

Mechanized Vine Rake Design and Concept Testing

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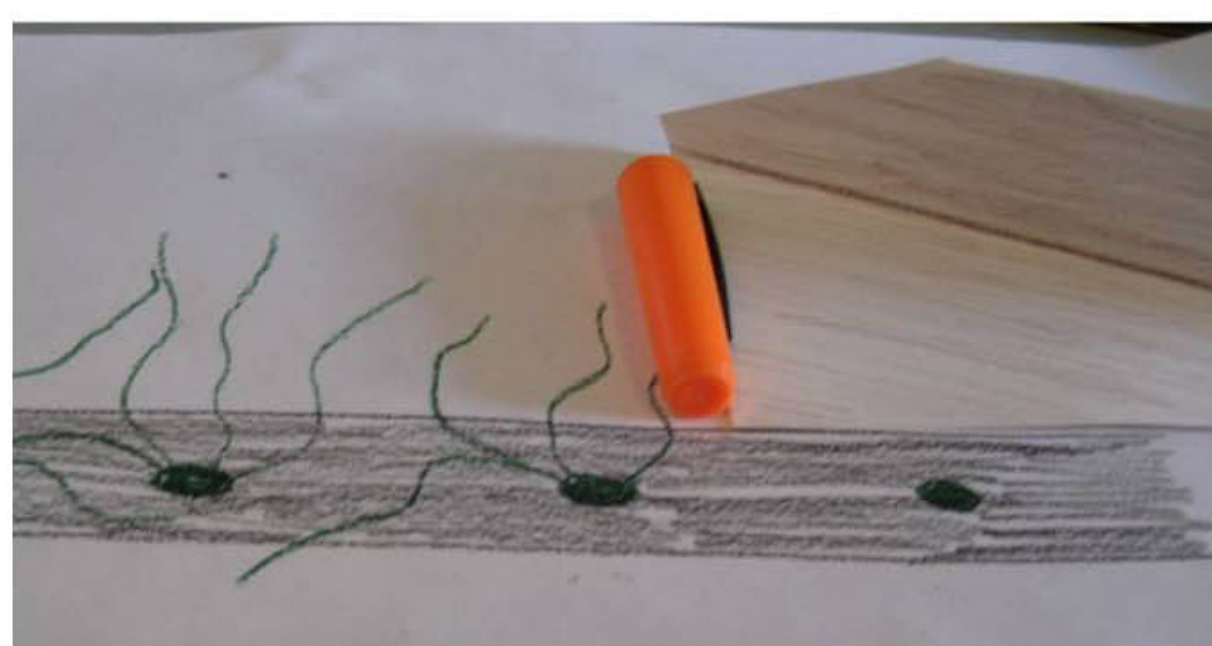
Problem:

The fruit and vegetable industry is highly under mechanized. Currently, growers are using manual labor to move vines into place. No product has been developed that effectively moves vines from cucurbit crops in order for a grower to perform tasks such as cultivating and spaying in the early stages of production. Purdue University is searching for new ways to improve mechanization for horticultural growers.

Objective:

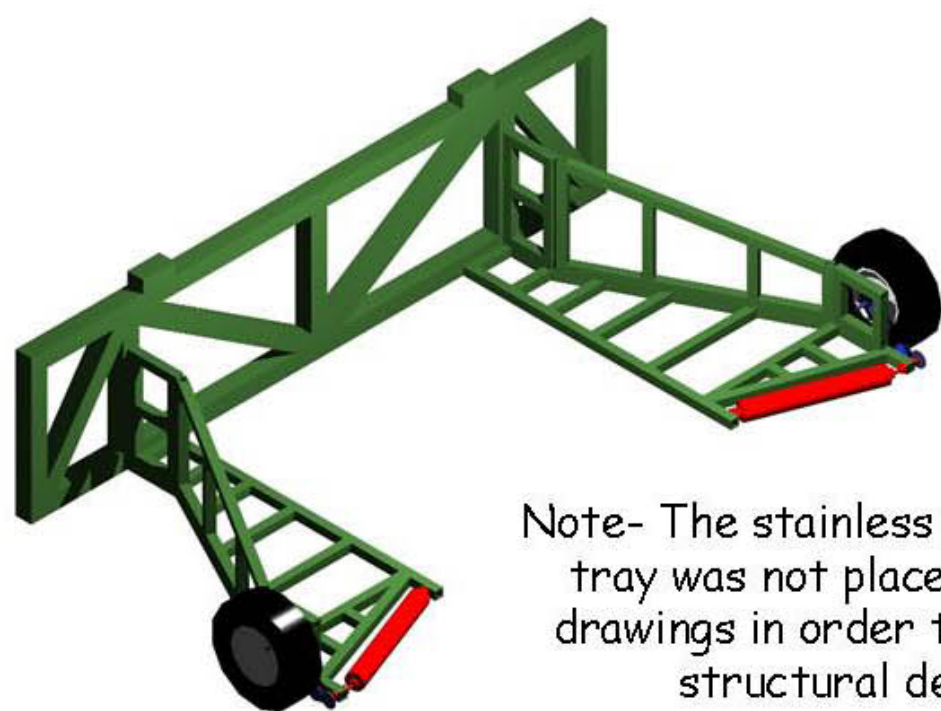
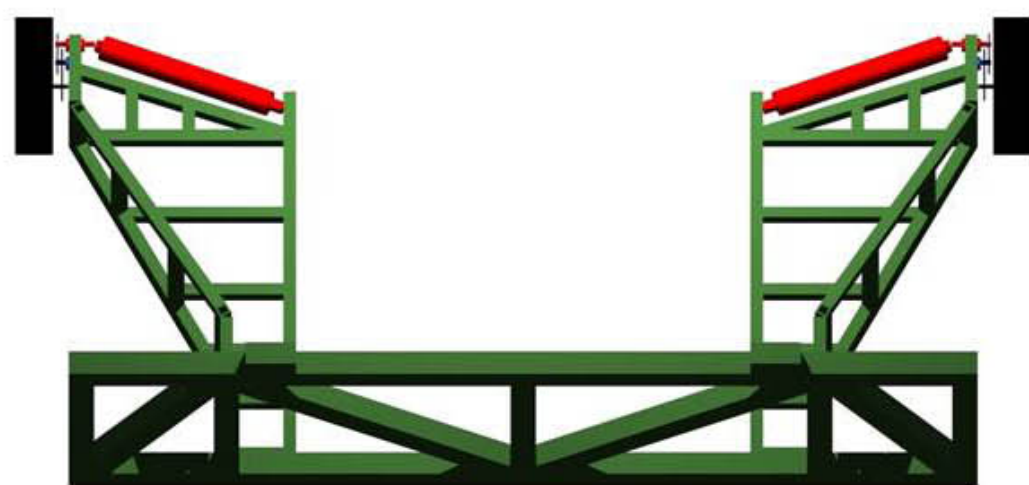
- Generate concept design ideas
- Build concept prototypes to test for approval by sponsor
- Produce CAD drawings of workable concepts



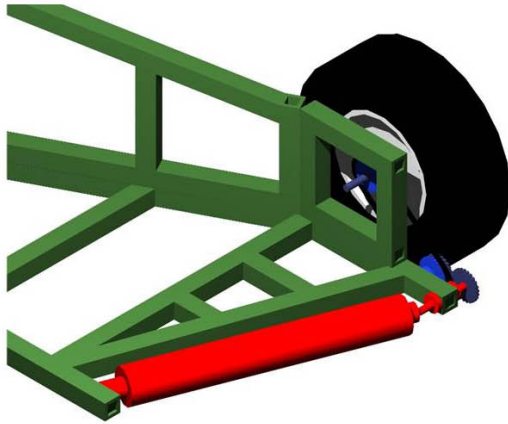


Build and Test Concept Prototype

- Supplies were bought.
- Prototype was tested for it's potential.
- Prototype was proven to be effective and a workable design.
- After testing, we concluded that both ground speed and wheel revolutions per minute are an essential component to operation without damaging plant vines.



Note- The stainless steel curved tray was not placed in these drawings in order to show the structural design.



CAD Drawings of Drive Mechanism

- Ground driven which could easily be adapted to be hydraulically driven.
- Tire is set so that the tines on the rake will just break the surface of the ground.
- When the tire spins forward, the rake will spin in the opposite direction allowing lift of vines onto the tray.

Future of the "Vine Rake"

- Must be built and tested to full scale.
- Must be tested on real conditions.
- Attachment plate must be universal for most tractors.
- Future concepts may want to incorporate adjustable row spacing.



Project Team

- L-R, Ryan Drake, Eric Oteham, Payton Farrer, Joe Rihm
- Technical Advisor/Sponsor
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