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Rijk Zwaan partners with Eternal.ag to build next generation of robot-ready tomatoes

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Dutch vegetable breeding specialist Rijk Zwaan and agricultural robotics innovator Eternal.ag have launched a collaborative initiative aimed at identifying tomato varieties best suited for robotic crop management, reflecting a growing convergence between plant genetics and automation in the future of protected agriculture.

The partnership seeks to explore how tomato breeding can evolve alongside advances in robotics and artificial intelligence, with both companies sharing expertise to better understand which plant characteristics can enable efficient and reliable robotic operations in increasingly automated greenhouse environments.

As labor shortages continue to challenge greenhouse production systems worldwide, the industry is intensifying efforts to develop technologies capable of sustaining productivity while reducing dependence on manual labor. While significant progress has been made in robotic harvesting and crop management systems, the biological complexity of crops remains one of the sectorâ??s most persistent barriers to full automation.

The collaboration between Rijk Zwaan and Eternal.ag aims to address that challenge by examining whether crop genetics can be intentionally aligned with robotic capabilities.

Drawing upon Rijk Zwaanâ??s extensive global experience in vegetable breeding and Eternal.agâ??s expertise in robotics, artificial intelligence, and autonomous crop operations, the initiative will investigate tomato traits that facilitate machine

interaction. Researchers will evaluate plant architectures, fruit positioning, canopy structures, and other biological characteristics that may improve the consistency and efficiency of robotic harvesting and crop maintenance activities.

A key area of focus will be identifying plant topologies that enhance fruit accessibility while minimizing operational complexity for robotic systems. By designing crops that are inherently more compatible with automation technologies, the companies aim to reduce the technical constraints that often limit robotic performance in commercial greenhouse settings.

The initiative reflects a broader shift within controlled-environment agriculture, where innovation is increasingly moving beyond standalone technologies toward integrated production systems in which crop genetics, automation platforms, and artificial intelligence are developed in tandem.

Industry observers note that while greenhouse automation has advanced considerably in recent years, many robotic solutions continue to be adapted to crops originally bred for human labor. The next phase of innovation may therefore involve breeding crops specifically designed to thrive within autonomous production environments.

â??Robotics will play an important role in the future of automatic greenhouses,â? said Michiel Zwaan, Crop Manager for Berries and Tomato at Rijk Zwaan. â??Thatâ??s why working together is important. This collaboration gives us the chance to try things out in practice.â?•

For Eternal.ag, the partnership represents an opportunity to bridge the traditionally separate disciplines of crop science and robotics engineering.

â??The collaboration represents a future vision of blending advanced research, technical expertise, and real-world application,â?• said Renji John, Co-Founder and Chief Executive Officer of Eternal.ag. â??By bridging the gap between robotics and crop genetics, the goal is to improve future crop performance while addressing long-term food production challenges in a future where greenhouse automation is essential.â?

The collaboration arrives at a pivotal moment for the global greenhouse industry. Rising labor costs, workforce shortages, and growing demand for year-round food production are accelerating investment in autonomous technologies capable of improving operational predictability and scalability. At the same time, advances in artificial intelligence, machine vision, and precision robotics are creating new opportunities to automate tasks that were previously considered too complex for machines.

As part of the initiative, Eternal.agâ??s Harvester robot will be showcased at Rijk Zwaanâ??s Trial Center High-Tech (TCHT) facility in De Lier, the Netherlands, during the week commencing June 8, 2026. The demonstration is expected to provide industry stakeholders with a practical glimpse into how future greenhouse systems could integrate advanced robotics with crop varieties specifically optimized for automated production.

Beyond tomatoes, the collaboration underscores a broader transformation underway in controlled-environment agriculture, where the future competitiveness of greenhouse operations may increasingly depend on the seamless integration of biology and technology.

Rather than asking robots to adapt to crops, the industry is beginning to explore a more fundamental question: how crops themselves can be designed for a world in which machines become an integral part of cultivation. In that context, the partnership between Rijk Zwaan and Eternal.ag represents an early but significant step toward redefining the relationship between plant breeding and agricultural automation.