With Diesel Up 70%, Aigen's Solar Robots Manage Crops With No Fuel or Herbicides

Aigen's world model trains autonomous robotic fleets on new row crops in under a week, giving large growers diesel-free, herbicide-free crop management.



An Element fleet at work. Solar-powered robots manage crops row by row, with no diesel and no herbicides.

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Key takeaways

1. AI for good: Element's autonomous crop management runs on sunlight, with no fuel and no herbicides, as U.S. diesel prices run 70% above a year ago.
2. A new crop, fast: Alchemy generates infinite, pixel-perfect annotated training data, so Element learned lettuce in simulation and went to work in the field in under a week.
3. Continuous crop intelligence: Element counts crops, tracks plant health and maps weed pressure, turning each field into data growers can act on.
4. Weeds other methods miss: Up to 99% of herbicide-resistant weeds, weeds up to 6 inches in foliage diameter reliably, and weeds under the crop canopy, are all removed at the root.
5. One operator, a full fleet: Fleets are sized to the operation, from one field in a day to thousands of acres. Aigen technology is currently deployed with Fortune 500 companies.
6. Element robotic fleets are designed, engineered, and assembled in the United States.

> I would love to live in a world where robotics took over everything and I didn't have to spray a single acre."
>
> *Neil Rockstad, farmer*

Aigen's autonomous Element robots went from zero to working a new crop in under a week, trained by Alchemy, Aigen's suite of simulation tools and world models. With U.S. diesel prices 70% above a year ago, Element fleets manage crops on solar power, with no diesel and no herbicides. Aigen is now taking orders for the 2027 season

and will demonstrate Element at FIRA USA in Yakima, Wash., Oct. 20-22, 2026.

How Alchemy and Element Work Together

Open fields are among the hardest environments for physical AI: crop types, weed species, soil conditions, growth stages, weather and lighting change daily, and training a robot for a new crop has meant seasons of collecting and hand-labeling field imagery.



Aigen Element robots remove weeds at the root. Mechanical removal works regardless of herbicide resistance.

Alchemy generates those conditions on demand, grounded in real-world data from Aigen's own field operations, with every plant annotated to the pixel. Element trains on datasets that are up to 100% synthetic, learning a new crop in simulation and performing in the field.



Aigen's Alchemy generates field conditions on demand, with every plant annotated to the pixel, so Element can learn a new crop before it reaches the field.

Solar-Powered Crop Management

Once deployed, each Element robot is run by an on-board AI that captures plant data in real time and directs independently operating arms to remove only the weeds, at the root. Available in two-, three- and four-arm configurations, Element fleets can work one field in a day or cover multiple fields and regions all season. On a single pass, Element can:

1. Monitor crops and fields: Record crop counts, plant health, and weed pressure, producing field-level analytics that give growers an early read on stand establishment and plant stress, and track progress across one field or an entire region all season long.
2. Detect disease: Spot early signs of disease and fungal infection, so growers can treat only the plants and areas that need it instead of spraying whole fields.
3. Control weeds: Remove only the weeds, at the root, with independently operating arms and no herbicides.

Removing What Chemicals and Lasers Can’t
Globally, 275 weed species have evolved resistance to at least one herbicide. Element removes weeds mechanically, which works regardless of resistance and spares growers herbicide purchases. Element also removes weeds up to 6 inches in foliage diameter reliably, in the row, between rows and under crop canopies, where diesel-powered laser systems lose effectiveness as weeds grow larger and overhanging foliage can block the beam. Running entirely on solar, with solar-charged battery backup and no charging infrastructure or fuel deliveries, Element robotic fleets provide growers with weed control and crop analytics at a predictable per-acre cost. Element is cost-competitive today with organic herbicide programs and the more expensive conventional chemistries, and Aigen is on track to compete on cost with conventional herbicides in the near future.

Fleets Sized to Every Operation
"Every operation is different, so we size each Element fleet to the grower's acres, crops and goals," said Kenny Lee, co-founder and CEO of Aigen. "Growers get the precision of a hand crew at the scale of a sprayer, at a per-acre cost they know before the season starts. That's AI doing real good in agriculture: better crop management and a budget growers can forecast.”

"Growers can't control what diesel will cost next month, but they can run their weed control on sunlight. We built Alchemy and Element together to take diesel and pesticides out of our fields, for more stable farm budgets and healthier food, and to scale that fast," said Richard Wurden, co-founder and CTO of Aigen.

Proven Enterprise Reliability
Element is designed for 10,000 active operating hours or 8 years. Each unit carries a two-year bumper-to-bumper warranty, including motors, regardless of operating hours, excluding normal wear and consumables, backed by remote diagnostics and field service teams.

To date, Aigen has built more than 100 robots and logged more than 15,000 autonomous hours across multiple generations in California, Minnesota and North Dakota, in soybean, tomato, sugarbeet, lettuce and cotton fields. Element Gen 2 X4 is deployed with Fortune 500 companies for weed control, data collection and analytics, and Alchemy is deployed with a Fortune 500 company.

Element is designed, engineered and assembled in the United States. Learn more or book a field demonstration at https://aigen.io/agriculture.

FREQUENTLY ASKED QUESTIONS
How can growers reduce diesel costs in crop management?
Element runs on solar power, so weed control and crop monitoring use no diesel, at a

predictable per-acre cost.

How is Aigen using AI for good?
Aigen uses AI to replace herbicides with mechanical weed removal and diesel with solar power. Because Alchemy trains Element on new crops in under a week, those benefits can reach more crops and more acres.

About Aigen
Founded in 2020 by Richard Wurden and Kenny Lee, Aigen builds fully autonomous, solar-powered robots that deliver chemical-free, fossil-fuel-free weed control and crop intelligence for large-scale agriculture. Wurden, a former Tesla engineer, and Lee, a data and security leader, founded the company to remove harmful chemicals from the food supply and build the data foundation for autonomous agriculture. Aigen sells to enterprise OEMs, agribusiness, and farmers. Learn more at aigen.io.

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