

## **Characterization of Bacteriophage for Biocontrol of *Pseudomonas syringae*, Causative Agent of Canker in *Prunus* spp.**

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**Abstract :** Bacterial canker is a major disease of *Prunus* species such as cherry (*Prunus avium*). It is caused by *Pseudomonas syringae* species including *P. syringae* pv. *syringae* (Pss) and *P. syringae* pv. *morsprunorum* race 1 (Psm1) and race 2 (Psm2). Concerns over the environmental impact of, and developing resistance to, copper controls call for alternative approaches to disease management. One method of control could be achieved using naturally occurring bacteriophage (phage) infective to the bacterial pathogens. Phages were isolated from soil, leaf, and bark of cherry trees in five locations in the South East of England. The phages were assessed for their host range against strains of Pss, Psm1, and Psm2. The phages exhibited a differential ability to infect and lyse different Pss and Psm isolates as well as some other *P. syringae* pathovars. However, the phages were unable to infect beneficial bacteria such as *Pseudomonas fluorescens*. A subset of 18 of these phages were further characterised genetically (Random Amplification of Polymorphic DNA-PCR fingerprinting and sequencing) and using electron microscopy. The phages are tentatively identified as belonging to the order Caudovirales and the families Myoviridae, Podoviridae, and Siphoviridae, with genetic material being dsDNA. Future research will fully sequence the phage genomes. The efficacy of the phage, both individually and in cocktails, to reduce disease progression in vivo will be investigated to understand the potential for practical use of these phages as biocontrol agents.

**Keywords :** bacteriophage, pseudomonas, bacterial canker, biological control

**Conference Title :** ICB 2020 : International Conference on Bacteriophages

**Conference Location :** Sydney, Australia

**Conference Dates :** February 27-28, 2020