Local Adaptation Study of Parasitic Nematode on Various Host Plants

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CURF 2021 Research Expo
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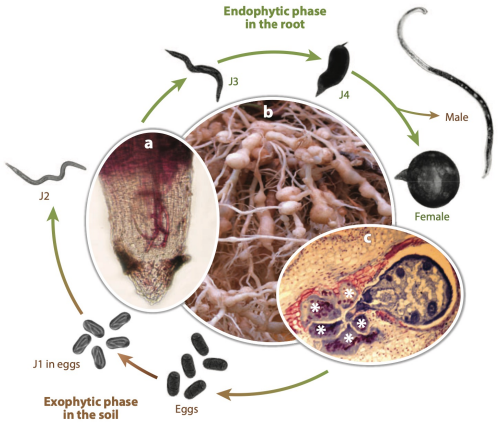
Funded by Penn Undergraduate Research Mentoring Program

1 UNDERSTANDING THE PARASITE

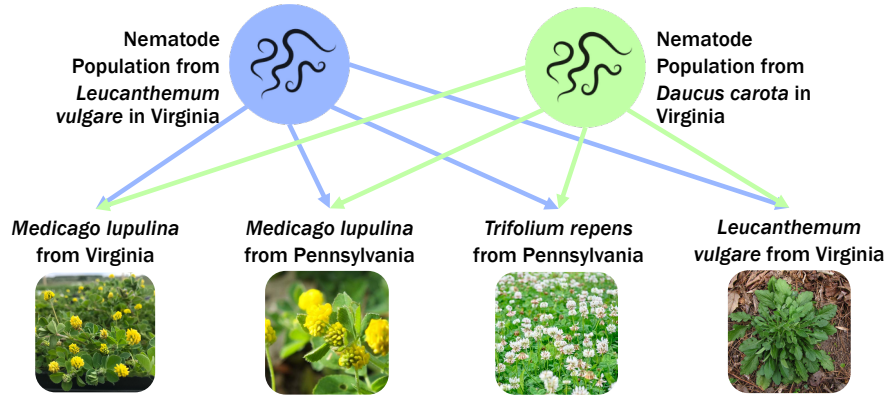


Root-Knot Nematode Life Cycle
(image from Castagnone-Sereno, et al. 2013)[1]

Root-knot nematodes (RKNs) are a major agricultural pest responsible for an **annual global multibillion dollar loss**. They are known to be a highly generalist species, but we are interested in finding out **if they are true generalists or a collection of specialized lineages**.

RKNs infect their host plants by first burrowing into the root and migrating to a suitable site. Then, they puncture a few plant cells to form sedentary, permanent enlarged feeding cells. [1]

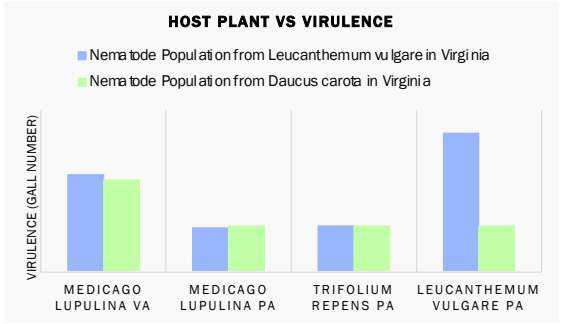
2 EXPERIMENTAL DESIGN

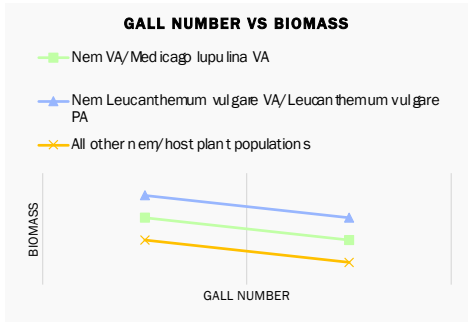


**all figures are conceptual*

3 ARE *MELOIDOGYNE HAPLA* POPULATIONS LOCALLY ADAPTED TO THEIR HOST PLANT?

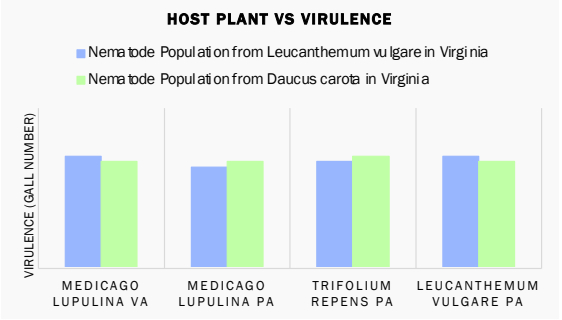
✓ YES *Meloidogyne hapla* is locally adapted to its host plant

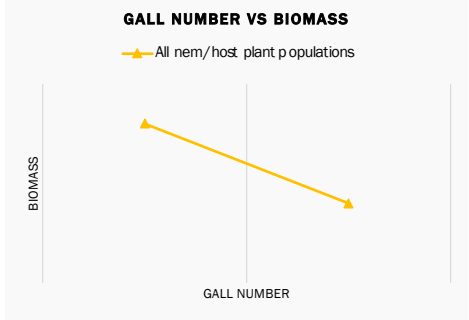




What's Next? **How quickly do nematode populations adapt to a new host plant? What is the genetic basis of this fitness variation?**

✗ NO *Meloidogyne hapla* is not locally adapted to its host plant





What's Next? **What are the molecular and genetic mechanisms that allow nematode populations to become generalists?**

REFERENCES

[1]Castagnone-Sereno, Philippe, Etienne G.J. Danchin, Laetitia Perfus-Barbeoch, Pierre Abad. "Diversity and Evolution of Root-Knot Nematodes, Genus Meloidogyne: New Insights from the Genomic Era." *Annual Review of Phytopathology*, vol. 51, no. 1, 2013, p 203-220.