FoodBioSystems DTP - PhD Project Advertisement Text

Project Title: FOODBIOSYSTEMS - Predicting the ripening behaviour of mango fruit through an understanding of the progression of ripening events

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Research Group: FOODBIOSYSTEMS BBSRC DTP
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Project Description: Mangoes (*Magnifera indica* L.) are the second most consumed tropical fruit in the UK, with imports consistently rising during the last five years. However, 10-15% of mangoes imported are lost before packaging. The primary causes of this are uneven ripening and chilling injury, which lead to loss of texture and flavour quality, and discolouration. These physiological disorders result in loss of marketability, significant food waste and economic losses in the supply chain and at consumer level.

Ripening is subject to high genetic control with much variation even between varieties. 'Kent' and 'Keitt' mangoes, which cover the UK year-round supply, seem to have different ripening patterns: from outside in, and from inside out, respectively. This makes the ripening stage of 'Keitt' mangoes difficult to predict, and hinders the final quality of fresh-cut produce, mainly because ripening assessment is done based on external colour on a subset of samples per batch.

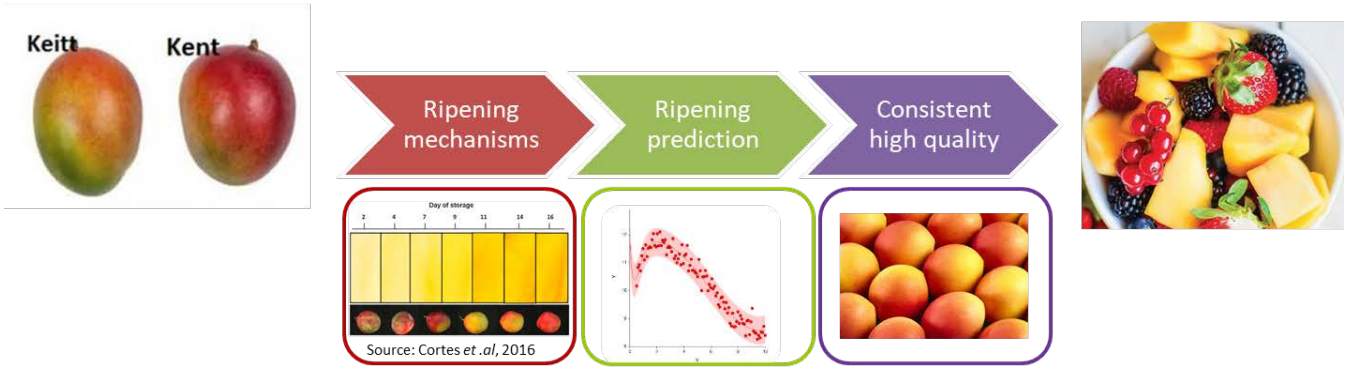
The aim of this research project is to predict mango ripening based on an understanding of the progression of ripening events in different cultivars. This will be achieved by:

1) **Investigating the chemical and genetic differences underlying the distinct ripening patterns of 'Kent' and 'Keitt' cultivars**, and
2) **Evaluating the potential use of non-destructive techniques to predict ripening through the supply chain**

The project has a component of laboratory work, which involves designing and carrying out postharvest trials, and developing skills in fundamental plant physiology and biochemistry. Another important component of the PhD research includes data modelling and chemometrics. The successful candidate will also engage with different food industry stakeholders, spend time in the premises of Orchard House Foods Ltd., and develop an understanding of the fresh produce supply chain.

Overall, the knowledge gained from this project will allow the food industry to adopt informed and targeted postharvest management practices to improve quality of ready-to-eat mangoes and reduce waste.

Figure 1. *The aim of the research project is to predict mango ripening based on an understanding of the progression of ripening events in different cultivars, in order to improve quality of ready-to-eat mangoes and reduce waste.*



Funding Notes: This project is part of the FoodBioSystems BBSRC Doctoral Training Partnership (DTP), it will be funded subject to a competition to identify the strongest applicants. Due to restrictions on the funding, this studentship is only open to UK students and EU students who have lived in the UK for the past three years.

This project has co-sponsorship from Orchard House Foods Ltd., a manufacturer and provider of food and drinks products, with a strong fruit division. Orchard House Foods Ltd. believes that for the research to have a real impact it is vital that the student has a deep understanding of the challenges faced through the supply chain. For that reason, Orchard House Foods Ltd. will support a minimum of a three-month placement in the company, and will ensure the student spends sufficient time directly engaged with the business processes and systems.

The FoodBioSystems DTP is a collaboration between the University of Reading, Cranfield University, Queen's University Belfast, Aberystwyth University, Surrey University and Brunel University London. Our vision is to develop the next generation of highly skilled UK Agri-Food bioscientists with expertise spanning the entire food value chain. We have over 60 Associate and Affiliate partners. To find out more about us and the training programme we offer all our postgraduate researchers please visit https://research.reading.ac.uk/foodbiosystems/.

Training opportunities: The student will be trained to use a wide range of modern biological and chemical techniques related to crop phenotyping, plant physiology and biochemistry, molecular biology and chemometrics, at Cranfield University (CU) and University of Reading (UoR). They will also be able to tailor the PhD training to suit their personal goals. The successful candidate will have access to a range of training programmes at CU (Cranfield Doctoral Research Core Development) and UoR (Reading Researcher Development Program), as well as access to MSc modules to develop their scientific, statistical, business and academic skills.

The student will benefit from a minimum of 3 months industrial placement at Orchard House Foods Ltd., where they will receive formal training on Health & Safety, Food Safety Management, HACCP, Personal Development, Conflict Management, Finance, and Management & Leadership. The student will be directly engaged with the business processes and systems: being embedded with the fruit procurement team, integrated with ripening and processing (factory) teams, retailers, and joining customer visits and audits.

Moreover, the student will have access to training provided by the BBSRC including Summer Schools, and attend BBSRC dissemination events/workshops (e.g. KTP) and the Biotechnology Yes (Young Entrepreneurial Scheme)

event.

Student profile: This project would be suitable for students with a degree in biology, chemistry, nutrition, agriculture, food science or a closely related science. The project has a data-modelling component so students with good statistical, chemometrics and/or bioinformatics skills are encouraged to apply. Moreover, applications from students with a background working in fresh produce supply chains, and interested in sustainability are encouraged.