: https://doi.org/10.3390/app15062893

32. Rashvand, M., Paterna, G., Laveglia, S., Zhang, H., Shenfield, A., Gioia, T., Genovese, F. (2025). Quality detection of common beans flour using hyperspectral imaging technology: Potential of machine learning and deep learning. Journal of Food Composition and Analysis, 142, 107424. DOI: 10.1016/j.jfca.2025.107424



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