Thesis Project Offer

Joint Research and Education Programme “Palestinian-German Science Bridge PGSB”
Forschungszentrum Jülich GmbH & Palestine Academy for Science and Technology

Thesis type*

☐ BSc  ☒ MSc  ☐ PhD

Intended starting date (approx.): flexible

Contact details of supervisor/responsible host at Forschungszentrum Jülich

Title*  Degree  First name*  Surname*

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Function*  Institute and homepage of institute*

Institute Director  Agrosphere, IBG-3


University affiliation in Germany*

KU Leuven (Belgium)

Co-Supervisor at Palestinian university (if applicable)

Title  Degree  First name  Surname

Phone  E-mail

University/institution  Department/faculty/institute

Project description*

Master Thesis Projects:

Projects on modeling and monitoring of soil water fluxes, root water uptake, plant transpiration and root growth are proposed as master thesis projects. Understanding, quantifying and prediction of these processes play a crucial role for water management and irrigation scheduling. In the project, students will become acquainted with techniques that can be used to monitor water states (water content and water potential) in the soil and to monitor root development. In order to investigate the interaction between root development, root water uptake, and plant water stress, a research facility: rhizotron facility, was constructed in which root and soil parameters are monitored in two different soil types and for three different watering treatments. The observations made in these facilities are used to further refine and parameterize root growth and root water uptake models. Refinement of such models is necessary so as to adequately predict and simulate root water uptake and root growth when water is not homogeneously distributed in the root zone and when water stress occurs. Students will be trained in using soil water balance models and newly developed root water uptake models that simulate water flow in the soil and in the root system.

For a description of the rhizotron facility see:
https://dl.sciencesocieties.org/publications/vzj/articles/15/9/vzj2016.05.0043
For a description of the soil-root simulation model see: https://soil-modeling.org/models/model-descriptions/r-swms

Date*  Signature*
09.11.2016

* required field