
CARBON
ROBOTICS
LaserWeeding

About Carbon Robotics

Started in 2018, Launched Feb 2022, $72M funding

HQ in Washington State + Manufacturing in Detroit

Precision weed control - AI-Powered LaserWeeder™

World-class AI-Robotics & Ag-Tech team

2023 → LaserWeeders in 19 US states & 3 CAN provinces

International expansion underway

Leading growers have shot 3B+ weeds across 50+ crops

Grimmway Farms · Triangle Farms · JV Smith Companies · Duncan Family Farms Organic · Mercer Ranches · Braga Fresh

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Proven Rapid Innovation

Founded 2018 by Paul Mikesell in Seattle, Washington

LaserCart - Aug 2019

Purpose: Concept Validation

- 1x CO2 40W Lasers
- 1 Row Span
- Manual Push
- **Deployed: Nov 2019 (WA)**

Seedy - Dec 2019

Purpose: Engineering Validation

- 2x CO2 80W Lasers
- 1 Row Span
- Diesel Gen/Electric Drives
- **Deployed: April 2020 (Idaho)**

Veggie - June 2020

Purpose: Pre-Sales Validation Machine

- 4x CO2 150W Lasers
- 2 40” Row Span
- 4WD Diesel Engine/Hydraulic Drivetrain
- **Deploymed: November 2020 (NM)**

Bud - March 2021

Purpose: Sales Demos

- 8X CO2 150W Lasers
- 2 40” Row Span
- 4WD Diesel Engine/Hydraulic Drivetrain
- **Deployed: April 2021 (Washington)**

Slayer- May 2022

Purpose: Scaling Sales & Implementation

- 30X CO2 150W Lasers
- 3 80” Row Span (60-84”)
- Tractor Pulled Implement
- **Deployed: May 2022 (WA/OR/CA/AZ/NM)**
- **To Deliver in 2023: WA/OR/ID/CA/AZ/NM/NV/IA/GA/TX**

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Laserweeding

In The Field
If we can see it - We can shoot it

100% Chemical free & no soil disruption
Sub mm accuracy & Infinite crop flexibility
3000/4000 avg. weeds a min. eliminated
24/7/365 - Run it day or night

Operationaly
Save money - Increase efficiency

95-98% Efficacy - Consistency in results
Predictability - Convert OpEx to CapEx
Move to direct seeding - eliminate herbicide resistance
Yield bumps and ability to plant higher densities

Support
World class - White glove

24/7/365
Local boots on the ground and over the air
Modular design - Easy to repair - Prioritize uptime
Expected 7-10 year useable life

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LaserWeeders in Fields

All LaserWeeders Are Owned & Operated by Growers/Customers

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LOOK UNDER THE HOOD

High performance GPUs for AI/DL

30 x 150W CO2 lasers shooting 5,000 weeds/minute

Precision optics with sub 1mm accuracy

LED lighting arrays 4x brighter than sun

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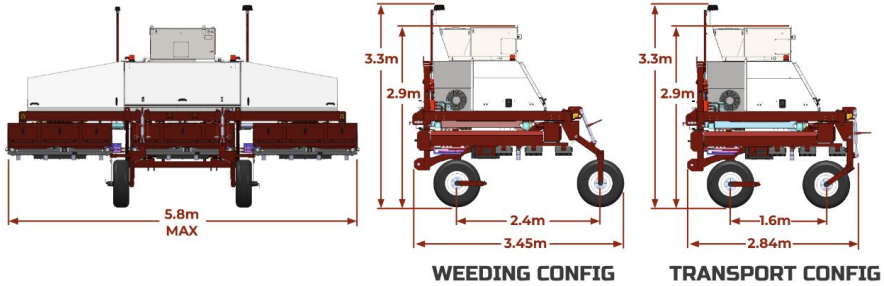
Fleet Avg Speed	0.6 MPH	1.0 KM/H
Fleet Avg Speed	1.5 ACRE/HR	0.6 HA/HR
Max Speed	2.0 MPH	3.2 KM/H
Weight	9,500 lb	4,300 kg
Minimum Tractor	100hp + Lift	6175R Min



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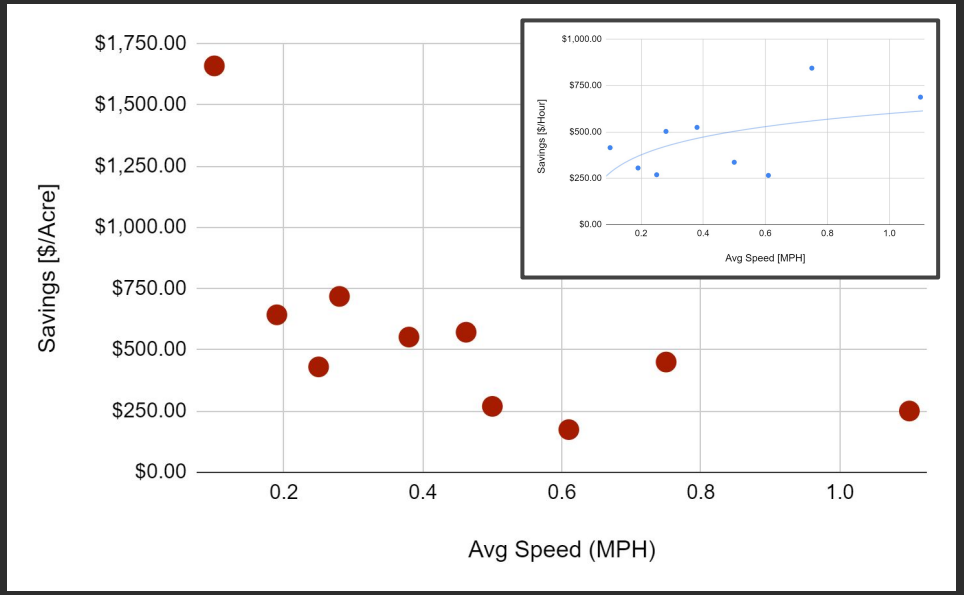
CASE STUDIES ACROSS FLEET



HD Lettuce | 6-Line Lettuce | Onions | Carrots | Cilantro | Spinach

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VALUE ADDED

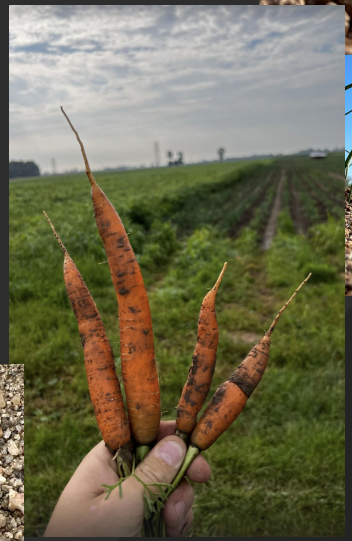
Yield Increases - XX% Carrots, Onions

Earlier Harvests - 2 Weeks in Onions

Spray Burn

LaserWeeded

Thinning Accuracy



Herbicide Treated

LaserWeeded

Cultivated,
Not Weeded Intra-Row

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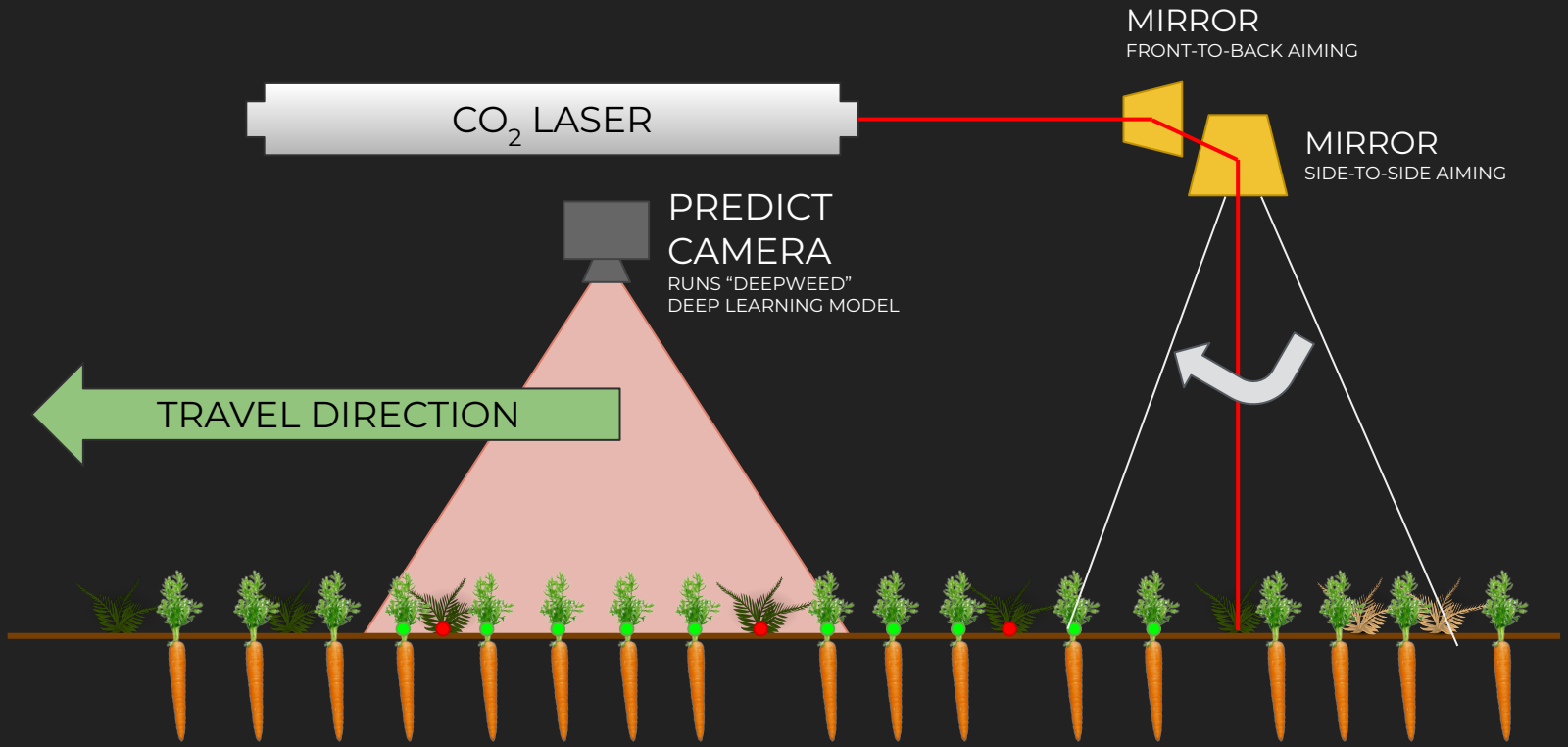
Laser Targeting



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Weed Size Range

< We can see weeds day #1

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Weed Death via Lasers

Post-Shot

24hr Later

48hr Later

72 hr Later

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6 Days Post Laserweeding

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LaserWeeding Check Strips

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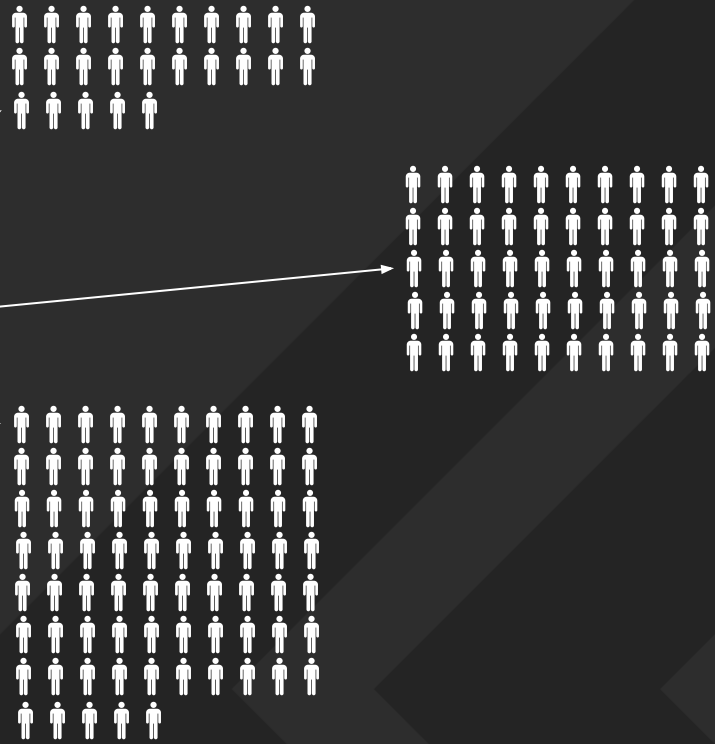
LaserWeeder v Crew Size

Humans weed at ~40 weeds/min

LaserWeeder Equivalency

- 1,000 weeds/min = 25 people
- 2,000 weeds/min = 50 people
- 3,000 weeds/min = 75 people



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LaserWeeding vs Herbicide

Photos taken on the same day.

Same:
-Field
-Planting Date
-Watering Schedule

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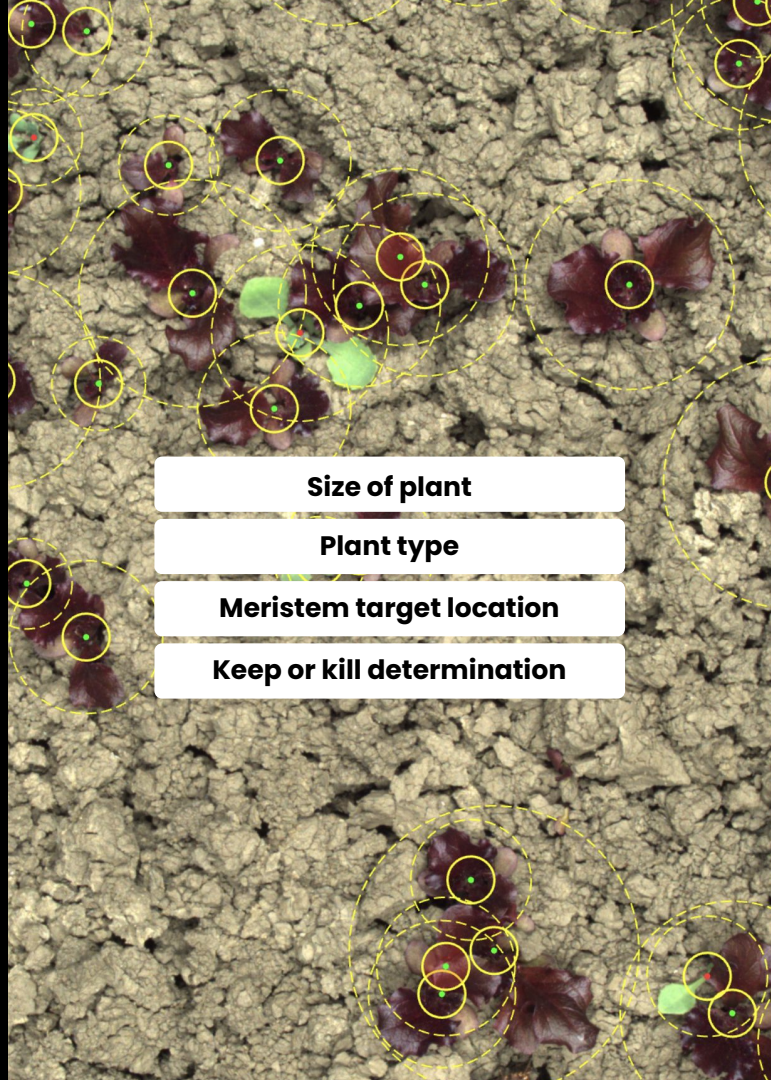
PLANT DETECTION USING DEEPLEARNING-BASED AI

Best in World

- 24K models trained
- 11M individual plants labeled (7M crops 4M weeds)
- 100+ unique crops identified
- 3B+ weeds shot to date
- Sub-millimeter targeting precision
- Most diverse ag image dataset



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ADVANCED SOFTWARE

CONSTANTLY IMPROVING PERFORMANCE

1.16 VERSION RELEASE EXAMPLE: New algorithmic optimization:

- Speed boosts of **50%+**
- Cover more acres in less time

“We’re seeing a doubling in speed and acres covered with the new V1.16 software update”

- Kyle Harmon, Director of Farming, Braga Fresh

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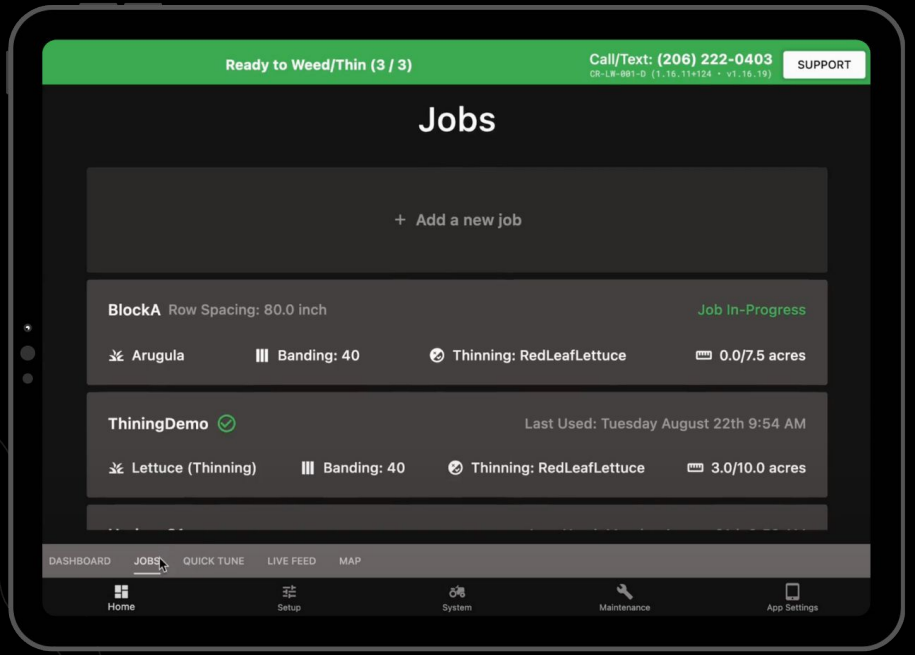
JOBS FEATURE

Organize and track weeding by date/field/task with the Jobs Feature.

See metrics that matter:

- Coverage
- Efficiency
- Weed Data: type, total identified, and eliminated



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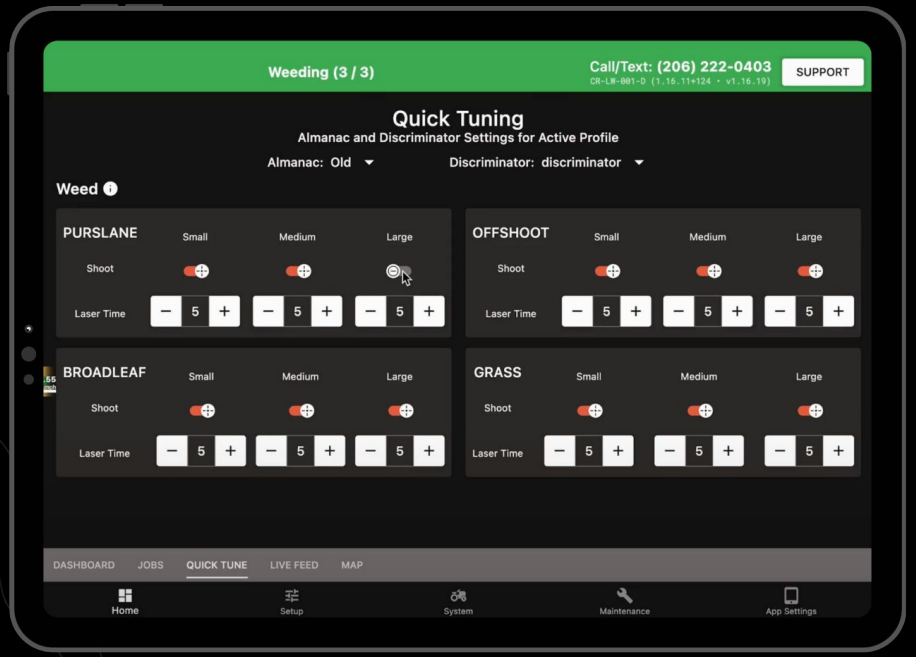
QUICK TUNING FEATURE

Increase or decrease laser shoot times with the Quick Tuning Feature.

- Optimize laser shoot times to maximize acres covered
- Toggle weed sizes on/off for selective shooting
- Change settings on the fly



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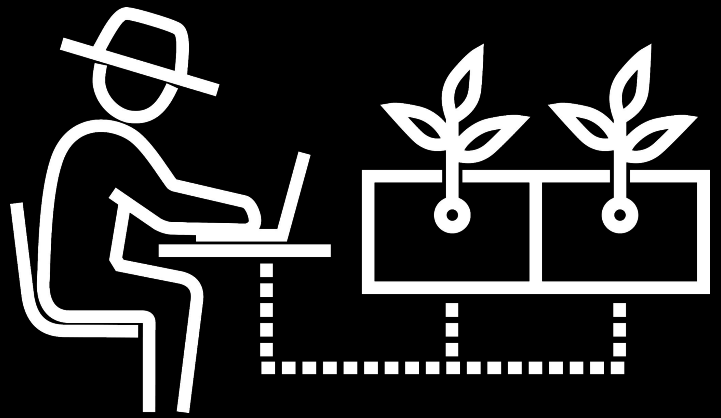
REMOTELY MANAGE YOUR FLEET

- View daily usage, coverage, and weeding history
- View real-time crop and weeding metrics from any device
- View support history and access knowledge base



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TRUSTED BY LEADING GROWERS

LASERWEEDING IS JUST THE BEGINNING...

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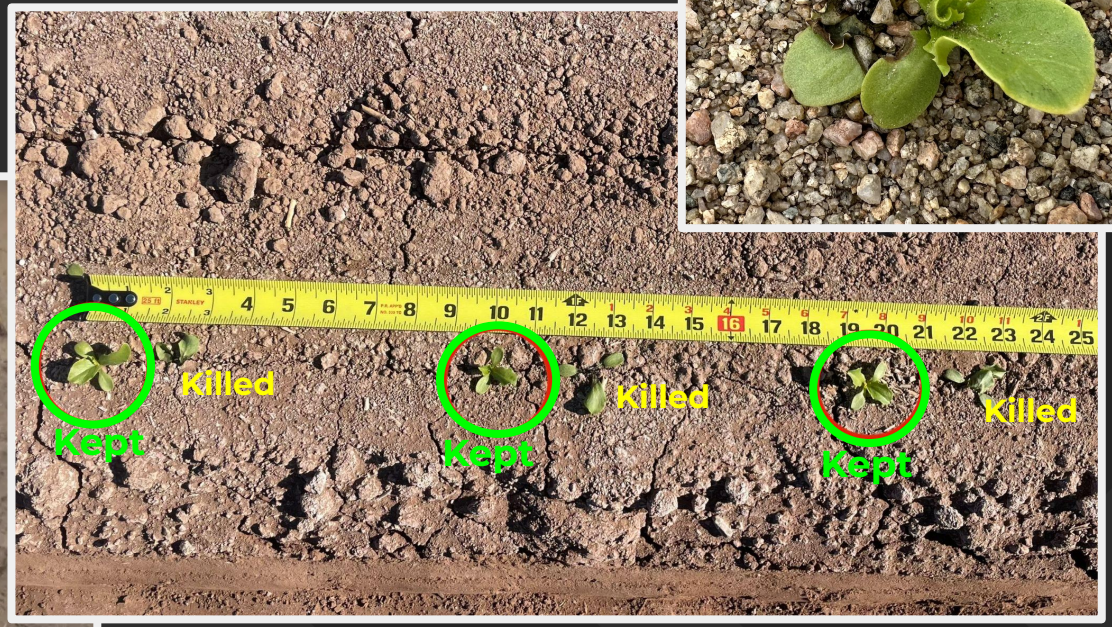
LaserThinning With LaserWeeder

Launched Feb 2023

No hardware changes required



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