

Coordination of physiological responses to multiple stresses by abscisic acid in barley: a field focused study



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Project description

Crop yield losses due to adverse weather and herbivory are among the main threats to global food security and will likely increase under climate change. While the molecular and physiological basis of plant stress responses are well studied in controlled laboratory conditions, it has proved difficult to translate this knowledge into improved crop yield stability under challenging environmental conditions. In particular, little is known about how crop physiological responses to the complex combination of climatic fluctuations and environmental stresses encountered in the field are coordinated. The aim of this PhD project is to understand the role of the hormone abscisic acid (ABA) in coordinating plant physiology and growth in response to multiple stresses and climatic fluctuations in barley. The student will conduct experiments in both outdoor and greenhouse conditions to analyse the growth and synthesis of metabolites involved in stress acclimation of a mutant line deficient for ABA under drought alone and in combinations with other stresses (soil compaction and herbivore interaction). These data will be used to model physiological responses to stress conditions and fluctuating environmental factors, adapting a method already developed in the Plessis lab.

Eligibility

Applicants should have a minimum of a first class or upper second class bachelor degree. Applications from candidates with a relevant masters qualification will be welcomed. Essential requirements for this position are: strong knowledge of plant stress physiology and biochemistry; the ability to conduct experimental work independently and as part of a team; excellent oral and written communication skills in English. Experience in using R for statistical, graphical and modelling applications would be highly beneficial to the application.

If you wish to discuss this project further informally, please contact [Dr Anne Plessis](#).

More detail: <https://www.plymouth.ac.uk/student-life/your-studies/research-degrees/postgraduate-research-studentships/coordination-of-physiological-responses-to-multiple-stresses-by-abscisic-acid-in-barley-a-field-focused-study>