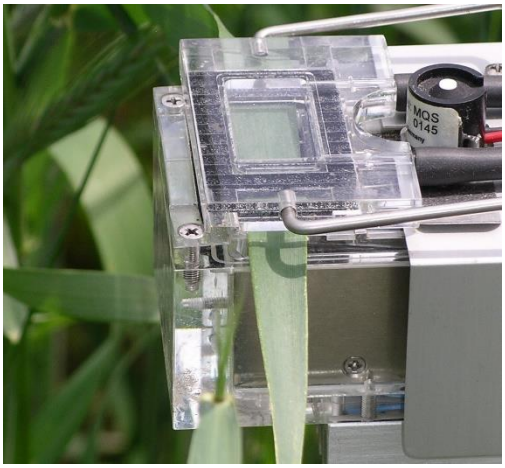
01. June 2021

Leibniz-Zentrum für Agrarlandschaftsforschung (ZALF) e.V.

Offer for a Master's thesis

Determination of photosynthesis parameters on maize plants (C4) along a transect in a field experiment

Characteristics of photosynthesis, which are derived from light dependence curves, are suitable for characterising the performance of cultivated plants. The measuring principle is infrared gas analysis (IRGA) in an open system. Differences in the concentrations of CO_2 and H_2O in the ppm range caused by assimilation and transpiration of the leaf are registered during a continuous gas flow through the cuvette. However, comparability of such measurements requires that they are carried out under strictly standardised conditions. Influencing factors such as photosynthetically active radiation (PhAR), temperature and relative humidity or air-to-leaf vapour pressure deficit (ALVPD) must be able to be kept constant in the measuring cuvette. The existing instrument (LCproT, ADC, Hoddesdon, UK) offers these possibilities. The aim of this research is to investigate whether crop photosynthetic rate at the leaf scale is affected by within field soil heterogeneity (chemical and physical differences) at the patch scale. For this purpose, photosynthesis and transpiration measurements are carried out on fully developed leaves of maize in a transect from the centre to the edge of the plot using the LCproT photosynthesis system at different light intensities. Light dependence curves and photosynthesis parameters are derived from the results. The task requires close cooperation with other working groups involved in the project, is interdisciplinary and requires a broad background.



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Tasks

You will carry out the measurements in the field independently after instruction and use various methods to evaluate the gas exchange data with reference to relevant technical literature and in conjunction with statistical procedures.

Qualifications:

- Focus on ecophysiology, agricultural or environmental science
- Interest in an interdisciplinary Master's thesis
- Experience in literature research and evaluation
- Confident handling of the English language

For further questions please contact:

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