

Agricultural Engineers

SOC: 17-2021 • Career Profile Report

■ Key Facts

\$84,630 Median Salary	1,700 Employment	+6.0% Growth Rate
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■ Requirements & Salary Range

Education: Bachelor's degree

■ Automation Risk Assessment

Low Risk - 17.0% probability of being automated in the next 10-20 years.
This job is relatively safe from automation due to its creative, social, or complex problem-solving requirements.

■ Work-Life Balance

7.2/10 - Good work-life balance

■ Personality Fit (RIASEC)

Higher scores indicate better personality fit for this career type.

Realistic	8.2/10	Investigative	8.8/10
Artistic	6.4/10	Social	5.2/10
Enterprising	5.8/10	Conventional	6.6/10

■ Top Skills Required

Analytical skills, Communication skills, Math skills, Problem-solving skills

✓ Strengths

- High Demand
- Flexible Work
- Continuous Learning

■ Challenges

- Burnout Risk
- Rapid Technological Change

■ What They Do

Agricultural Engineers are engineering professionals who apply **engineering principles, technology, and problem-solving methods** to improve agricultural production, food processing, and natural resource management. They design systems, equipment, and processes that increase efficiency, sustainability, and safety in farming and agribusiness. Their work supports modern agriculture by addressing challenges related to water use, soil conservation, machinery, renewable energy, and environmental impact.

This career is well suited for individuals who enjoy engineering, innovation, and applying technical solutions to real-world agricultural and environmental problems.

What Do Agricultural Engineers Do?

Agricultural engineers design and improve systems used in crop and livestock production and food processing. Their responsibilities blend engineering analysis with field application.

Common responsibilities include:

- Designing agricultural machinery and equipment
- Developing irrigation, drainage, and water management systems
- Improving soil conservation and erosion control methods
- Designing structures such as barns, silos, and greenhouses
- Applying automation and precision agriculture technologies
- Analyzing environmental impacts of agricultural operations
- Testing and refining agricultural systems and processes

Areas of Specialization

Agricultural engineers often focus on specific technical areas:

- Farm Machinery and Equipment Design: Developing tractors, harvesters, and mechanized tools.
- Irrigation and Water Resources Engineering: Designing efficient water delivery and conservation systems.
- Soil and Environmental Engineering: Preventing erosion and managing soil health.
- Food and Bioprocess Engineering: Improving food processing and storage systems.
- Precision Agriculture and Automation: Integrating sensors, GPS, and data-driven systems.
- Renewable Energy in Agriculture: Applying bioenergy and sustainable power solutions.

Skills and Abilities Needed

Agricultural engineers combine engineering fundamentals with agricultural knowledge.

Core Professional Skills

Personal Qualities That Matter

Education and Career Pathway

Becoming an agricultural engineer requires formal engineering education:

- Bachelor's Degree: In agricultural engineering, biological engineering, or a related field
- Internships and Cooperative Programs: Hands-on engineering experience
- Professional Licensure (optional but beneficial): Professional Engineer (PE) credential
- Advanced Education (optional): Master's degree for research or specialized roles
- Continuing Education: Staying current with engineering standards and agricultural technology

Where Do Agricultural Engineers Work?

Agricultural engineers are employed across agriculture, industry, and government:

- Agricultural Equipment Manufacturers

- Farms and Agribusiness Companies
- Food Processing and Manufacturing Facilities
- Engineering and Consulting Firms
- Government Agencies and Research Institutions
- Environmental and Water Management Organizations

Work environments often include both office-based design and on-site fieldwork.

How Much Do Agricultural Engineers Earn?

Earnings vary based on experience, industry, and specialization:

- Entry-Level Engineers: Typically earn professional engineering salaries
- Experienced Agricultural Engineers: Often earn higher pay with specialization or leadership responsibilities
- Senior or Consulting Engineers: May earn more with advanced expertise

Compensation depends on location and employer type.

Is This Career Difficult?

Agricultural engineering is technically demanding and multidisciplinary. Engineers must integrate knowledge of biology, mechanics, and environmental systems while meeting regulatory and safety requirements. The challenge lies in designing solutions that are both technically sound and economically practical for agricultural operations.

Who Should Consider Becoming an Agricultural Engineer?

This career may be a strong fit if you:

- Enjoy engineering and applied problem-solving
- Are interested in agriculture, sustainability, or food systems
- Like designing and improving physical systems
- Want a career with real-world environmental and economic impact
- Are comfortable working across disciplines

How to Prepare Early

- Take advanced courses in math, physics, and science
- Learn basic engineering and design software
- Gain experience through farm work or engineering internships
- Develop problem-solving and teamwork skills
- Explore accredited engineering programs with agricultural focus

Agricultural engineers drive innovation in food production and resource management by applying engineering expertise to create more efficient, sustainable, and resilient agricultural systems.