

Alessandro Esposito

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Alessandro Esposito si è laureato in Scienze Agrarie nel 1992 presso l'Università degli Studi di Napoli –Federico II-. Nel 1996 ha conseguito il Diploma di Abilitazione all'Esercizio della Professione di Dottore Agronomo.

Dal 1995 collabora in progetti di ricerca scientifici con istituzioni del CNR, prima presso il Centro di Studio sulla Chimica e Biochimica dei Fitofarmaci di Perugia del C.N.R e dal 2002 presso dell'Istituto CNR per i Sistemi Agricoli e Forestali del Mediterraneo (CNR-ISAFOM).

Dall'inizio della sua carriera scientifica ad oggi ha svolto attività di ricerca riguardanti il destino ambientale nel suolo delle principali sostanze utilizzate in agricoltura (xenobiotici) sia mediante prove di degradazione ed adsorbimento in laboratorio ed in pieno campo, sia attraverso l'uso di modelli matematici previsionali.

Attualmente è impegnato in attività di ricerca mirate al miglioramento tecnico ed economico della gestione dei reflui dei frantoi oleari con particolare attenzione al loro utilizzo in ambito agronomico. In tale ambito, si occupa dello sviluppo di processi innovativi eco-compatibili ed economicamente sostenibili di gestione degli scarti agro-industriali. Ha pubblicato diversi lavori che descrivono nuove tecnologie di maturazione aerobica delle biomasse a base di reflui oleari e che analizzano l'impatto che tali miscele determinano nel suolo con particolare attenzione al ciclo del carbonio e dell'azoto.

All'interno di progetti riguardanti la ricerca di nuove tecnologie per la coltivazione eco-compatibile delle piante in contenitore è coinvolto in ricerche che riguardano:

- lo sviluppo di miscele compostate da inserire nei terricci di coltivazione come surrogato della torba
- lo sviluppo di prototipi automatizzati da laboratorio per lo studio e la valutazione dei parametri connessi alla stabilità biologica dei compost (respirometria statica e dinamica) dai quali si evince la compatibilità con le colture in vaso.
- la ricerca di materiali bioplastici da utilizzarsi al posto dei tradizionali vasi in PE attraverso prove di biodegradabilità e compostabilità
- la realizzazione di bioreattori a scala di laboratorio

Ha partecipato ai seguenti progetti europei:

2000 - P.E.G.A.S.E. (Pesticides in European Groundwaters: detailed study of representative Aquifers and Simulation of possible Evolution scenarios - EU-FP5 Contract EVK1-CT-1999-00028).

2008 LIFE-TIRSAV PLUS ENV/IT/845 (Tecnologie Innovative per il Riciclaggio delle Sanse e delle Acque di Vegetazione)

2009 STInno (Sustainable Innovations and Treatment in Industrial Waste Water Clusters) FP7-REGIONS-2009-1

2013- FFW (Fuel From Waste) FP7, technological development and demonstration, grant agreement n° 308733

Ha pubblicato complessivamente 77 lavori a stampa di cui 20 su riviste internazionali ISI.

## ENGLISH

Alessandro Esposito was graduated in Agricultural Sciences at University of Naples –Federico II, Italy. From 2000 was involved in Italian and European project at Consiglio Nazionale delle Ricerche (CNR, Italy) in studies relating the pesticides fate in the soil and successively in the valorization of agricultural effluents. At moment he is researcher at ISAFOM-CNR, Perugia, Italy.

In the first part of his career he was involved in studies on the environmental fate in soil of the xenobiotics (products for plant protection) or by trials in laboratory and in the field, either through the use of mathematical forecasting models (PRZM, Macro, Pelmo).

He is currently engaged in research aimed at improving the technical and economic management of the waste from olive oil mills with particular attention to their agronomic use. In this context, it deals with the development of innovative processes eco-compatible and economically sustainable management of agro-industrial wastes. He has published several papers describing new technologies dealing with aerobic maturation of biomasses and the impact of these mixtures in the soil, with particular attention to their influence on carbon and nitrogen cycle.

In projects involving research into new eco-friendly technologies for growing plants in container (plant nursing) it is engaged in research concerning:

- the development of composted mixtures to be included in the potting soil cultivation as a peat substitute;
- the development of prototypes automated laboratory for the study and evaluation of parameters related to the stability of the organic compost (static and dynamic respirometry) and thus their compatibility with crops in pots.
- search for bioplastics to be used in place of traditional vessels in PE through testing biodegradability and compostability
- design of bioreactors at laboratory scale

### European Project participation

2000 - European project PEGASE (Pesticides in European Groundwaters: detailed study of representative Aquifers and Simulation of possible Evolution scenarios) - FP5 Contract EVK1-CT-1999-00028).

2008 - European project LIFE-TIRSAV PLUS ENV/IT/845 (Innovative Technologies for pomace and olive mill waste water recycling).

2009 - STInno (Sustainable Innovations and Treatment in Industrial Waste Water Clusters) FP7-REGIONS-2009-1

2013- FFW (Fuel From Waste) FP7, technological development and demonstration, grant agreement n° 308733

He is co-author of several research papers of which 26 original peer reviewed papers published in International Scientific Journals.

ISI publications

Pubblicazioni su riviste ISI

Castellani F., Esposito A., Geldermann J., Altieri R. (2018). Life cycle assessment of passively aerated composting in gas-permeable bags of olive mill waste. *The International Journal of Life Cycle Assessment*. <https://doi.org/10.1007/s11367-018-1514-0>.

Seggiani M., Altieri R., Puccinia M., Stefanelli E., Esposito A., Castellani F., Stanzione V., Vitolo S. (2018). Polycaprolactone-collagen hydrolysate thermoplastic blends: Processability and biodegradability/compostability. *Polymer Degradation and Stability*, 150, 13-24.

Chilosi G., Esposito A., Castellani F., Stanzione V., Aleandri M.P., dell'Unto D., Tomassini A., Vannini A., Altieri R. (2017). Characterization and use of olive mill waste compost as peat surrogate in substrate for cultivation of *Photinia* potted plants: assessment of growth performance and in vitro suppressiveness. *Waste and Biomass Valorization* 9, 919-928. Impact Factor 1.337.

Castellani F., Esposito A., Stanzione V., Altieri R., (2016). Measuring the biodegradability of plastic polymers in olive-mill waste compost with an experimental apparatus. *Advances in Materials Science and Engineering (online)*. <http://dx.doi.org/10.1155/2016/6909283>.

Barbanera M., Lascaro E., Stanzione V., Esposito A., Altieri R., Bufacchi M., (2016). Characterization of pellets from mixing olive pomace and olive tree pruning. *Renewable Energy*, 88, 185-191. Impact Factor 3.404 - Thomson Reuters Journal Citation Reports 2015, citation 1

Nair N.G., Altieri R., Esposito A., Saville K., (2014). Recent studies on preparation of humified compost using olive mill waste for horticultural purposes. *Acta horticulturae*, 1018, 465-469. IPP (Impact per Publication 2015) 0.154

Altieri R., Esposito A., Baruzzi G., Nair T., 2014. Corroboration for the successful application of humified olive mill waste compost in soilless cultivation of strawberry. *International Biodeterioration & Biodegradation*, 88, 118-124. Impact Factor 2.429 - Thomson Reuters Journal Citation Reports 2015, citations 7.

Pepi M., Cappelli S., Hachicho N., Perra G., Renzi M., Tarabelli A., Altieri R., Esposito A., Focardi S. E., Heipieper H.J. (2013). *Klebsiella* sp. strain C2A isolated from olive oil mill waste is

able to tolerate and degrade tannic acid in very high concentrations. *FEMS Microbiology Letters*, 343, 105-112. IPP (Impact per Publication 2015) 1.996, citations 5

Vitullo D., Altieri R., Esposito A., Nigro F., Ferrara M., Alfano G., Ranalli G., De Cicco V. (2013), Lima G. Suppressive biomasses and antagonist bacteria for an eco-compatible control of *Verticillium dahliae* on nursery-grown olive plants, *International Journal of Environmental Science and Technology*, 10/2, 209-220. Impact Factor 2.344 - Thomson Reuters Journal Citation Reports 2015, citations 3.

Federici E., Pepi M., Esposito A., Scarpetta S., Fidati L., Gasperini S., Cenci G., Altieri R. (2011) Two-phase olive mill waste composting: community dynamics and functional role of the resident microbiota. *Bioresource Technology*, 102, 10965–10972. Impact Factor 4.917 - Thomson Reuters Journal Citation Reports 2015, citations 20.

Altieri R., Esposito A., Nair, T. 2011. Novel static composting method for bioremediation of olive mill waste, *International Biodeterioration & Biodegradation*, 65 (6), 786-789. Impact Factor 2.429 - Thomson Reuters Journal Citation Reports 2015, citations 11.

Parati F., Altieri R., Esposito A., Lobianco A., Pepi M., Montesi L., Nair T. 2011. Validation of thermal composting process using olive mill solid waste for industrial scale cultivation of *Agaricus bisporus*, *International Biodeterioration & Biodegradation*, 65, 160-163. Impact Factor 2.429 - Thomson Reuters Journal Citation Reports 2015, citations 5.

Federici E., Pepi M., Esposito A., Focardi S., Cenci G., Altieri R. 2010. Phylogenetic and functional characterization of tannin-degrading bacteria isolated during composting of olive mill waste. *Journal of Biotechnology*, 150, Supplement 1, November 2010, 289.

Altieri R., Esposito A., Baruzzi G., 2010. Use of olive mill waste mix as peat surrogate in substrate for strawberry soilless cultivation. *International Biodeterioration & Biodegradation*, Volume 64, Issue 7, October 2010, Pages 670-675. Impact Factor 2.429 - Thomson Reuters Journal Citation Reports 2015, citations 7.

Pecoraro L., Altieri R., Esposito A., Parati F., Montesi L., Perini C., 2010. La coltivazione di *Agaricus bisporus* su miscele sperimentali a base di reflui oleari: una prova a livello industriale, *Micologia Italiana*, ISSN 0390-0460, Anno XXXIX, n. 1, pp 40-46. From 2015 Italian Journal of Mycology.

Altieri, R., Esposito, A., 2010. Evaluation of the fertilizing effect of olive mill waste compost in short-term crops. *International Biodeterioration & Biodegradation*, 64 (2), 124-128. Impact Factor 2.429 - Thomson Reuters Journal Citation Reports 2015, citations 37.

Pepi M., Lampariello L. R., Altieri R., Esposito A., Perra G., Renzi M., Lobianco A., Feola A., Gasperini S., Focardi S.E., 2010. Tannic acid degradation by bacterial strains *Serratia* spp. and *Pantoea* sp. isolated from olive mill waste mixtures. *International Biodeterioration & Biodegradation*, 64, 73-80. Impact Factor 2.429 - Thomson Reuters Journal Citation Reports 2015, citations 27.

Pepi M., Altieri R., Esposito A., Lobianco A., Borghini F., Stendardi A., Gasperini S., Focardi S.E., 2009. Effects of amendment with olive mill by-products on soils revealed by nitrifying bacteria. *Chemistry and Ecology*, 25(4), 293-303. Impact Factor 1.281 - Thomson Reuters Journal Citation Reports 2015, citations 2.

Altieri, R., Esposito, A., Parati, F., Lobianco, A., Pepi, M., 2009. Performance of olive mill solid waste as a constituent of the substrate in commercial cultivation of *Agaricus bisporus*. *International Biodeterioration & Biodegradation*, 63,993-997. Impact Factor 2.429 - Thomson Reuters Journal Citation Reports 2015, citations 13.

Altieri R., Esposito A., 2008. Olive mill waste amendments in an intensive olive orchard: effects on soil organic carbon, plant growth and yield, *Bioresource Technology*, 99/17: 8390-8393. Impact Factor 4.917 - Thomson Reuters Journal Citation Reports 2015, citations 50.

Pecoraro L., Altieri R., Esposito A., Perini C., Salerni E., De Dominicis V., 2008. Impiego di substrati sperimentali a base di reflui oleari per la coltivazione di funghi eduli, *Micologia Italiana* ISSN 0390-0460, Anno XXXVII, n. 1, aprile 2008, pp. 34-39. From 2015 Italian Journal of Mycology.

Esposito A., Vischetti C., Errera G., Trevisan M., Scarponi L., Herbst M., Ciocanaru M., Vereecken H., 2005, A spatialising tool to simulate pesticide fate in the unsaturated zone on a catchment scale, *Agron. Sustain. Dev.* 25, 279–283. Impact Factor 4.141 - Thomson Reuters Journal Citation Reports 2015, citation 1.

Vischetti C., Trevisan M., Esposito A., Scarponi L., 2002. “Ability of three pesticide leaching models to simulate summer crops in a Mediterranean scenario”. *Agronomie*, 22, 351-361. Impact Factor 4.141 - Thomson Reuters Journal Citation Reports 2015, citation 1

Scarponi L., Esposito A., Tomassini C., 2001. Factors of tolerance to rimsulfuron in four pepper (*Capsicum annum* L.) lines. *Agronomie*, 21, 419-425. Impact Factor 4.141 - Thomson Reuters Journal Citation Reports 2015, citations 3

Vischetti C., Marucchini C., Esposito A., Zadra C., 2000. Pesticides in drinking water: analysis of a lake scenario with a mathematical model. *Italian Journal of Food Science*, 12(2), 207-217. IPP (Impact per Publication 2015) 0.544.

Vischetti C., Esposito A., 1999. Degradation and Transformation of a Potential Natural Herbicide in Three Soils. *Journal of Agricultural and Food Chemistry*, 47 (9), 3901-3904. Impact Factor 2.857 - Thomson Reuters Journal Citation Reports 2015, citations 9.