Exploring Microbial Biocontrol Agents for *Dioscorea bulbifera*

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Introduction

•***Dioscorea bulbifera*** **is a fast-growing vine with prolific bulbil production, with a wide distribution across the southeastern United States.**

•Biological control methods are an ongoing research subject, with the air potato beetle (*Lilioceris cheni*) cited as a success.

•Relying on the beetle ignores the threat posed by the production of aerial bulbils and underground tubers.

Hypothesis

•The most effective biological control agent candidates will damage aerial tubers, prevent herbaceous growth, and reduce bulbil production.

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Background

•***Dioscorea spp.*** **(yams) are economically important crops for food and traditional medicine in Africa and Asia.**

•Many viruses and nematodes are unique to to *Dioscorea* and could be used as biological control agents if host specificity could be proven

•Desirable traits include reducing tuber production, destroying bulbils and tubers, and preventing further growth

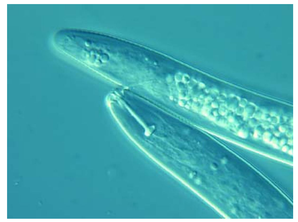
Method

•A full list of *Dioscorea spp.* was accumulated from various agricultural databases.

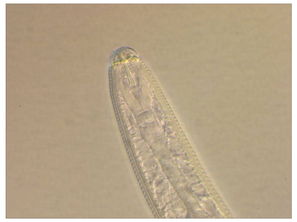
•The USDA Fungal Database and Nematode Collection Database were investigated for agents that fit the requirements for pathogenicity.

Results

Banana root nematode (*Pratylenchus coffeae*)



Yam lesion nematode (*Scutellonema bradys*)



- **Most of the nematodes, insects and viruses that harm *Dioscorea spp.* are generalist opportunists, such as the greater yam beetle, fusarium wilt, and anthracnose, making them unsuitable for use as a biological control agent**
- **A few nematodes and viruses are unique enough to yams in a wild setting to make testing for host specificity feasible**
- **The few viruses found however only result in defoliation, which doesn't fulfill the goals of this review**

Conclusions and Further Research

•The most common viruses and nematodes that target yams are generalist species too dangerous to use as biocontrol agents

•The two viruses and two nematodes singled out are either host-specific or cause damage to the tuber itself

•Further research is needed to see if they are host-specific to *Dioscorea bulbifera* in a wild, invasive setting

Sources Cited

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