

The Future of Farming is Here

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Robotics and artificial intelligence: Words typically accompanied by the backdrop of a neon cityscape full of high rises, and never ending streams of cars flying past. From Bladerunner to The Jetsons, a future of technology is often predicated on ideas of sprawling, gritty urbanity, where wired, manufactured components replace biological structures completely.

However, at Greenfield Robotics, the role of cutting edge technology is to support nature, not supplant it.

For decades, the agricultural industry has grappled with critical challenges such as the extensive use of harmful chemicals and the resultant environmental degradation. Phasing out herbicides and pesticides has been a difficult task due to the lack of alternatives that could function with the same efficiency at scale.

But Clint Brauer, the founder of Greenfield Robotics, realized that there was an unexpected answer to the problem. By harnessing AI-powered robotic technology to revolutionize no-till farming methods, he built a team at Greenfield to create technology that promises not only to mitigate environmental impact but also to enhance the sustainability and efficiency of farming operations, all without chemicals.

Greenfield Robotics leverages cutting-edge technology to power autonomous robots that are designed specifically for the

agriculture industry. Brauer, who is himself a third-generation farmer, says, "The reason we created these initial robots was to solve a pretty basic problem. Weeds have become resistant to herbicides, and so then you have to use more of those chemicals... There's no resistance to a blade."

The fleet was built and developed in Cheney, Kan. to navigate fields independently, equipped with spinning blades to cut through even the hardest, most stubborn stalks. The robots are able to keep crop damage to less than 1% during the process, which is a much better record than large-scale spray rigs. Machine vision and learning help them identify field boundaries and obstacles in real-time, while a smaller chassis allows them to operate more nimbly than traditional heavy machinery and avoid crushing crop rows.

By implementing Greenfield's robots-as-a-service methodology, farmers will no longer need to purchase their own sprayers, which can run up to \$1 million or more, and they would be able to cut the cost of post-plant herbicides out of their budgets, Brauer says.

A big part of what makes herbicide use so problematic is that long-term adoption of chemicals like glyphosate has resulted in generations of superweeds, which have become resistant and require stronger, more toxic solutions. Further, since glyphosate functions as an enzyme inhibitor, it can also stunt the growth of the very crops it's meant to help and harm other species that are endemic to local biomes.

In recent years, many farmers have been shifting away from tillage and instead putting regenerative practices in place. Ideas like cover cropping and no tillage farming aren't new, but they are being rediscovered as effective methods of naturally managing weeds as well as returning nutrition back into the soil—thus "regenerative." These practices emphasize maintaining soil integrity by keeping it planted and undisturbed, allowing it to build a healthy ecosystem that

helps prevent erosion, retain water, and even draw carbon out of the air and back into the earth. The result is land that increases the nutrient density of the crops grown, which also means that when growing season comes, the crops are stronger and more vital, too.

But adopting new practices while maintaining seasonal calendars can be taxing and difficult, sometimes impossible at the speed and scale required. Greenfield Robotics provides an automated solution. Unlike spray rigs, which require human operators and can only be driven safely during daylight hours, Greenfield's robots run on rechargeable lithium ion batteries that go for five hours at a time for weeding. Since they follow AI-drawn paths based on overhead drone imagery, they can run deep into the night without issue. When there are storms, it can take a week before the ground is solid enough for heavy machinery to be able to go back to work, but soft ground and mud is less of an issue for the lighter robots. All of these factors allow the robots to shave entire days off of an arduous, expensive, and necessary task that must be done multiple times a year.

The implementation of Greenfield's robots-as-a-service results in a "triple-win" solution for farmers, with positive impact for the climate, consumers, and on the bottom line for farmers.

Greenfield Robotics is not just changing farming practices on individual farms, but is also setting a precedent for the global agricultural sector. By demonstrating the effectiveness and efficiency of robotic weed control, Greenfield Robotics is opening the door to more sustainable farming methods worldwide.

This technology-driven approach is gradually shaping the thinking and practices around regenerative agriculture. Greenfield Robotics has worked live on farm fields for the past three years and continue to expand their reach.

Every year the systems take a big leap forward and Greenfield Robotics aims to refine their systems, increase the capabilities of their robots by developing new tools for farmers, and scale their solutions to meet global demands. Bauer shares more of their R&D, "Whether it is to improve sensors that can analyze plant tissue in real time and identify nutrient deficiencies or adding cover cropping capabilities, the team is always working to develop additional functionality to the fleet."

Greenfield Robotics stands at the forefront of agricultural innovation, and are receiving support throughout the industry. With the backing of major industry players such as Chipotle, ILS Beef, and MKC agricultural co-op with 11,000 farming customers, Greenfield is leading the way toward a new era where technology and traditional farming work hand in hand.

By helping farms adopt concepts like cover cropping and no-tillage farming, Bauer and Greenfield Robotics are bringing agriculture back to the future. Combining time-tested practices with cutting-edge technology, it's paving the way for a healthier, more sustainable future. The opportunity to remove toxic herbicides completely from farming and our food is within reach.

If you'd like to be a part of the Greenfield Robotics mission, visit to learn more: <https://investgreenfieldrobotics.com/>

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