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Introduction

- Bacteriophages are viruses that infect bacteria.
- Bacteriophage can be found anywhere their bacterial host strain is found, such as soil and leaves.
- Little is known about bacteriophage genetic and ecological diversity.
- Xanthomonas is a genus of plant pathogenic bacteria that causes bacterial spot disease (Fig. 1) and was used as the host in this study.

Objectives

- Isolate bacteriophage from *Xanthomonas* infected peach leaves.
- 2. Test host range of bacteriophage isolates.
- Characterize genome of select bacteriophage isolates.

Methods

Peach leaves infected with Xanthomonas were harvested and soaked in DI water

The water was spotted onto plates containing a lawn of a known Xanthomonas host strain

Ten bacteriophage cultures were spotted onto sixteen different strains of Xanthomonas to test their host range (Fig. 3).

Bacteriophage with unique plaque morphology and host range were selected for genomic analysis

Characterizing Bacteriophage Host Range and Genetic Diversity

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Figure 1. Bacterial spot disease on peach leaves



Figure 4. Host range assay for 10 bacteriophage isolates purified from peach leaves showing symptoms of bacterial spot. Bacteria included in host range assay include several strains of Xanthomonas arboricola pv. pruni along with other Xanthomonas spp.

- and plaque morphology.

Plaques of bacteriophage (Fig. 2) present the next morning were isolated and purified by repeating step two





Figure 3. Example host range assay with 10 phage isolates plated on one bacterial host strain.

Results and Conclusions

• Initially, the protocol for isolating phage from leaf tissue was optimized for our lab conditions.

• A host range assay was performed utilizing 10 bacteriophage isolates and 16 bacterial hosts.

• The results in Fig. 4 indicate that there are two distinct bacteriophages isolates with similar host range

Figure 2. Bacteriophage plaques on lawn of Xanthomonas.

Moving Forward

- analyze their genomes.
- different cultivars of peach.
- hosts.







Large clear zone (black box) Clear zone (dark grey box) Hazy (grey box) Very Hazy (light grey box) No Lysis (white box)

 DNA isolations are being performed on the two bacteriophage isolates identified in this study to • Research on bacteriophage diversity associated with *Xanthomonas* host strains is being conducted using • In the future, this work will likely to be extended to

other economically important crops and bacterial