



Workforce and Career-Ready Learning in Out-of-School Time (OST):

Agriculture

The Shapiro Administration has prioritized five key industries to bolster Pennsylvania's economic development over the next decade—Agriculture, Energy, Life Sciences, Manufacturing, and Robotics and Technology. Out-of-school time (OST) programs provide a critical opportunity to connect students to these high-growth sectors early, building awareness, foundational skills, and real-world experiences that align education with workforce needs.

Why Agriculture Matters in Pennsylvania

Pennsylvania's agriculture industry is one of the most powerful economic engines in the nation, contributing more than \$132 billion annually and supporting over 593,000 jobs across more than 49,000 farms statewide. The commonwealth leads the nation in mushroom production, ranks among the top states for organic sales, dairy, poultry, and specialty food manufacturing, and is home to iconic brands from Hershey and Heinz to Herr's, UTZ and Weis Markets.

How OST Programs Support Career Pathways in Agriculture

Career Awareness | Grades K–5

Elementary-aged youth engage in garden-based or digital farm projects that build curiosity, collaboration and growth mindsets. Students act as junior plant scientists and farm technologists, asking questions about plants, weather and Pennsylvania farms while using age-appropriate artificial intelligence (AI) tools.

Sample activities include school garden investigations, soil and weather data exploration inspired by Microsoft FarmBeats for Students, and locally rooted storytelling, such as cocoa-to-chocolate journeys with Hershey and dairy-to-yogurt stories from Painterland Sisters.

Family and community engagement are built in – students co-create AI-drafted career cards and questions to share with families, and OST providers coordinate with 4-H, Penn State Extension, and the Pennsylvania Farm to School Network to extend in-school units into afterschool agriculture investigations.



PSAYDN.org

pennsylvania statewide
afterschool
youth development
network

Career Exploration | Grades 6–8

Middle-grade youth complete interest and values surveys, then use AI tools to research agriculture-related STEM careers, including food scientists, regenerative dairy producers, poultry welfare specialists, and packaging engineers in the supply chain. They reflect on how these careers align with their strengths and identities.

OST programs facilitate projects where youth work with real or simulated soil, weather and yield datasets. Students use AI-enabled tools to interpret patterns and propose precision agriculture recommendations which improve yield, reduce waste, or support climate resilience.

Youth design presentations and short videos explaining how AI is changing Pennsylvania's food system from farms to processing and packaging, then share them at family nights and community events. Partnerships can bring professional guest speakers and virtual tours into OST settings.

Career Preparation | Grades 9–12

High school youth lead multi-week agriculture and AI projects, such as optimizing a school garden's irrigation plan, analyzing cafeteria purchasing data with AI tools, or designing AI-supported quality control workflows for food processing. These projects apply durable skills including project management, critical thinking, communication and leadership.

Industry-aligned simulations connect youth to real ag sector challenges, including modeling smart packaging solutions for a company, developing AI-assisted animal welfare monitoring concepts using a virtual hatchery tour as a case study, or analyzing food security data and logistics with tools linked to statewide resources.

Youth plan and implement community service or social enterprise projects related to food security and local agriculture. Students use AI to support outreach and multilingual communication, connecting to Pennsylvania Key's food resources for families, regional food banks, and community organizations.

OST providers can coordinate with school systems, workforce boards and higher-education and CTE partners to connect youth to internships, work-based learning and dual-enrollment courses in agriculture and AI. This work aligns with United States Department of Agriculture (USDA) National Institute of Food and Agriculture's (NIFA) AI for K–12 Food and Agricultural Sciences Program and National Science Foundation's (NSF) AI-ENGAGE awards.

Key Durable Skills Developed

Across all grade bands, agriculture and AI experiences in OST build durable workforce skills that transfer to every career pathway. Youth who troubleshoot a sensor in a garden bed, collaborate on a farm business case study, or present a supply chain analysis are developing the same competencies that employers across Pennsylvania's five key industries demand.

Communication • Collaboration • Critical Thinking
• Problem-Solving • Leadership • Adaptability

Examples of Pennsylvania Partners and Resources

- **Pennsylvania Farm to School Network**
pafarmtoschool.org
- **Project PA Farm to School (Penn State/PDE)**
projectpa.org
- **Penn State Extension 4-H**
extension.psu.edu/programs/4-h
- **Pennsylvania Farm Bureau Resources**
pfb.com/allresources
- **PA Farm Bureau Ag Literacy Week**
pfbfriends.com/ag-literacy-week
- **Microsoft FarmBeats for Students**
learn.microsoft.com

Support OST Programs that Connect Youth to High-Demand Agricultural Careers in Pennsylvania.

Policymakers, funders, and partners can help by:

- **Funding OST programs aligned to career-ready learning.**
- **Expanding partnerships between schools, industry, and workforce agencies.**
- **Advocating for resources that prepare the next generation of ag professionals.**

