

Agricultural Safety and Health Research and Extension

Agriculture is one of the most hazardous industries in the U.S.

Across the nation, people who work or live on farms and ranches are regularly exposed to dangerous machinery, sharp tools, toxic chemicals, biological pathogens, confined spaces, extreme temperatures, and other hazards that can cause injuries or deaths. These injuries and deaths can have a ripple effect on the economic and social wellbeing of their communities.

Land-grant universities are addressing agricultural health and safety issues.

Researchers, educators, government, and industry have made farms and ranches safer, but improvement is still needed. Since 2000, a committee of experts at land-grant universities across the U.S. has worked to pinpoint the knowledge, outreach, engineering, and legislation needed to prevent work-related injury, illness, and death. Diverse expertise enables the committee to tackle a wide range of risks from multiple angles. The committee has fostered numerous collaborations and generated an estimated \$45 million in support of their efforts. The multistate approach also helps tools and information reach a broad audience. Collaborations with organizations such as the American Society of Agricultural and Biological Engineers, National Institute for Occupational Safety & Health, and Canadian Agricultural Safety Association further increase the committee's capacity and reach.

Research and Extension reduce risks, injuries, and deaths.

This committee has increased awareness and technical understanding of agricultural health and safety issues as well as specific tools and practices that can mitigate risks. In just the last five years, the committee's training efforts reached at least 300,000 farmers and ranchers, helping them avoid injuries and deaths. The committee's findings and advocacy have influenced engineers, manufacturers, and policymakers, resulting in new design guidelines and regulations that make machines and facilities safer. Recent efforts have also bolstered infrastructure support for agricultural health and safety research, Extension, and teaching.



Committee Highlights 2015-2020

This committee supports agricultural safety and health research, Extension, and teaching at land-grant universities by:

- Advocating for additional funding to be allocated to agricultural safety and health issues.
- Encouraging and supporting “specialist” positions at universities to study, advise, and teach agricultural safety and health in each state.
- Maintaining the Agricultural Safety and Health eXtension Community of Practice (ag-safety.extension.org/) which currently totals over 100 members from over 40 universities and organizations and receives over 45,000 visits each year (up from 11,802 people the first year).
- Recognizing researchers and educators who are addressing agricultural safety and health issues through award nominations and other distinctions.

Collaboration helps set agricultural health and safety priorities.

The committee maintains an up-to-date inventory of ongoing land-grant university research and Extension that addresses agricultural health and safety. Recently, the group revised the National Agenda for Action document (originally created by the group in 2003) to help land-grant university researchers and educators prioritize and plan their efforts.

Critical training reduces injuries and deaths.

Committee members conduct in-person and virtual safety and health programs and demonstrations in their states. In the past five years, committee members trained an estimated 300,000 farm and ranch workers. Many of these trainings targeted young workers and beginning farmers. Tens of thousands of farmers participated in grain safety demonstrations. Committee members also trained agriculture teachers about safety topics. In addition, committee members trained over 4,500 emergency first responders on safe and effective extrication procedures.

New data on existing and emerging health and safety topics are guiding potential solutions.

- Researchers modeled the force needed to extract males of different body sizes from below the grain surface, helping researchers explore new rescue techniques and improve grain bin safety.
- Many tractors are equipped with foldable rollover protective structures, but these structures can be difficult to raise and lower, and many rollover fatalities have occurred because the structure was not raised. Researchers are testing a lift assist mechanism and collecting data about farmers' willingness to retrofit their tractors.
- Researchers identified ways to manage financial stress, which can lead to distraction, injury, and other mental and physical health problems for farmworkers.
- Researchers investigated the use of wireless technology to monitor agricultural worker health.
- Other recent studies provided new data on risks from manure gas, falls, drones, and ATVs.
- Research influenced new safety standards for agricultural facilities, machinery, and personal protective equipment. In recent years, the committee guided safety standards for tractor-mounted boom-type posthole diggers and ventilating manure storage. Committee members also helped revise standards for classifying farm and agricultural injuries.

To share findings and recommendations with farmers, government officials, engineers, and others, committee members:

- Maintained websites (ag-safety.extension.org) and social media (@AgSafety4U).
- Contributed to AgrAbility (agrability.org), which enhances quality of life for farmers, ranchers, and other agricultural workers with disabilities. The site had over 1.6 million visitors in 2020.
- Published a report on confined spaces and grain bins injuries (agconfinedspaces.org). Over 21,000 visitors retrieved material from the website in 2019 and 2020. Interviews on the findings led to articles in *Progressive Farmer* and *Farm Journal*, which reach several hundred thousand families.
- Supplied information and resources to agricultural clients that requested assistance.
- Developed content for various health and safety and farming industry organizations.
- Organized and presented at conferences, enhancing information sharing and collaboration.

Project Funding and Participation

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