Sustainably reducing food waste through photomanipulation of leaf senescence

Supervisory team:

Main supervisor: Prof Kerry Franklin (University of Bristol)
Second supervisor: Dr Andy Bailey (University of Bristol)

Host institution: University of Bristol

Project description:
Sustainably enhancing the quality and shelf-life of fresh produce is a major objective for the horticulture industry. One way in which this can be achieved is by delaying senescence-induced chlorophyll breakdown. Leaf senescence can be triggered by age, abiotic stress (such as prolonged darkness during crop transport and storage) and pathogen infection. The light- and temperature-regulated transcription factors, PHYTOCHROME INTERACTING FACTOR 4 (PIF4) and PIF5 act as master regulators of this process.

This project will explore how light quality manipulation designed to reduce PIF activity can be used to delay dark-induced leaf senescence in Arabidopsis across a range of storage temperatures. The molecular mechanisms underlying these responses will be investigated using a variety of molecular and biochemical techniques. The project will also explore whether light quality treatments designed to delay leaf senescence can additionally suppress the growth and pathogenicity of fungal crop pathogens, further enhancing crop quality and reducing waste.

Our aim as the SWBio DTP is to support students from a range of backgrounds and circumstances. Where needed, we will work with you to take into consideration reasonable project adaptations (for example to support caring responsibilities, disabilities, other significant personal circumstances) as well as flexible working and part-time study requests, to enable greater access to a PhD. All our supervisors support us with this aim, so please feel comfortable in discussing further with the listed PhD project supervisor to see what is feasible.