

Curriculum Vitae

Francesco Reyes

Francesco Reyes is Assistant Professor (RTDB) at the Department of Life Science of the University of Studies of Modena and Reggio Emilia.

WORK EXPERIENCE

Jul 2019 – Dec 2021: Fixed Term Researcher (RTDA), at the Department of European and Mediterranean Cultures, Environment, and Cultural Heritage of the University of Studies of Basilicata, Matera.

Oct 2018 – Jul 2019: Post doc at the Department of Agricultural and Forest Sciences, University of Tuscia, Viterbo.

Feb 2018 – Oct 2018: Post doc at the System Research Unit, National Research Institute for Agriculture, Food and the Environment, Institut Agro, Montpellier, France.

Jan 2017 – Dec 2017 and Jan 2018 – Oct 2018: Post doc at the System Research Unit, National Research Institute for Agriculture, Food and the Environment, Institut Agro, Montpellier, France.

EDUCATION

2016: PhD in “Management of the mountain environment and agriculture” released by the Free University of Bolzano. Dissertation title: “Carbon allocation in the apple tree: from field experiments to computer modelling”.

2010: Msc in International Joint Master in Sustainable Development, Environmental Sciences, University of Utrecht and University of Ca’ Foscari, Venice.

RESEARCH

His research focuses on tree eco-physiological responses to microclimate and biophysical modeling. He became familiar with a variety of approaches for the process-based modeling of plant growth, on simple monoculture systems, as well as in systems (such covered orchards or multistory agroforestry) where plant microclimate is affected by more complex agricultural system designs. In this respect he used both previous existing models (e.g. Hi-sAFe, RATP) and formalisms of plant representation (e.g. Multi Scale Tree Graph), created new models (MuSCA) and linked them to existing ones.

He also developed experience in programming and installing stations for sensing and monitoring fruit tree microclimate on kiwi (under protection nets) and in vineyards, also in collaboration with foreign research institutes (Institut Agro, Montpellier).

BIBLIOMETRIC INDICATORS (SOURCE: SCOPUS; DATA RETRIEVED ON 13 JULY 2022):

ORCID <https://orcid.org/0000-0002-3507-2915>

Author ID: 56767659100

Documents: 9

Citations: 137

H-index: 5

He contributed with 10 among oral presentations and posters to international and national conferences.

SCIENTIFIC PROJECTS

International projects

Responsible for annual reports: - “Zespri GI21020 - Water and soil management of G3 in Italy”, for the private agency Zespri Limited Ltd (2020-2022). Budget 232.000 euro.

National/Regional projects

MUR - BANDO 2022 Ministry of University and Research

Scientific responsible: - “Assessment of the effect of multifunctional covers on the physiological and productive efficiency of cherry orchards” for the private agency Sachim srl (2022-2024).

Budget 20.000 euro.

Participant: PSR mis 16.2 – Umbria – SMARTAGRI – Development of a platform for precision fertilization - FOCUS AREA 3B (2018-2019)

OTHER ACTIVITIES

- Participation to the COST Action CA19139 – “Process-based models for climate impact attribution across sectors”.

TEACHING ACTIVITIES

“Tree Agro-Ecosystems”, Master in Agricultural Sciences and Technologies (in Italian) (2021-2022);

“An introduction to the R statistical software for agronomic research”, PhD course in Food and Agricultural Science, Technology and Biotechnology (2021-2022)

“R scripting for data analysis”, PhD course in Cities and landscapes: architecture, archaeology, cultural heritage, history and resources (2019-2020-2021);

“Garden”, Bachelor in Landscape, Environment and Urban Vegetation (2019-2020).

TUTORING ACTIVITIES

- Co-advisor for the Master Thesis in Sustainable Agriculture of Erica Nei Giroto, titled “Dose adaptation of Plant Protection Products sprayed according to the vegetation stage. Example of peach and apricot orchards (ADOPA)”; University of Studies of Padua. (2020-2021);

- Coordinating the field activities of the interns Marilù Solas and Mathilde Erfurt on monitoring apple tree growth. Foundation Edmund Mach (2015);

- Co-advisor for the Bachelor thesis of Liborio Presti on Precision Agriculture. University of Studies of Tuscia. (2018).

SYMPOSIA ORGANIZATION

- Scientific committee of the 5th World Congress on Agroforestry. Québec City (Canada) July 17th-20th, 2022;

- Scientific committee of the 6th European Agroforestry Conference, EURAF2022. Nuoro (Italy) 16th-20th May 2022.

REVIEWER'S ACTIVITY

- Referee for the IX International Symposium on Irrigation of Horticultural Crops. 17-20 June 2019. Matera, Italy;

- Referee for Agricultural and Forest Meteorology (ISSN 0168-1923);

- Referee for Agroforestry Systems (ISSN 1572-9680);

- Referee for Geosciences and Remote Sensing Letters (ISSN 1558-0571);
- Referee for Agriculture (MDPI, ISSN 2077-0472).

INVITED CONTRIBUTIONS

- Invited speaker on 'Modelling agroforestry system productivity and climate change effects' at the Transfer Workshop of the "Upper Rhine Cluster for Sustainability Research" hold on 4th October 2017 at the University of Freiburg, Germany.

PERIODS ABROAD

From 2 to 4 June 2021 the he attended a training course on the DART model in Toulouse.

From October 2020 to March 2021 and from October 2021 to January 2022, he visited Prof. Léo Garcia (UMR System - Institut Agro, Montpellier) to collaborate on estimating structural variables, drivers of transpiration, and modeling water balance in grassed vineyards, by means of proximal and remote sensing.

From January 2017 to Dec 2017 and from Jan 2018 to Oct 2018, he did two consecutive Post-docs at the System Research Unit, National Research Institute for Agriculture, Food and the Environment, Institut Agro, Montpellier.

From September 2014 to December 2014, he visited the laboratory directed by Evelyne Costes (AFEF – French National Institute for Agricultural Research, Montpellier) to collaborate on the "Linkages between a carbon allocation model and a model for radiative transfer and photosynthesis".

From February 2016 to March 2016, he visited the laboratory directed by Evelyne Costes (AFEF - French National Institute for Agricultural Research, Montpellier) to collaborate on the "Development of a carbon allocation model for apple trees".

From January 2013 to March 2014, I visited the laboratory of Prof. Susan Ustin (CSTARS - Department of land, air and water resources, University of California, Davis) for eight months to collaborate on the inversion of radiative transfer models (PROSAIL).

ARTICLES ON INTERNATIONAL JOURNALS

Reyes F., Pallas B., Pradal C., Vaggi F., Zanutelli D., Tagliavini M., Gianelle D., Costes E. (2020). MuSCA: A multi-scale source-sink carbon allocation model to explore carbon allocation in plants. An application to static apple tree structures. ANNALS OF BOTANY, vol. 126, p. 571-585, ISSN: 0305-7364, doi: 10.1093/aob/mcz122

Reyes, Francesco, DeJong T., Franceschi, Pietro, Tagliavini M., Gianelle, Damiano (2016). Maximum growth potential and periods of resource limitation in apple tree. FRONTIERS IN PLANT SCIENCE, vol. 7, p. 1-12, ISSN: 1664-462X, doi: 10.3389/fpls.2016.00233

Reyes F., Gosme M., Wolz K. J., Lecomte I., Dupraz C. (2021). Alley cropping mitigates the impacts of climate change on a wheat crop in a mediterranean environment: A biophysical model-based assessment. AGRICULTURE, vol. 11, p. 1-18, ISSN: 2077-0472, doi: 10.3390/agriculture11040356

Dalponte, Michele, Reyes, Francesco, Kandare, Kaja, Gianelle, Damiano (2015). Delineation of individual tree crowns from ALS and hyperspectral data: a comparison among four methods. EUROPEAN JOURNAL OF REMOTE SENSING, vol. 48, p. 365-382, ISSN: 2279-7254, doi: 10.5721/EuJRS20154821

Sofa A., Khan N. A., D'Ippolito I., Reyes F. (2022). Subtoxic levels of some heavy metals cause differential root-shoot structure, morphology and auxins levels in Arabidopsis thaliana. PLANT PHYSIOLOGY AND BIOCHEMISTRY, vol. 173, p. 68-75, ISSN: 0981-9428, doi: 10.1016/j.plaphy.2022.01.027

Dupraz C., Wolz K. J., Lecomte I., Talbot G., Vincent G., Mulia R., Bussiere F., Ozier-Lafontaine H., Andrianarisoa S., Jackson N., Lawson G., Dones N., Sinoquet H., Lusiana B., Harja D., Domenicano S., Reyes F., Gosme M., Van Noordwijk M. (2019). Hi-sAFe: A 3D agroforestry model for integrating dynamic tree-crop interactions. *SUSTAINABILITY*, vol. 11, ISSN: 2071-1050, doi: 10.3390/su11082293

Dupraz C., Blitz-Frayret C., Lecomte I., Molto Q., Reyes F., Gosme M. (2018). Influence of latitude on the light availability for intercrops in an agroforestry alley-cropping system. *AGROFORESTRY SYSTEMS*, vol. 92, p. 1019-1033, ISSN: 0167-4366, doi: 10.1007/s10457-018-0214-x

Reyes F., Gianelle D., Pallas B., Costes E., Pradal C., Tagliavini M., Zanotelli D. (2017). A multi-scale model to explore carbon allocation in plants. In: *Acta Horticulturae. ACTA HORTICULTURAE*, vol. 1160, p. 285-292, International Society for Horticultural Science, ISSN: 0567-7572, doi: 10.17660/ActaHortic.2017.1160.41

CONFERENCE PROCEEDINGS AND ABSTRACTS

Reyes F., Dichio B., Xiloyannis C., Pitacco A. (2022). Protection net and the canopy layer decouple gas exchanges, affecting carbon and water net fluxes: the case of a kiwi orchard in a Mediterranean environment. 31st International Horticultural Congress IHC, Angers (France) 14-20 August 2022.

D'Ippolito Ilaria, Mininni AN, Dichio B, Reyes F, Xylogiannis E, Mastroleo M, Sofo A (2021). Moria del kiwi: alterazione della struttura anatomica e morfologica delle radici di actinidia sottoposte a condizioni di asfissia del suolo. In: (a cura di): SOI, XIII Giornate Scientifiche della Società di Ortoflorifrutticoltura Italiana (SOI). ITA:SOI, Catania, 22-23 June 2021

Reyes F, Gosme M, Wolz K, Lecomte I, Dupraz C (2019). Crop microclimate: can alleycropping alleviate climate change effects on durum wheat? In: 4th World Congress on Agroforestry. p. 69, Montpellier, 20-22 May 2019

Wolz K, Dupraz C, Lecomte I, Gosme M, Reyes F (2019). Calibration of the 3D Hi-sAFe agroforestry model for hybrid walnut. In: 4th World Congress on Agroforestry. Montpellier, 20-22 May 2019

Dupraz C, Wolz K, Lecomte I, Talbot G, Vincent G, Mulia R, Reyes F, Gosme M, Van Noordwijk M (2019). Theory and description of the 3D Hi-sAFe agroforestry model. In: 4th World Congress on Agroforestry. Montpellier, 20-22 May 2019

Reyes F., Gosme M., Blanchet G., Dupraz C. (2018). How important is adapting regional climatic projections to the local environment? A procedure for microclimatic corrections makes the difference for crop growth in a virtual experiment. In: *Agroforestry as Sustainable Land Use*. p. 141-145, Nuria Ferreiro-Domínguez, María Rosa Mosquera-Losada, ISBN: 978-84-09-02384-4, Nijmegen, The Netherlands

Reyes, Francesco, Kandare, Kaja, Frizzera, Lorenzo, Gianelle, Damiano, Dalponte, Michele (2014). Delineation of Individual Tree Crowns from ALS and Hyperspectral data: a comparison among four methods. In: *ForestSAT2014: a bridge between forest sciences, remote sensing and geo-spatial applications*, 4-7 November 2014, Riva del Garda (TN), Italy. Riva del Garda (TN), Italy, 4-7 November 2014