Aphids in Sugarcane: Decoding Their Role in Sugarcane Ecosystem

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Introduction

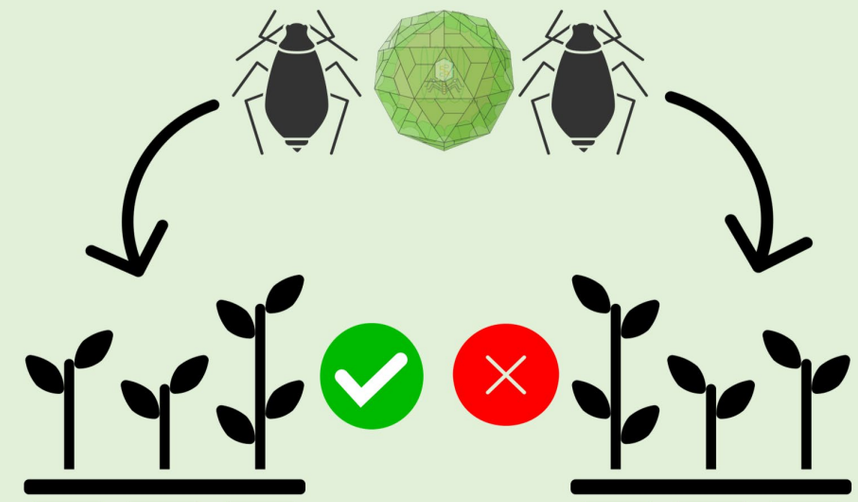
- Florida's sugarcane faces productivity losses due to pests, particularly aphids that spread viral diseases such as *Sugarcane yellow leaf virus* (ScYLV).
- ScYLV disrupts plant growth, particularly leaves, and causes varietal degeneration relying on aphids for survival and transmission and reducing yield and productivity.
- Three aphid species reported in Florida's sugarcane, but the primary vector and its impacts are unclear.
- Lack of knowledge about aphid population dynamics and role in the ecosystem leads to indiscriminate insecticide use, hampering effective integrated pest management (IPM).

Objectives

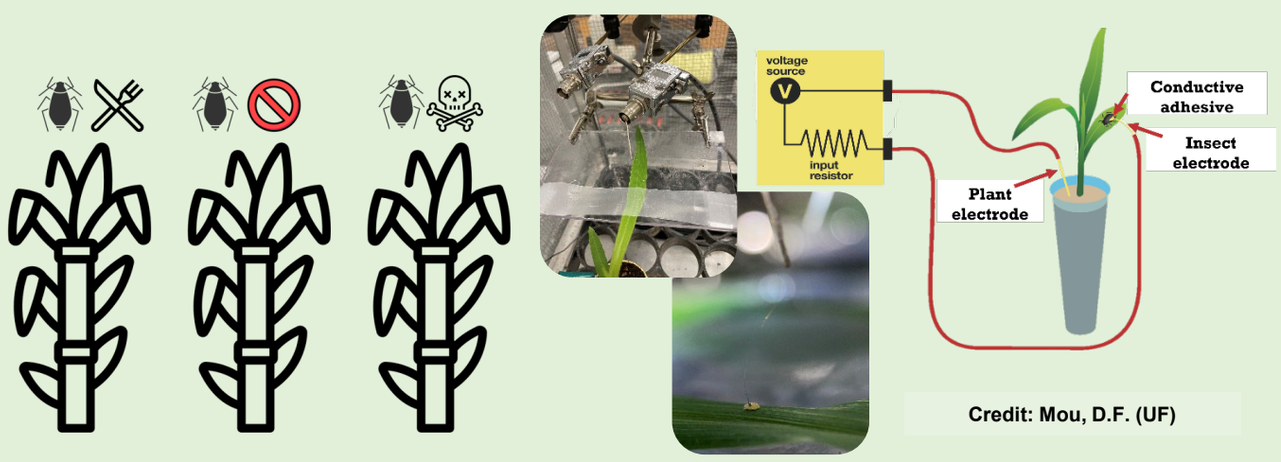
(1) Analyze aphid population dynamics
(2) Assess aphid transmission efficacy
(3) Screen sugarcane resistance to aphids
(4) Evaluate insecticide resistance in aphids

Methodology

(1) Two-year survey (2025-2027) sampling aphids on the most important varieties

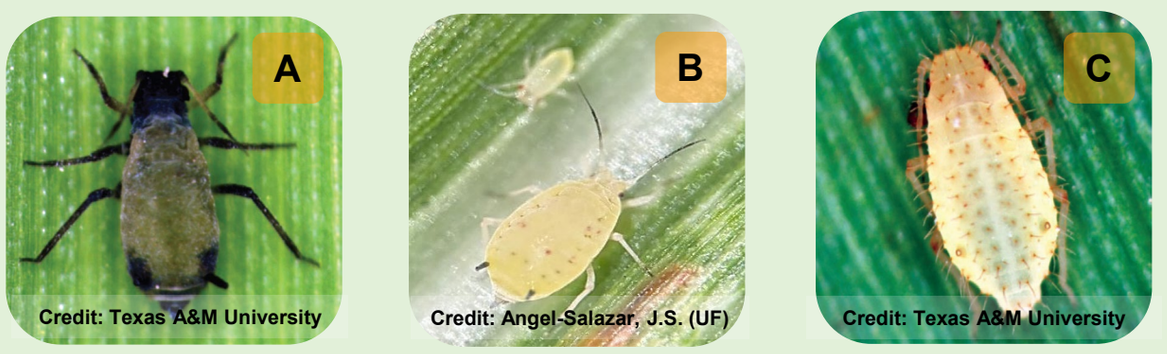


(2) Transmission efficacy bioassays



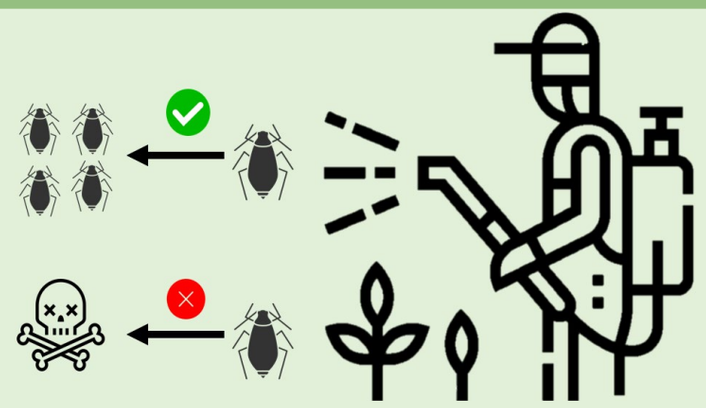
(3) Varietal resistance and behavioral bioassays

Aphids reported in Florida sugarcane



A. Corn leaf aphid (*Rhopalosiphum maidis*) **B.** Sugarcane aphid (*Melanaphis sacchari*) **C.** Yellow sugarcane aphid (*Sipha flava*)

Methodology



(4) Insecticide resistance assays

Expected Results

- Establish baseline data on the variability of aphid populations, distribution, and the factors that influence them in sugarcane fields.
- Identify the species responsible for the spread of ScYLV and varieties with resistance to the vector.
- Evaluate the sustainability of the current management practices and lay the groundwork for exploring alternative strategies in future studies.

Acknowledgements

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