

Empowering Tomorrow's Leaders

Technology creates exciting opportunities for youth in agriculture.

by *Will Fiske*

In a world undergoing rapid technological advancements, agriculture is emerging as an unexpected hotspot for young talents seeking an innovative and rewarding career path. Far from the conventional stereotype of manual labor in the fields, modern agriculture is being revolutionized by cutting-edge technologies, opening new and exciting opportunities for youth interested in farming and ranching.

The increased adoption of technology is not only renewing the interest of youth who grew up around agriculture, but it's attracting youth with little to no agricultural background to pursue a career in ag. From precision farming to ag-tech startups, technology is transforming agriculture and creating a bright future for the next generation of farmers, ranchers and "agri-preneurs."

Maximizing efficiency with precision farming

Gone are the days of guesswork and relying on only traditional methods; precision farming harnesses the power of technology to optimize agricultural practices. Through the integration of GPS, drones and advanced sensors, farmers can analyze soil data, monitor crop health and predict weather patterns more accurately than ever before.

Precision livestock management enables the use of digital systems to drive real-time decision making with financial advantages. Where traditional cattle management required a cowboy

to visually identify a sick animal, new technologies equip cattlemen and women with new methods to monitor cattle health and performance faster, more efficiently and more accurately. Technological tools such as biometric devices make this possible.

Cattle and crop producers are successfully reducing inputs and maximizing yield; precision farming not only improves agricultural efficiency but paves the way for more resilient agricultural practices, making it an attractive field for tech-savvy youth looking to make a difference.

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Data-driven decision-making

Increasingly agriculture relies on data-driven decision-making. The emergence of Big Data and Internet of Things (IoT) technologies allows farmers and ranchers to collect and analyze vast amounts of information, enabling them to make informed choices in areas like crop selection, planting time, irrigation schedules and pest management.

Hereford breeders utilize genomic-enhanced expected progeny differences (GE-EPDs) to make data-driven breeding and selection decisions; the genomic data leverages generations of phenotypes to empower the breeder to make a more accurate estimate of the progeny's genetic merit. Young people with a curiosity for analytics can find a natural fit in agriculture by using their skills to optimize farming practices, livestock management and drive innovation in the industry.

Farming vertically and other urban agriculture

Urbanization and limited infrastructure present significant challenges for traditional farming. However, technology has offered a solution in the form of vertical farming. By utilizing hydroponics, aeroponics and artificial lighting, vertical farms can grow crops in stacked layers, often in urban settings or previously unused spaces. This concept not only reduces the distance between consumers and fresh produce but also offers exciting opportunities for youth to embrace a career in farming in the heart of cities and metropolitan areas.

Booming ag-tech startups

The rise of ag-tech startups is reshaping the agricultural landscape. Young entrepreneurs are leveraging technological advancements to address pressing challenges faced by farmers and the food industry. Whether it's developing innovative apps for crop monitoring, implementing blockchain for supply chain transparency or using artificial intelligence for precision irrigation, ag-tech startups are redefining how agriculture operates.

Successful inventions, also known as disruptive technologies, are solving traditional problems and creating new revenue streams for beef producers. As an example, smart cameras are being integrated with machine vision systems to assess phenotypic measures and manage animal health and welfare. What were once considered farfetched ideas are becoming real.

According to *agfunder.com*, \$29.6 billion was invested globally in agri-food-tech startups in 2022. The surge in venture capital funding for startups, in addition to land-grant universities creating programs to foster ag innovation, further indicates the immense potential of agricultural technology and encourages young talent to enter the sector with their creative ideas.

Agricultural education and research

The integration of technology in agriculture has led to a new era of agricultural education and research. Universities and institutions are utilizing novel ag-tech tools in applied research programs to evaluate opportunities for producers. Once the value is validated, it's adopted into curriculum courses and embraced by Extension programs.

The technology space is quickly developing into a subsector of conventional agriculture. This sector will require service and further innovation, and it will demand skilled professionals to foster growth. This presents students and young professionals with new opportunities to engage with agriculture and make significant contributions to the industry's growth.

Technology is changing agriculture, providing youth with exciting and impactful career opportunities. From precision farming to ag-tech startups and sustainable solutions, the integration of technology is leading the way for a productive and profitable future in agriculture.

Genomic technology is a great example of a science-based tool that is being advanced by biotechnology companies, such as NEOGEN, and embraced by the academic community. Collaboration among industry partners permits technology, such as genomics, to be positioned to solve the beef industry's economically important



NEOGEN's Nick Hammet shows junior Hereford members how to collect DNA samples at the VitaFerm® Junior National Hereford Expo in Madison, Wis.

problems. As the industry evolves, it creates diverse and exciting opportunities for youth to engage with state-of-the-art technologies, developing their skills as future agricultural leaders. By fostering innovation, data-driven decision-making and a commitment to honorable practices, genomic technology empowers the next generation to contribute meaningfully to the future of the beef industry. **HW**

Editor's Note: Will Fiske is a technical services scientist for NEOGEN.