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: 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 monitoring agro-ecosystems microclimate via programming and installing customized agrometereological stations. The main tree crops studied to date are apple, kiwi, cherry and vineyards, also in relation to protection covers.

BIBLIOMETRIC INDICATORS (SOURCE: SCOPUS; data retrieved on 26 JULY 2024):

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

Author ID: 56767659100

Documents: 18

Citations: 244

H-index: 7

He contributed with 19 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)

Responsibility of National/Regional projects

- PRIN 2022 - “CHOICE - Optimizing CHerry physiOlogIcal performanCE through the correct choice of multifunctional covers” for the private agency Sachim srl (2022-2024)
- Departmental Fund for Research (FAR PD) 2023 – “Development of a predictive model for tree crops wetness under protection covers”
- “Assessment of the effect of multifunctional covers on the physiological and productive efficiency of cherry orchards” for the private agency Sachim srl (2022-2024)
  "Assessment of new multifunctional cover materials in chery orchards”, by Agrintech S.r.l. 15 December 2022 - 30 September 2023

Partecipation to National/Regional projects

- Emilia Romagna Region Regional Development Project “Approcci integrati agro-genomici per la resilienza e sostenibilità ambientale in vite e pomodoro (CLIMAVIP)”, 31 January 2024 - 31 July 2026
- Life 3.0 MICROFIGHTERS "Innovative Zeo-Biopesticides, based on useful microorganisms, for eliminating the use of copper-based pesticides" - Grant No.
  101074218 a partire dal 01 agosto 2022
- "Pommier en agroforesterie – création d’une base de données architecturale et fonctionnelle", under the supervision of Pierre-Eric Lauri, research group ABsys (Institut National de Recherche pour l'Agriculture, l'Alimentation et l'Environment -INRAE - 2 place Viala, Montpellier), 21 October 2022 - 20 December 2022
- COST Action CA21142 “Fruit tree crop responses to water deficit and decision support systems applications (FruitCREWS)”, coordinator of the review “Anatomy, physiological responses and relevant stress indexes of the apple and pear trees to variable water availability”, from 2 February 2023 onward
- PSR mis 16.2 – Umbria – SMARTAGRI – Development of a platform for precision fertilization - FOCUS AREA 3B (2018-2019)

TEACHING ACTIVITIES

- “Fundamentals of tree crops”, Bachelor in Agricultural Sciences and Technologies (in Italian) (2023-2024)
- “Tree Agro-Ecosystems”, Master in Agricultural Sciences and Technologies (in Italian) (2021-2024)
- “Fruit tree crops and Viticulture”, Bachelor in Agricultural Sciences and Technologies (in Italian) (2022-2023)
- “An introduction to the R statistical software for agronomic research”, PhD course in Food and Agricultural Science, Technology and Biotechnology (2021-2024)
- “R scripting for data analysis”, PhD course in Cities and landscales: architecture, archaeology, cultural heritage, history and resources (2019-2021)
- “Garden”, Bachelor in Landscape, Environment and Urban Vegetation (2019-2020)

SYMPOSIA ORGANIZATION

- Scientific committee and organizer of the special session #13: Mixed farming systems, agroforestry and intercropping: challenges for mechanization model optimization and #14 Measurements and modelling of mass and energy fluxes in agricultural and forest ecosystems, International workshop on Metrology for Agriculture and Forestry, Padua, 29-31Ottobre 2024
- Scientific committee and organizer of the special session #8 Measurements and modelling of mass and energy fluxes in agricultural and forest ecosystems, International workshop on Metrology for Agriculture and Forestry, Pisa 6-8 Novembre 2023
- Scientific committee of the 9th International Cherry Symposium. Beijing (China) May 21st-25th, 2023
- Review board of the 5th World Congress on Agroforestry. Québec City (Canada) July 17th-20th, 2022
- Scientific committee of the 6th European Agroforestry Conference, EURAF2022. Nuoro (Otaly) 16th-20th May 2022

REVIEWER'S ACTIVITY

- Associate editore of Agroforestry Systems, Springer nature
- 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 'Microclimate, wetness and fruit quality impacts of a rain exclusion cover on a young sweet-cherry orchard' at the 9th International Cherry Symposium; hold on 21st-25th May 2023 in Beijing, China.
- 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.

TRAINING ACTIVITIES

- 3–14 June 2024: 7th Training Course (Hybrid Virtual + in Person) on New Advances in Land Carbon Cycle Modeling
- 2-4 June 2021 and 4-6 June 2024: training course on the DART model, CESBIO, Toulose.
- 18-22 June 2018: "Analyse des pistes et équations structurelles pour écologues et agronomes", Centre d'Ecologie Fonctionnelle et Evolutive, Montpellier
- 15-20 July 2013: EUROSPEC Summer School on field spectroscopy and ecological modelling, Università di Palermo (COST action ES0903)
- 22 July 2020: LanguageCert Level 2 Certificate in ESOL International (Listening, Reading, Writing, Speaking) (Expert C1) 603/1963/X, High Pass from Language Cert Institute

COMMUNICATION SKILLS

Fluent speaker in Italian, English and French, R statistical software

PERIODS ABROAD

- October 2020 - 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
- January 2017 - Dec 2017 and Jan 2018 - 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
- September 2014 - 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"
- February 2016 - 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"
- January 2013 - March 2014, he 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., Casa, R., Tolomio, M., Dalponte, M., Mzid, N. (2023). Soil properties zoning of agricultural fields based on a climate-driven spatial clustering of remote sensing time series data. European Journal of Agronomythis, 150, 126930. https://doi.org/10.1016/j.eja.2023.126930
- Rafflegeau, S., Gosme, M., Barkaoui, K., Garcia, L., Allinne, C., Deheuvels, O., Grimaldi, J., Jagoret, P., Lauri, P.-É., Merot, A., Metay, A., Reyes, F., Saj, S., Curry, G. N., & Justes, E. (2023). The ESSU concept for designing, modeling and auditing ecosystem service provision in intercropping and agroforestry systems. A review. Agronomy for Sustainable Development, 43(4), 43. https://doi.org/10.1007/s13593-023-00894-9
- Reyes, F., Tagliavini, M., & Gianelle, D. (2023). A hierarchical dataset of vegetative and reproductive growth in apple tree organs under conventional and non-limited carbon resources. Data in Brief, 47, 109011. https://doi.org/10.1016/j.dib.2023.109011
- Reyes, F., Sorgonà, A., Briones, M. J. I., Crecchio, C., & Sofo, A. (2023). Plant Growth and Root Morphology Are Affected by Earthworm-Driven (Eisenia sp.) Changes in Soil Chemico-Physical Properties: A Mesocosm Experiment with Broccoli and Faba Bean. Journal of Soil Science and Plant Nutrition. https://doi.org/10.1007/s42729-023-01325-0
- Bignami, C., Reyes, F., Saccaggi, M., Pane, C., Zaccardelli, M., & Ronga, D. (2023). Composts from Grapevine and Hazelnut By-Products: A Sustainable Peat Partial Replacement for the Growth of Micropropagated Hazelnut and Raspberry in Containers. Horticulturae, 9(4), 481. https://doi.org/10.3390/horticulturae9040481
- Sofo 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
- Sofo, A., Khanghahi, M. Y., Curci, M., Reyes, F., Briones, M. J. I., Sarneel, J. M., Cardinale, D., & Crecchio, C. (2023). Earthworm-Driven Changes in Soil Chemico-Physical Properties, Soil Bacterial Microbiota, Tree/Tea Litter Decomposition, and Plant Growth in a Mesocosm

Experiment with Two Plant Species. Plants, 12(6), 1216. https://doi.org/10.3390/plants12061216

- 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
- Reyes F., Pallas B., Pradal C., Vaggi F., Zanotelli 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
- 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
- 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
- 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

CONFERENCE PROCEEDINGS AND ABSTRACTS

- Vendrame N., Reyes F., Dichio B., Xiloyannis C., Pitacco A. (2023). Characterization of microclimate and turbulent fluxes at a Mediterranean kiwi orchard covered with hail-protection net. 2023 IEEE International Workshop on Metrology for Agriculture and Forestry, MetroAgriFor 2023 - Proceedings, pp. 222 – 226. DOI: 10.1109/MetroAgriFor58484.2023.10424384.
- Di Biase R., Calabritto M., Sofo A., Reyes F., Mininni A.N., Mastroleo M., Xylogiannis E., Dichio B. (2023). Assessment of kiwifruit physiological decline: irrigation and soil management strategy to recover from waterlogging. Acta Horticulturae, (1373), pp. 11 – 18. DOI: 10.17660/ActaHortic.2023.1373.3.
- Giovannini A., Venturi M., Onofri A., Reyes F., Lugli S., Starace G., Poledica M. and Morandi B. Effects of multifunctional nets on sweet cherry physiological performance in Italy. Acta Horticulturae (accepted)
- 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.

- Green S., Reyes F., Dichio B., Mastroleo M., Xylogiannis E. (2022). Water use of yellow-fleshed kiwifruit during an annual cycle. Acta Horticulturae, 1332, pp. 187 – 194. DOI: 10.17660/ActaHortic.2022.1332.25.
- 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.