

# GROWERTALKS

## Growers Talk Business

2/1/2024

### Embracing the Future Innovations Transforming Home Gardens

*Amy Morris*



Christmas evening sparked an interesting conversation with my Millennial nieces and nephews when one received a Chia pet as a gift. This prompted me to go on a fact-finding mission about how technology has transformed our lives and gardens. In a world where technology continues to push the boundaries of what was once deemed impossible, the realm of home gardening is undergoing a revolution straight out of a science fiction novel. The coming together of science, technology and agriculture has delivered a new era where futuristic innovations are reshaping the way we cultivate, nurture and sustain our home gardens. From automated systems to genetic engineering, here's a glimpse into the sci-fi realm within our very own backyard sanctuaries.

The rise of smart gardens is on, bringing them closer to a sophisticated high-technology greenhouse. Imagine a garden that tends to itself, adjusts its conditions based on real-time data and communicates its needs to its caretaker. Welcome to the realm of smart gardens. Embedded with sensors, these gardens are equipped to monitor soil moisture, nutrient levels and even the health of individual plants. They utilize AI algorithms to analyze data and make adjustments autonomously, ensuring optimal growing conditions without constant human intervention.

Integrated with smartphone apps, these gardens enable gardeners to remotely monitor and control their green spaces. From adjusting watering schedules to receiving alerts about potential pest infestations, the connectivity of smart gardens allows for precise and efficient management.

#### **Vertical farming & hydroponics**

The future of gardening isn't confined to sprawling fields or traditional raised beds. Vertical farming and hydroponic systems are turning conventional gardening methods on their heads. Vertical farms employ stacked layers of plants in controlled indoor environments, maximizing space and resources while minimizing environmental impact, with LED lighting systems optimized for plant growth and controlled nutrient solution. These setups offer the potential to grow fresh produce year-round in urban areas.

Hydroponics, another futuristic technique, involves cultivating plants without soil by using nutrient-rich water solutions. The controlled environment of hydroponic systems allows for faster growth rates and higher yields while conserving water compared to traditional soil-based gardening. From home-scale setups to larger commercial

ventures, hydroponics is heralding a shift towards sustainable and efficient food production.

## **Robotics & automation**

Robots in the garden may have seemed like a distant dream, but they're now a reality. Robotic assistants are being developed to handle various gardening tasks, from planting seeds and weeding to harvesting crops. These machines are designed to navigate outdoor terrain, identify plants and perform precise actions with minimal human intervention. The cost is quite staggering, but it's out there for the right price.

Drone technology is also finding its place in the home garden, as we use it in our current businesses. Drones equipped with cameras and sensors can monitor plant health, detect pest infestations and even assist in pollination, increasing the efforts of bees and other natural pollinators.

## **Genetic engineering & biohacking**

The field of genetic engineering isn't restricted to laboratories. In home gardens, biohackers and enthusiasts are experimenting with genetic modifications to enhance plant traits, such as disease resistance, shelf life and nutritional content, thanks to COVID. DIY biology kits and CRISPR technology are empowering individuals to tinker with plant genetics in their own backyard labs, blurring the lines between science fiction and reality.

While the ethical implications of such ventures are a subject of debate, the potential to create more resilient and nutritious crops offers a glimpse into a future where gardeners become geneticists, shaping the flora around them.

## **Environmental sustainability & climate resilience**

The futuristic advancements in home gardening aren't just about convenience or novelty; they also hold the promise of addressing pressing global challenges. As climate change continues to impact agriculture, these innovations offer solutions to mitigate its effects. From water-efficient systems to genetically modified crops designed to withstand harsh conditions, the combining of sci-fi tech and gardening has the potential to support our resilience in the face of environmental adversities.

The integration of science fiction-like technologies into home gardens is ushering in an era where the boundaries between imagination and reality blur. Smart gardens, vertical farming, robotics, genetic engineering and sustainability efforts are transforming the way we interact with and nurture our green spaces.

As these innovations become more accessible and widespread, the future of home gardening appears promising, offering a glimpse into a world where technology and nature harmoniously coexist. Embracing these advancements not only enriches our gardening experiences, but also signifies a step toward a more sustainable and resilient future for our planet. **GT**

---

*Amy Morris is Vice President of N.G. Heimos Greenhouses in Millstadt, Illinois. She can be reached at [Amorris@ngheimos.com](mailto:Amorris@ngheimos.com).*