

OPEN DOORS FELLOWSHIP INTERNATIONAL TRAINING PROGRAM

MODALITY A: APPLICATION TEMPLATE FROM FLEMISH RESEARCH GROUPS.

This modality has been conceived for research institutions in Flanders that are looking for new scientific partners in Africa and are willing to explore new joint research streams with their African counterparts.

The slots open slots offered by the Flemish research laboratories shall be published on the ODFP web page <https://ipbo.vib-ugent.be/en/belgian-research-groups-portal>

Information from the hosting institutions in Flanders

Contact details of a focal point	✉: tom.deswaef@ilvo.vlaanderen.be ☎: +3292722848
Name of the research or academic institution and acronym	Research Institute for Agriculture Fisheries and Food (ILVO)
Name of the research group	Plant Sciences Unit
Name and position of the focal point supporting the fellow	Tom De Swaef - Scientist
Website of institution /research group	www.ilvo.vlaanderen.be

Present the group's research line(s) and activities, including a list of current projects coordinated by the Flemish laboratory

ILVO-Plant researches plant physiology, phenotyping and genomic functions in interaction with environmental factors like nutrient or water availability, light, or temperature. Phenotyping and modelling tools are developed and used to investigate plant ecophysiological responses to microclimate in the context of plant breeding and crop husbandry.

The current projects of our research group are:

- [FABPS](#): Field Above and Belowground Phenotyping System.
- [GrasSat](#): Optimizing grassland management using crop models and satellite imagery.
- [ILVO breeding programme](#) for forage grasses.
- [RiceClimaRemote](#): Irrigation scheduling using remotesensing and modelling

Describe the primary hard and soft skills desirable from the awarded ODFP fellow to deliver the task at hand in the Flemish research group (i.e. *bioinformatics, genetic engineering, chromatography, sequencing, metabolomics, metagenomics*).

Hard-skills:

- Acquisition, processing and interpretation of remote sensing (satellite) data (intermediate level)
- Plant and crop modelling (e.g., STICS, APSIM) (beginner level)
- Programming in R or Python (intermediate level)

Soft-Skills:

Related to soft skills & competencies, the fellow should have excellent communication (verbal and written) in English, interpersonal communication, proactiveness, self-management, teamwork, and problem-solving.

Indicate the short and long-term outputs that the Flemish research group would like to see arising from this collaboration.

Expected Short-term outputs (1-2 years)	Expected Long-term outputs (after two years)
• Develop, at least, one collaborative project proposal for EU-Africa relevant research on grasslands crop modelling/ecophysiology. • Produce, at least, one joint research paper.	• Establish a robust collaboration with African partners on climate-resilient crops for staff and students exchange. • Joint supervision of MSc or PhD Students.

Summarise (600 - 800 words approx.) the research project(s) to which the ODFP fellow would contribute during the short research stage in Flanders.

Nutrient and water use efficiency in crop models

Crop productivity is to a large extent, limited by nutrient and water availability. The goal of the research stay is to examine to what extent these limitations and their interactive effects are embedded in crop models. We will specifically focus on grass productivity. Thereto, we will use historical data sets of experiments at ILVO and satellite imagery to evaluate how well

grassland models can represent nutrient and water dynamics and the effects on productivity and quality.

These model features are crucial for proper implementation in decision support tools for irrigation and fertilization management.

Please list any other relevant resources (e.g. articles, videos, project documents and summaries, repositories) related to the targeted projects and the short research stay that would help applicants build up their project proposal for your group.

Articles worth reading to prepare the application for this slot:

Kipling RP et al. 2016. Key challenges and priorities for modelling European grasslands under climate change. *Science of The Total Environment* (Vol. 566-567), 851-864.

<https://doi.org/10.1016/j.scitotenv.2016.05.144>

Van Oijen, M.; Bellocchi, G.; Höglind, M. Effects of Climate Change on Grassland Biodiversity and Productivity: The Need for a Diversity of Models. *Agronomy* **2018**, *8*, 14.

<https://doi.org/10.3390/agronomy8020014>

To complete this application, we need **an official letter from the Principal Investigator of the Flemish receiving group confirming the collaboration with the ODFP**. Please, send the application form and supporting letter as a separate **PDF file**.

Applications must be submitted electronically to IPBO@vib-ugent.be. The application form must be named as follows: "**ODFP_ModalityA_name of short research stay**".
