



# **Recherche de l'Innovation Farms**

## **Ontario 2025**

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Nov 26th 2025

# WELCOME / Bienvenue

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# HAGGERTY AGROBOTICS

“Haggerty AgRobotics is a leader in the emerging agriculture robotics and automation industry. As we look to the future, Haggerty AgRobotics is developing relationships with the leading ag technology companies to commercialize and bring new innovations to farmers in Eastern Canada”

Ground truth & test new technologies on Canadian soil

In-house develop on new and existing technologies

Commercialize innovative agricultural technology to Canadian farmers



# Why AgRobotics?

AgRobotics Role in Filling Industry Gaps & Advancing Sustainable Agriculture

Easing labour challenges through autonomy



Providing alternatives for herbicide resistant weeds



Input reductions through advanced precision



GHG emission reductions



Lightweight designs promoting healthier soils





# AgRoboticsWG

“The role of AgRobotics Working Group is to be a single-point resource for producers and industry to learn about new technologies, get support for existing technologies, and collaborate for the betterment of the Ontario AgRobotics ecosystem.”

Member-to-member outreach through weekly meetings, demo days, events and industry connections

Research support to ground truth commercially ready robotics solutions

Mentorship support for start-up, early-stage AgTech and Robotics-based companies



# INNOVATION FARMS

Powered by **AgExpert** 

“Innovation Farms Ontario, powered by FCC AgExpert, is a part of a Canadian network of innovative farms, willing to provide practical research and farm testing on new technologies such as automation, robotics and sustainability.”

Assess the state of AgRobotics' for addressing key challenges – derisking, transition, efficiency, gaps and ROI

Support R&D with Data-Backed Findings

Showcase Ag Tech Innovation

Drive Real-World Impact



# AgRobotics Working Group 2025 Projects

Funded by OMAFA

Asparagus Harvester Study with  
Harvest Corp Technologies



Alternative Weed Control in  
Permanent Plantings



Image Detection Models in  
Permanent Plantings



Squash Plot Trial at Simcoe  
Research Station



# Innovation Farms 2025 Projects

Funded by FCC

Picketa LENS Adoption for Grain Crops

AgRobotics for Vegetable Production and Weed Management at the Bradford Ontario Crops Research Station

Ukko Agro-Weather Stations



# Innovation Farms Ontario Research

## Guiding Research Questions & Associated Data

Are the robots efficient?

Robot Productivity (area, time, work rate)

Are the robots effective at their given tasks?

Ground Truthing Tests (weeding, stand counts)

Do the robots reduce labour needs?

Laboured Hours (Set-up, Maintenance, Supervision)

Is there cost savings to production?

Costs (labour, inputs, machinery)

Are there reductions to inputs used & emissions?

Inputs (spray, seed, fuel)

Energy (kWh)

# Squash Plot at Simcoe Research Station

Naio Technologies' Oz

## Technology Being Trialed:

- Naio Technologies' Oz

## Project Overview:

- Tasks: planting, spraying pre-emergent herbicide on the row, cultivate between rows until canopy cover closes

## Trial Objectives:

- Monitor machine productivity, efficiency, and human involvement
- Assess logistics, usability, reliability, and economic feasibility
- Next year: Side-by-side trial comparing Oz to conventional machinery



# Squash Plot at Simcoe Research Station

Naio Technologies' Oz

## General Information:

- **Crop Type:** Butternut Squash
- **Planting Density:** 60-70 cm apart
- **Row Spacing:** 1.5 m
- **Rows Total:** 17
- **Field Size:** 0.94 acres

## Deployment Information:

- **Time Planting:** 1.7 hours (1 pass on field)
- **Time Spraying (pre-emergence):** 1.4 hours (1 pass on field)
- **Cultivating (between rows):** 18 hours
- **# of Cultivation Passes in Field:** ~2.5



# Squash Plot at Simcoe Research Station

Naio Technologies' Oz

## Stand Count Experiment Results:

**~75%** emergence rate across the field

## Cultivation Weeding Efficiency Results:

**~97%** of inter row weeds were eliminated in single pass

## Grower feedback:

- Weeds remaining on plot are on the row (herbicide escapes)
- **~27%** reduction in herbicide product used

## Harvest Results:

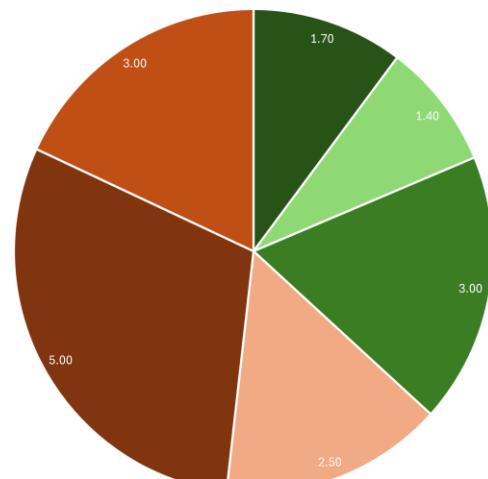
**5,006** butternut squash harvested

**~18,923 lbs** of marketable yield

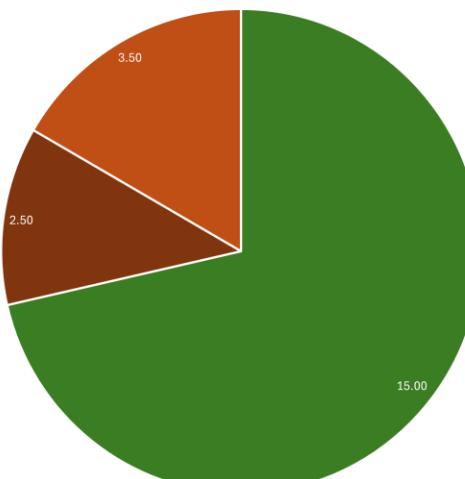
**1.3 times** more lbs/acre then predicted by OMAFA's standards

# Uptime vs. Downtime

Naio Technologies' Oz



- Time Planting (hours)
- Time Spraying (hours)
- Time Cultivating (hours)
- Time Mapping (hours)
- Laboured Setup Time (hours)
- Laboured Maintenance & Repair Time (hours)

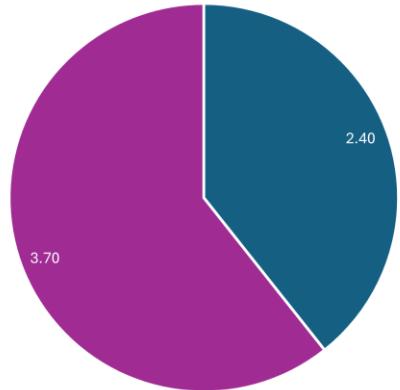


- Time Planting (hours)
- Time Spraying (hours)
- Time Cultivating (hours)
- Time Mapping (hours)
- Laboured Setup Time (hours)
- Laboured Maintenance & Repair Time (hours)

# Supervision Levels

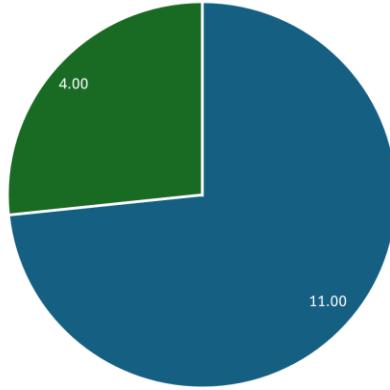
Naio Technologies' Oz

Oz Simcoe Supervision Level June



- Hours Operating Supervised
- Hours Operating Unsupervised
- Hours Operating Hands on

Oz Simcoe Supervision Level July



- Hours Operating Supervised
- Hours Operating Unsupervised
- Hours Operating Hands on

# Sustainability

## Comparing GHG Emissions

### Comparative Study of One Pass of Cultivation at Simcoe Research Station

Equipment	Time (hours)	Entire Area (acre)	Energy / Fuel	Cost (\$)	Co2e Emissions (kg)
Diesel Tractor & Cultivator	0.33	1.00	0.63 Us Gal	3.18	5.89
Oz	4	1.00	1.24 kWh	0.15	0.18



Cultivating with the Oz costs ~21 times less for fuel, with ~33 times less CO2e emissions

# Why This Matters

Importance of trials for new Ag Tech

Derisk adoption of new technology

Understand economic benefits and feasibility (ROI, Labour Reduction Costs, Input Reduction Costs, Etc.)

Compare conventional to new methods of production

Developing a sustainable sector for the future (soil, emissions, noise, pesticide use reductions)

Keeping Canada resilient and at the leading edge of Innovation



# Thank You / Merci !

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