PHD FELLOWSHIP OPPORTUNITY

"UNDERSTANDING MILLING EFFICIENCY IN OATS"

Walsh Fellowships Ref: 2017225

Background

Demand for oats is increasing as a result of positive health effects associated with the consumption of oats. For oats to remain a valuable crop, future production will need to meet the challenges posed by the changing climate and the increasingly sophisticated demands of various end-users. The first stage in the oat milling process is the removal of the husk or hull from the kernel, the economically part of the oat grain. The ease with which the hull is separated affects the efficiency of milling and is known as hullability. Milling efficiency is also affected by the kernel content, which is the proportion of kernel to the whole grain. We are seeking a talented and motivated scientist to further our understanding of these traits using the world class phenomics and genomics facilities at IBERS.

We are evaluating innovative applications of established biomedical imaging technologies such as microCT scanning, FTIR, and other non-destructive image analysis to accurately quantify grain and kernel size parameters. In this study the relationship between these detailed measurements and milling efficiency traits will be explored. This will be combined with analysis of the ripening process in oat crops. Many factors affect hullability including variety grown, grain maturity at harvest, crop management and environment, and drying regime after harvest. Kernel content has a strong genetic component but is also influenced by climate and management. The architecture of both the plant and the panicle directly influences milling quality. The grain and straw mature at different rates making it difficult for farmers to harvest oats. Defining and assessing optimal maturity is therefore a focus of this project. Options for post-harvest drying regimes will also be investigated, the aim being to develop guidance about management of grain post-harvest in relation to its maturity at harvest in order to maximise milling efficiency.

Working with oat millers will be integral to the project and its impact. The student will join highly successful international research groups and lively graduate training communities. Furthermore, the project will provide insights to inform the IBERS breeding programmes and provide tools for deployment by oat breeders. The student will receive an excellent training in important scientific skills in plant developmental biology, genetics, image analysis and grain quality as well as in a range of other transferable skills provided by IBERS and AU PG training. This project will involve periods of research conducted out of both Aberystwyth and AFBI. The Fellowship will start as soon as possible after 1st of October when the most suitable candidate is appointed.

Funding notes

This Walsh PhD Fellowship is funded jointly by Teagasc in Ireland and the Institute of Biological, Environmental and Rural Sciences (IBERS), Aberystwyth University where the student will be registered. The 3-year PhD scholarship covers 100% of tuition fees at the UK/EU rate and an annual maintenance grant equivalent to the RCUK rate (£14,553 for 2017/18). Applicants should hold, or expect to obtain, a minimum of a first or upper-second class honours (or equivalent) in a relevant subject. Contact Catherine Howarth (cnh@aber.ac.uk) or Ethel White (ethel.white@afbni.gov.uk) to discuss the project, or for general queries IBERS Postgraduate Co-ordinator Michelle Allen (myd@aber.ac.uk). For information on IBERS see http://www.aber.ac.uk/en/ibers/ and for how to apply see http://www.aber.ac.uk/en/postgrad/howtoapply/ - please enter the lead supervisor name under "Project title applied for".

Closing date 30st June 2017.