

Spotted Lanternfly Separation System

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Spotted Lanternfly Presence During Mechanical Harvesting

Team: Tree of Hell

Client(s): Cornell CALS Extension / E&J Gallo Winery / National Grape

Problem Statement

During mechanical harvesting in upstate New York vineyards, Spotted Lanternflies (SLF) contaminate harvested grapes. Because grapes are partially liquified during mechanical harvesting and product quality standards are strict, simple filtering methods are ineffective. Contamination leads to wasted product, additional labor, and reduced processing efficiency.

Impact

This project introduces a modular in-line attachment that:

- Reduces contaminated yield
- Preserves usable grape juice
- Maintains harvest efficiency
- Minimizes modification to existing equipment
- Maintains compatibility with existing vineyard machinery

Proposed Direction

Separate juice from the grape–SLF mixture

Filter SLFs from grapes

Filter the extracted juice

Recombine grapes and juice before final collection

This maintains product integrity while eliminating contamination.

Primary Concept

A pressurized water tunnel system using:

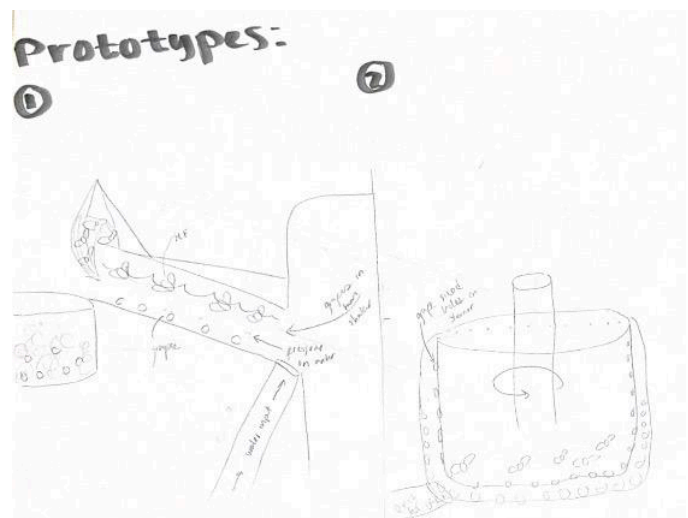
- Controlled water flow separation
- OR centrifugal force separation

Filtration stages include:

- Juice filtration
- SLF removal
- Controlled recombination

Prototype Sketch

(Insert prototype sketch image here.)



Full Client Outline (PDF)

The full client outline is attached separately as a PDF document.