



Unravelling the epiphytic microbiome of raspberries: How fruit age and polytunnel location impact pathogenic and beneficial fungi and bacteria on the surface of raspberries

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Abstract

Raspberries are a profitable crop, susceptible to fungal diseases. In the UK, *Cladosporium* fruit rot is becoming more prevalent. For many fungal pathogens, inoculum is spread via airborne spores that land on the surface of plant tissues. *Cladosporium* is reported to be an abundant component of aero-inoculum, and is likely to land on the fruit surface. It is not known if more *Cladosporium* may germinate and grow as the fruit ages, or if beneficial organisms may inhibit such fungal growth. Hence understanding how fruit age impacts the microorganisms on the fruit surface may provide insight into how they cause or prevent disease.

The aero-microbiome is also impacted by air movement, which may be impeded by the presence of polythene plastic. The gradient of temperature and humidity associated with large polythene tunnels may also impact the aero-microbiome composition.

In this study, we sampled green, ripening and ripe fruit at two time points, and two locations (the outer edge and centre of polytunnels). We then performed metabarcoding to profile the microbiome on the surface of raspberry fruits.

Preliminary results show that sampling date, fruit age, location within the polytunnel and the polytunnel location all have significant effects on the epiphytic microbiome of raspberries. Differential analyses revealed that multiple pathogenic species (including *Cladosporium*) increased and decreased across fruit ages and between fruit sampled in the inner and outer sections of polytunnels.