

Microbes collected from invasive plants at the C&O Canal are potential biological control agents

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Background

- There are over 400 non-native invasive plants found in the United States costing \$13 billion dollars annually in control costs and damages.
- Invasive plants degrade natural resources and reduce the recreational quality of land maintained by NPS.
- Controlling invasive plants is especially difficult in large public spaces and near waterways where chemical herbicide use is undesirable or removal by hand is impractical.
- Biological control of invasive plants using microbes (fungi, bacteria and viruses) can be a sustainable approach to weed management in sensitive environments.
- Researchers from the U.S. Department of Agriculture in Frederick, MD collect plant pathogenic microbes from invasive plants found within the United States to evaluate, develop, and safely apply biological control agents for weed management.

Methods

- During the summer and fall of 2021, invasive plants found at the C&O Canal were examined for disease.
- Pathogens were collected for identification and their efficacy as weed biological control agents was tested.

Results

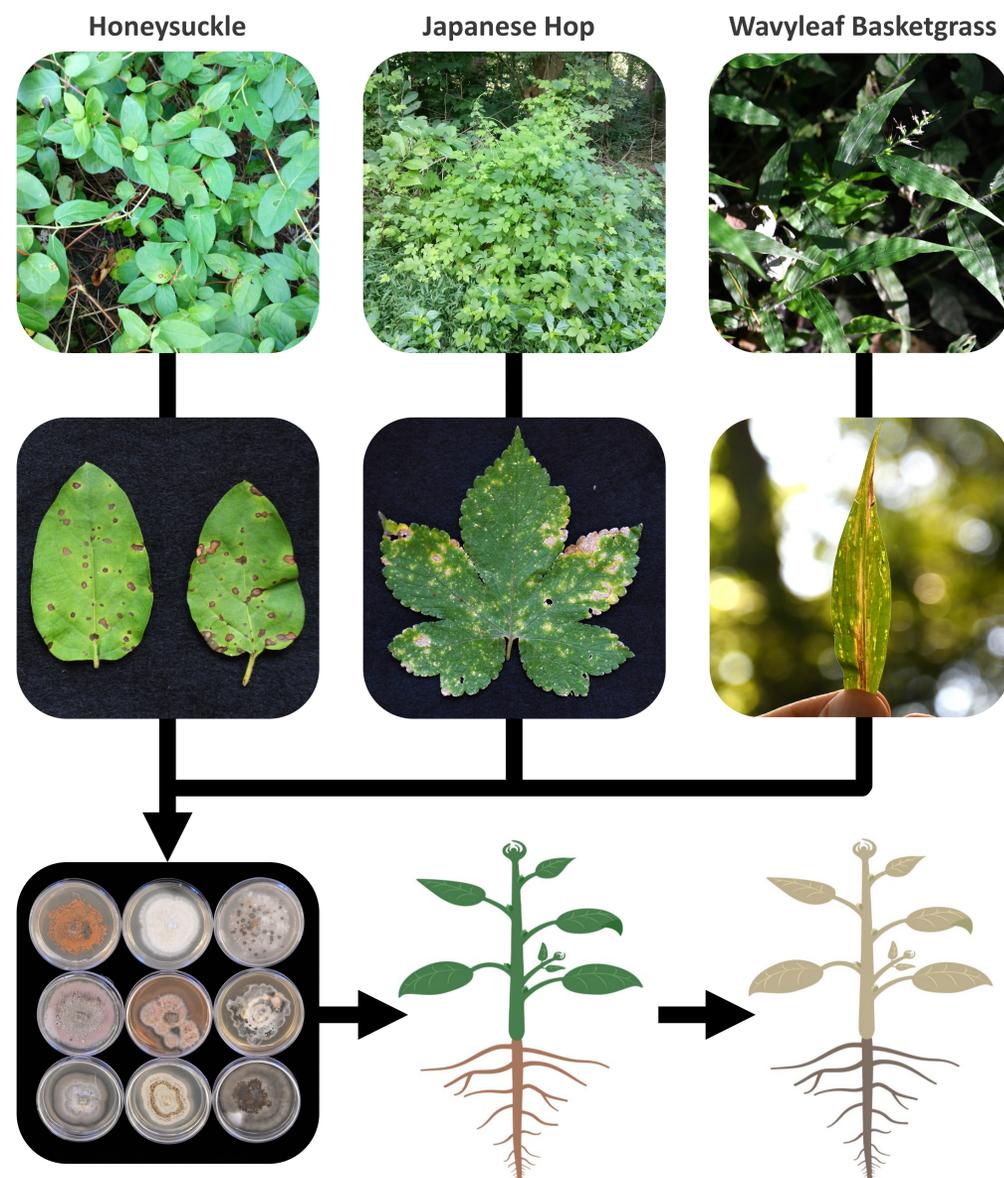
- Over 100 microbes have been recovered.
- Four pathogens are under continued evaluation for potential biocontrol applications.

Conclusions

- The possible use of plant pathogens found at the C&O canal as biological control agents highlights the value of microbial diversity found on NPS managed land.

6 Plant Species Examined, 166 Microbes Collected, 4 Pathogens Identified

- After invasive weed infestations are located, plants with disease symptoms are collected, and microbes from diseased plant tissue are grown in a laboratory.
- Possible pathogens are then tested to see whether they cause disease in healthy plants.



Fungal plant pathogen *Colletotrichum shioi* is a potential biocontrol agent for invasive perilla

- Perilla mint (*Perilla frutescens*) (right) is a foreign invasive weed present in 30 states, outcompetes desirable plants, and can cause respiratory illness in grazing livestock.
- A fungal pathogen was collected from diseased perilla leaves (below left and right) and identified as *Colletotrichum shioi*. Previously, this pathogen had only been found in Japan.
- The pathogen reduced perilla seedling growth by 50-80% (bottom)

