PhD Project Advertisement

Project title: Mango waste reduction: a study of physical, physiological and biochemical factors affecting postharvest storage potential

Project No: FBS2023-15-Falagan-ca

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Project description:

Reducing food loss and waste is essential to ensure food security and in achieving UN Sustainable Development Goal 12.3 and Blue Skies sustainability targets. Food loss does not only imply the physical loss of the product but also the loss of nutritional traits and the waste of resources involved in the production of the commodity. Mango fruit (Magnifera indica L.) is the second most consumed tropical fruit in the UK, with imports consistently rising during the last five years - ca. 56k tonnes per annum at present. However, mangoes imported are lost due to postharvest disorders before reaching the consumer. The primary causes of this are uneven ripening and chilling injury, which lead to loss of texture and flavour quality, and discolouration or browning. These physiological disorders result in loss of marketability, significant food waste and economic losses in the supply chain and at consumer level. Storage strategies are essential to preserve fresh produce and hence, protect the yield achieved in each season.

In this project, you will work with Cranfield and Aberystwyth Universities to develop postharvest strategies to extend mango storage life, through its investigation of the regulatory metabolism. You will have the opportunity to work very closely with Blue Skies, an UK based company that believes in 'Adding Value at Source' since 1997, which improves rural communities' lives and allows the delivery of fruits 'Fresh from Harvest'. This multidisciplinary team aims to extend storage of mango fruit, while maintaining nutritional and physiological quality.

Your work will be a combination of i) laboratory based work, where you will develop your analytical skills; ii) industry focus learning in order to understand the real needs of the food sector; and iii) desktop based work for data analysis. We would like you to take ownership of the project so timings will be adapted to your needs. Together with the supervisory team, you will decide when it is best to develop your placements in Aberystwyth University and Blue Skies and we will support with travel and accommodation.

If you want to make a positive impact towards food loss and waste reduction, join us and be part of the change.

Training opportunities:

This DTP combines specialist postharvest knowledge (Cranfield) with expertise in browning and biochemical changes in fresh produce (Aberystwyth) and a large UK company (Blue Skies); with training opportunities available from all partners within these areas.

The student will have in-house training at Cranfield through the Doctoral Researchers Core Development programme, where they will improve their e.g. writing, public speaking, and employability skills. They will have the opportunity to enrol in modules such as 'Postharvest Technology' and 'Food Chain Resilience' as part of the MSc in Food Systems and Management. These modules will contribute to the student's understanding of the existing knowledge gaps in the area and the current limitations the industry is facing.

Aberystwyth University will provide training, facilities and expertise for characterisation of enzyme activities and analysis of enzyme substrates.

Over the four years of the project, the student will have the opportunity to spend at least three months at Blue Skies Ltd. visiting their growing sites in Ghana to better understand their supply chain from farm gate; and also, the processing plant in Corby to learn the manufacturing system. These placements will help the student identify potential critical points for postharvest disorders development, such as browning.

Student profile:

This project would be suitable for a candidate with a passion for science and curiosity driven research. They should have an interest in tackling global challenges, in this case food loss and waste. A BSc (Hons) degree at upper second class level (or equivalent) in biology, biochemistry or related subject will be required.

Stipend (Salary):

FoodBioSystems DTP students receive an annual tax free stipend (salary) that is paid in instalments throughout the year. For 2022/23 this will be £17,668 and this will increase slightly each year at rate set by UKRI.
This is a CASE PhD sponsored by Blue Skies Ltd.

Equality Diversity and Inclusion:

The FoodBioSystems DTP is committed to equality, diversity and inclusion (EDI), to building a doctoral researcher(DR) and staff body that reflects the diversity of society, and to encourage applications from under-represented and disadvantaged groups. Our actions to promote diversity and inclusion are detailed on the FoodBioSystems DTP website.

In accordance with UKRI guidelines, our studentships are offered on a part time basis in addition to full time registration. The minimum registration is 50% FT and the studentship end date will be extended to reflect the part-time registration.

For up to date information on funding eligibility, studentship rates and part time registration, please visit the FoodBioSystems website.