Central States Center for Agricultural Safety and Health

About our Center

CS-CASH - University of Nebraska Medical Center - College of Public Health

CS-CASH Pilot and Feasibility Program

The Pilot and Feasibility Program has been an essential component of the Central States Center for Agricultural Safety and Health (CS-CASH) since the Center was established in 2011.

This program supports projects with funding up to $20,000 over 18 months.

The program goal is to enable investigators to collect preliminary data to support the submission of grant applications for independent, longer-term, larger projects related to agricultural safety and health. The projects selected for support by this program must address a critical issue in agricultural safety and health and lead to future extensive studies of the selected critical issue.

To find out more and to submit an application to the CS-CASH Pilot Grant Program please contact Ellen Duysen ellen.duysen@unmc.edu.

Past Performance of Pilot Projects

In addition to NIOSH AFF funding ($660,000), generous funding from the University of Nebraska Medical Center's Vice Chancellor for Research ($500,000), the University of Nebraska Lincoln (UNL) College of Agricultural Engineering ($20,000), and the UNL Institute of Agriculture and Natural Resources ($20,000) has allowed **CS-CASH to fund 65 pilot projects over 11 years**. Additional funding received by Pilot Program investigators due to data generated through their pilot research amounts to $19,390,183 (Table 1).

Table 1. CS-CASH Pilot and Feasibility Project Report.

Grant Year	# of Pilot Projects	Peer Reviewed Articles	Presentations Oral / Poster	**Non-Peer Reviewed Articles	***Other Products	Initial Funding	****Additional Funding
Y1	5	0	20	2	8	$95,000	$1,319,581
Y2	7	1	25	15	3	$100,000	$1,275,712
Y3	5	1	3	4	1	$60,780	$15,000
Y4	4	9	25	15	7	$100,000	$3,135,208
Y5	5	4	5	7	5	$100,000	$1,270,000
Y6	7	6	12	2	8	$140,000	$1,853,484
Y7	7	5	4	7	2	$140,000	$120,000
Y8	5	7	13	3	22	$100,000	0
Y9	7	6	8	0	24	$138,742	$3,149,499
Y10	8	5	9	12	6	$140,000	$7,251,699
Y11	5	NA	NA	NA	NA	$100,000	NA
TOTAL	**65**	**44**	**124**	**67**	**86**	**$1,214,522**	**$19,390,183**
*Education / Training includes course/curriculum, material distribution, mtg./conference, training/demonstration, workshop							
**Non-Peer Reviewed Articles include reports, booklet/brochure, factsheet, interview (media/other), newsletter, multimedia, websites							

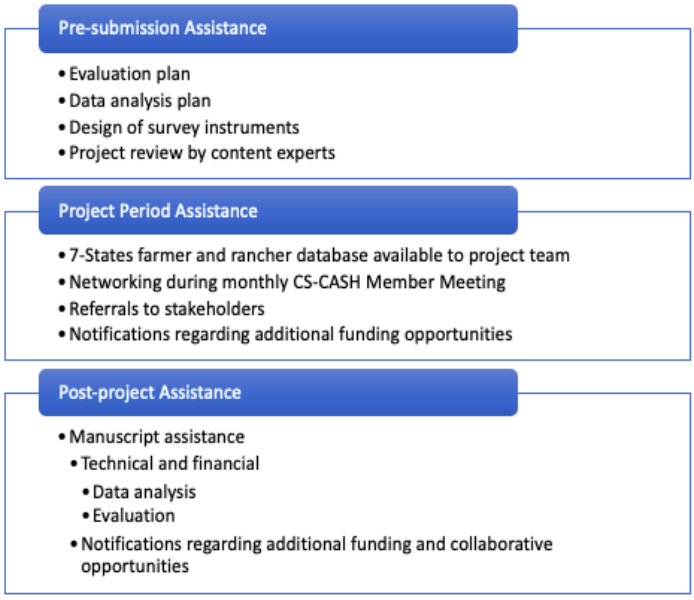
***Other Products include reports, focus group, evaluation instrument/tool, questionnaire/survey/checklist, site visit, farm safety audit, consultations, testing and screenings

****Additional Funding includes all grant years including indirect costs.

Return on Investment. A return on investment of **1,597%** is calculated from subsequent agricultural safety and health funding received by Pilot/Feasibility Program recipients.

Resource Sharing. CS-CASH provides a range of no-cost resources to investigators from the inception of their project to completion. See Figure 1. Resources include expert analytical assistance from Dr. Cheryl Beseler and the UNMC (University of Nebraska Medical Center) Center for Collaboration on Research Design and Analysis (CCORDA) and content expertise provided by CS-CASH researchers and administration. Grant recipients are invited to attend and present at the monthly CS-CASH member meetings and are forwarded all information about grant opportunities, webinars, conferences, and other information that could assist the investigators with their research.

Figure 1. Available Assistance to Pilot Investigators.



Funded Regions. Since 2011 CS-CASH has funded 65 Pilot Projects in all 7 of the States served by the Center and several National projects. Recipients include community organizations, health departments, post-doctoral students, scientific researchers, and ag safety and health organizations.

COVID-19 Extensions and Modifications. In 2020 and 2021, CS-CASH worked with each funded investigator to determine whether their project could be safely completed during the COVID-19 pandemic. Project extensions were provided in some cases, and in two cases, modifications to the original aims were allowed.

Impact. Pilot Project data have been used to generate more significant awards totaling $19,390,183, including $12,374,682 in the 2015-2021 funding cycle.

Publications: There have been 44 publications resulting from funded Pilot research[1-44]. See Bibliography. Pilot researchers have developed 67 non-peer reviewed articles and have presented their research data in oral and poster form 124 times.

Project Synopsis from the last funding cycle (2015-2021)

Human lung 3D organoids as model of damage and repair of lungs in agricultural airborne biohazards. Rohit Gaurav, MSc, PhD, FAAAAI
This project used 3D organoid culture from primary human lung cells to investigate the phenotypic and functional changes in structural cells when exposed to Toll Like Receptor agonists from agricultural dust. These data have been used for a successful NIH (National Institutes of Health) grant application.

Redesigning National Agricultural Safety Database. Serap Gorucu, PhD
This project engaged an expert panel in redesigning a long-term plan for the National Agricultural Safety Database. The panel assisted in creating a nationwide survey that has led to achievable site improvements, a long-term plan for addressing site content recommendations from the site evaluations, and the development of a plan for promoting NASD (National Ag Safety Database) and NIOSH safety and health efforts.

Ag-Operator Monitoring Systems (Ag-OMS) for Safety and Health Risk Detection and Assessment. Santosh K. Pitla, PhD
This project developed camera systems and instrumentation and used existing tractor technologies to monitor the activities of operators, thereby identifying high-risk behaviors. Artificial Intelligence machine learning techniques were used to analyze tractor data, images, and video feeds to develop a library of behaviors associated with safety and risk while operating agricultural machinery.

Agricultural Safety and Health Curriculum: Preparing the next generation of rural nurses. Sue Schuelke PhD, Michelle Ellermeier
This project demonstrated the impact on the practice, attitude, and behaviors of the nursing students following the inclusion of the agricultural health and safety curriculum into the University of Nebraska College of Nursing program.

Investigating Opioid and Alcohol Risk and Misuse Among Rural Agricultural Workers. Christine Chasek, PhD
This project Investigated the feasibility of screening agricultural workers for substance use by administering SBIRT screenings in agricultural work environments and settings rather than a clinic-based setting and determined the risk level of opioid and alcohol misuse among agricultural workers.

Teledermatology and Increasing Access to Care in Agricultural Populations. Dillon Clarey, MD and Jennifer Adams, MD
This project determined the need and acceptance of teledermatology services for agricultural workers in rural regions where dermatologic care is limited or absent. The project provided educational training at health care sites to recognize, diagnose, and treat common skin conditions in this population.

Modeling Improved Access to Health Screening of Agricultural Populations Through Deployment of a Mobile Clinic and Networking with a Rural Health Care Network. Kelley Donham, DVM, PhD
In a collaboration between the non-profit Rural Health and Safety of Eastern Iowa (RHSEI) and a regional health care network, this project developed a model for improved access to primary health screening of rural and farm residents through the deployment of a fully equipped mobile health screening and educational facility. Health care provider staff were trained in agricultural medicine to serve rural and agricultural populations better.

Building A Youth Mental Health Toolkit: Developing crucial resources to support children living and working in agricultural communities. Jana Davidson
This project brought together a national panel of mental health experts to develop a model curriculum that laypeople will use to discuss mental health and stress with youth working in agriculture.

Parkinson's Care for Nebraskans in Agriculture. Bethany Lowndes, PhD
This project evaluated Parkinson's disease signs and disease prevalence in the agricultural community; identified user requirements for rehabilitation engineering and adaptive technology to enable individuals with Parkinson's disease to complete agricultural tasks safely and explored the feasibility of novel modes of early Parkinson's disease deterioration monitoring in the agricultural community.

Improving Agricultural Worker Health and Safety Awareness through Multimodal, Case-Based Physician Assistant Education. Carey Wheelhouse
This project developed a curriculum and an educational model for increasing Physician Assistant (PA) student awareness and knowledge of agricultural health and safety issues; and enhancing communication skills regarding occupational risks and hazards with agricultural patients.

Summary of Seven Central-State Region Injuries and Fatalities Involving Livestock Manure Storage, Handling and Transport Operations: 1975-2019. Mahmoud Nour, PhD
This project classified, analyzed, and summarized all available injury and fatality cases involving livestock manure storage, handling, and transport facilities and equipment in the CS-CASH 7 states region from 1975-2019 and developed evidence-based prevention strategies to reduce the frequency and severity of these incidents.

Gathering Local Data and Building Ag Partnerships to Better Reach Ag Families. Chris Blanke
This project developed and disseminated a model for use by rural public health departments to obtain data on the health and well-being of workers at agricultural businesses and a protocol for directly engaging agribusiness on the topics of stress, substance use, suicide prevention, care for employees after a suicide death, and creating a mental health-friendly workplace.

Agricultural and Occupational Exposures in U.S. Veterans with Rheumatoid Arthritis and Associations with Disease Severity. Bryant England, MD
This project characterized the associations between agricultural exposures with rheumatoid arthritis autoantibody and inflammatory cytokine expression in RA (Rheumatoid Arthritis) patients, stratifying by genetic background. Data were used in the successful application for Veterans Administration research funding.

ATV Aware. Susan Harris Broomfield
This project gathered data from FFA participants regarding their behaviors while operating or riding ATVs. Pre- and post-surveys (immediate and 6-month) measured impact following an interactive session about proper behaviors and laws. Findings were used in the creation of a curriculum guide for FFA and ATV instructors.

Creating Enduring Resources for Farm Safety Education. Jana Davidson
Safety and health professionals were recruited to create unique and effective props for farm safety and health education. Videos (n=25) demonstrate the assembly of the props from start to finish and with designs that meet the needs of individuals with all learning types, including visual, auditory, and kinesthetic. These videos are available on the Progressive Ag Foundation website and the USAg Center YouTube Channel.

Investigation into the respiratory properties of snow molds. Missy Berry
This project tested the hypothesis that snow mold-associated species would incite pathogenic pulmonary responses in agricultural workers and those seasonal changes contribute to the immunogenic properties of the fungal species. A manuscript is in production.

Injury Prevention in Greenhouse and Nursery Workers through Engineering Design Innovation. Katherine Schofield, PhD
This project ascertained injury rates in a nursery/greenhouse worker population using regional workers' compensation (WC) injury claims and payroll data (2000-2017); evaluated comparative risk factors for injury and severity based on worker, job, and injury event characteristics, including text narratives; determined areas of high injury prevention priority and engineering design feasibility; and innovated and tested the efficacy of an engineering intervention to prevent a high priority nursery industry injury.

Evaluation of Medication-Related Agricultural Injury among Missouri Farmers. Kelly Cochran, PharmD
This project determined the extent to which farm-related injuries resulting from hospital admission or emergency department visits were associated with drug-related problems in the farmers' home medication regimen and characterized and measured the frequency of drug-related problems. This work has led to additional work by Dr. Cochran on the agricultural injuries related to worker medication.

Blue Ribbon Outreach. Julie Rother, PhD
This project developed a public health department model for using information technology methods to communicate health, safety, and disaster preparedness information to agricultural workers in rural regions. This model has been presented and adopted in by several rural health departments.

Identifying the sources of stress and prevalence of anxiety and depression symptoms among young farmers and ranchers in the upper and western Midwest. Josie Rudolph, PhD

This project identified sources of stress among young farmers and ranchers in the upper and western Midwest; estimated the prevalence of symptoms of self-reported anxiety and depression among young farmers and ranchers in the upper and western Midwest and evaluated the association between work stress and anxiety and depression among young farmers and ranchers in the upper and western Midwest. These data were used to write a successfully funded USDA (United States Department of Agriculture) mental health grant and will be used as part of the CS-CASH 2022 Competitive Renewal grant process.

Development of ion channel blockers for influenza D virus. Hideaki Moriyama, PhD
This project developed mathematical models for the influenza type D M2 protein behavior based on experimental results. Results demonstrated the initial process of virus uncoating to release the RNA genome into the cell, modeling the opening and closing of the ion channel using a biophysical model, the Boltzmann equation. This project was instrumental in creating background data for federal-level funding applications. Two peer-reviewed manuscripts have been published.

MAPPER Immersion: Developing an Augmented Reality prototype to Protect Lives and Increase Emergency Responder Effectiveness. Bryan Weichelt, PhD
Farm Mapping to Assist Protect and Prepare Emergency Responders (Farm MAPPER) is an interactive, device-agnostic, web-based prototype developed to provide emergency responders with up-to-date information about hazards, resources, and the physical environments of agricultural operations. This pilot project developed an augmented reality version of Farm MAPPER, available on iOS and Android platforms. The application is now part of a 5-year NIOSH-funded study through the UMASH NIOSH Ag Center.

Farmer Evaluation of Agricultural Fatality Messaging: Best Practices for Disseminating Prevention Messages Based on FACE Cases. Stephanie Leonard, MS CIH
Using farmer-led evaluations of existing FACE format fatality investigation reports, hazard alerts, and media articles, this project developed new ag safety and health messaging; and enhanced knowledge about developing and targeting injury prevention messages.

Development of a mobile application for agricultural safety, AgHealth. Joseph Siu, PhD
This project developed and validated the “AgHealth” mobile application. The AgHealth app contains two critical components – balance assessment and education for farm safety. The AgHealth links to important agricultural safety messages from the National Institute for Occupational Safety and Health (NIOSH) and CS-CASH and provides essential information about maintaining a good balance and preventing falls while working in agriculture. The mobile app is currently being evaluated by farmers and their healthcare providers.

Modeling the role of weather patterns and grain quality in predicting on-farm engulfment and entrapment. **Dr. Gretchen Mosher**, **PhD**
This ongoing project is exploring a new direction for predicting on-farm grain engulfment and entrapment and developing the basis for an alternative approach to an existing intervention strategy.

Gasoline Safety on the Farm - Developing a strategy to reduce the frequency and severity of gasoline-related explosions, fires, and burns involving the agricultural community. Jane Allsup
This project is developing an evidence-based strategic plan designed to reduce the frequency and severity of gasoline-related explosions, fires, and burns on farms, and to create educational materials around this topic.

Sleep in Ag: Investing in the feasibility of measuring sleep quantity and quality in agricultural workers. Susan Harris
This ongoing project is collecting data to determine the need, value, and efficacy of potential educational interventions to improve sleep quantity and quality in agricultural workers to reduce the risk of accident and injury. This unique project will fill a critical research gap in knowledge of sleep patterns in ag populations.

Investigation of contaminants in the drinking water of agricultural workers in rural Nebraska. Balkissa Ouattara, M.D., MPH
This ongoing project will fill spatial and temporal gaps in available ag worker drinking water quality data by monitoring surface and groundwater quality within rural areas with a high incidence of water contamination.

Healthy Hearing, Healthy Aging in Agriculture. Jan Moore, PhD
This ongoing project is documenting patterns of cognitive status in aging agricultural workers to determine the relationship between cognitive status, hearing status (degree of hearing loss), and age in agricultural workers.

Newly Funded Projects in 2021

- Exposure to Zoonotic Diseases in Agricultural Workers of the Great Plains: An evaluation of real and perceived risk and mitigation behaviors in rural agricultural workers of the Great Plains. Mystera Samuelson, PhD
- The Classroom Component: A hands-on experience of agricultural safety and health education aimed at rural youth. Jana Davidson
- The Ability of Adult Female Operators to Reach Agricultural All-Terrain Vehicles Controls. Farzaneh Khorsandi, PhD
- Evidence-Based Training for Employees Exposed to Hazards Associated with the Storage, Handling, Transport, and Processing of Agricultural Wastes. Mahmoud Nour, PhD
- Development of CRC Screening Education Material for Agricultural Workers. Shinobu Watanabe-Galloway, PhD

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