23/03/2024

Luogo di lavoro	GERMANIA
Profilo ricercato	**PhD Position – Mathematical Modelling of the Soil-Root-Mycorrhiza System (m/f/d)**
Requisiti	https://www.jobvector.de/jobs/ingenieur?sort=dateStart&pn=1&jobId=211497&filter=202 Conducting research for a changing society: This is what drives us at Forschungszentrum Jülich. As a member of the Helmholtz Association, we aim to tackle the grand societal challenges of our time and conduct research into the possibilities of a digitized society, a climate-friendly energy system, and a resource-efficient economy. Work together with around 7,400 employees in one of Europe's biggest research centers and help us to shape change! At the Institute of Bio- and Geosciences - Agrosphere (IBG-3), we conduct research to improve our understanding of biogeochemical and hydrological processes in terrestrial systems. Specific studies focus on environmental controls on biogeochemical cycling of elements, the analysis of exchange processes and nutrient dynamics in the soil-plant-atmosphere continuum. A combination of experiments, modelling, and innovative observation technologies is used to bridge the gap between model, process, and management scale. Its research contributes to the sustainable and resource-conserving use of soils and water and to the quantification of the effect of climate and land use change on terrestrial ecosystems. Activities and responsibilities This work will be part of the DFG project "Texture Dependency of Arbuscular Mycorrhiza Induced Plant Drought Tolerance (TeAM-uP)" in collaboration with the Leibniz Institute of Vegetable and Ornamental Crops, the University of Bayreuth, the Technical University of Munich, and the Czech

	Academy of Sciences. The TeAM-uP project will investigate the effects of arbuscular mycorrhizal fungi (AMF) on soil and rhizosphere hydraulic properties and its consequences for host plant water and nutrient uptake as well as carbon flows under drought conditions. You will be responsible for extending the functional-structural plant model CPlantBox to include mycorrhization, growth of extraradical hyphae in soil, and water flow and nutrient transfer in the soil-plant-mycorrhiza system. Model parameterization and evaluation will be based on the experimental data from this project. Your tasks in detail: Implementing a model of root architecture, AMF infection, and hyphal growth through soil within the CPlantBox modelling framework Parameterization of this model based on experimental data Performing in silico experiments to understand and disentangle the joint effect of root system development and AMF and their effects on soil hydraulic properties and on root water and nutrient uptake Using the model to quantify the carbon investment into AMF and the related water and nutrient uptake efficiencies Presenting and publishing results at national and international conferences and peer reviewed journals Qualification profile Master’s degree in bioengineering, environmental sciences, or applied mathematics Knowledge of plant and soil sciences Mathematical modelling skills Ability to work independently as well as collaboratively in an international, interdisciplinary team across institutes Very good communication and organizational skills Very good command of the English language We offer We work on the very latest issues that impact our society and are offering you the chance to actively

	help in shaping the change! We offer ideal conditions for you to complete your doctoral degree: Competent and interdisciplinary working environment, as well as an excellent framework in the areas of experiments and modelling Vibrant international work environment on an attractive research campus, ideally situated between the cities of Cologne, Düsseldorf, and Aachen Attendance at national and international conferences and workshops Possibility for further scientific and technical training through international experts Exceptional research infrastructure Flexible working hours 30 days of annual leave and provision for days off between public holidays and weekends (e.g. between Christmas and New Year) Further development of your personal strengths, e.g. through an extensive range of training courses; a structured program of continuing education and networking opportunities specifically for doctoral researchers via JuDocS, the Jülich Center for Doctoral Researchers and Supervisors: https://www.fz-juelich.de/en/judocs Targeted services for international employees, e.g. through our International Advisory Service In addition to exciting tasks and a collaborative working atmosphere at Jülich, we have a lot more to offer: https://go.fzj.de/benefits. The position is for a fixed term of three years. Pay will be in line with 75% of pay group 13 of the Collective Agreement for the Public Service (TVöD-Bund) and additionally 60% of a monthly salary as special payment (“Christmas bonus”). Further information on doctoral degrees at Forschungszentrum Jülich, including our other locations, is available at https://www.fz-juelich.de/gp/Careers_Docs. We welcome applications from people with diverse backgrounds, e.g. in terms of age, gender, disability, romantic orientation / personal identity, and social, ethnic, and religious origin. A diverse and inclusive working environment with equal opportunities, in which everyone can realize their

	potential, is important to us. working time models to reconcile work and family life.
Modalità di candidatura	Candidarsi direttamente sul sito https://www.jobvector.de/jobs/ingenieur?sort=dateStart&pn=1&jobId=211497&filter=202 non si accettano candidature via email Per info www.fz-juelich.de Please feel free to contact us via our contact form: https://www.fz-juelich.de/de/karriere/stellenangebote/2024D-041?contact. You can find helpful information on the application and selection process here: https://www.fz-juelich.de/en/careers/application-information You can also find answers to frequently asked questions in our FAQs: https://www.fz-juelich.de/en/careers/application-information/faq
Scadenza	The job will be advertised until the position has been successfully filled