



# NORTHEAST CENTER

FOR OCCUPATIONAL  
HEALTH AND SAFETY

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## 2021 YEAR IN REVIEW

*"If we are to make research relevant and actionable, farmers', loggers' and fishermen's perspectives must be an essential part of the equation."* page 1

- Dr. Julie Sorensen

## OUR MISSION

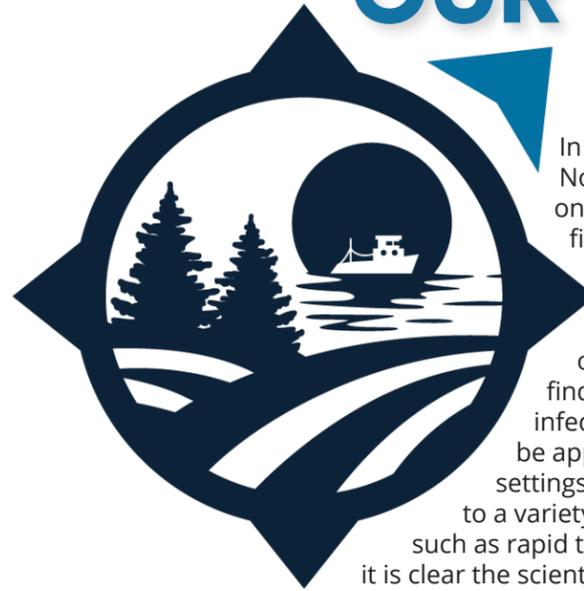
Serving a 12-state region from Maine through West Virginia, the Northeast Center conducts health and safety research, education and prevention activities in the high-risk areas of agriculture, forestry and commercial fishing.

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The Northeast Center for Occupational Health and Safety (NEC) is one of 11 agricultural centers across the country designated and funded by the Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health (NIOSH).

## MESSAGE FROM OUR DIRECTOR



In the past year, the Northeast Center has not only been challenged to find ways to address the myriad hazards that exist on farms, fishing vessels and logging operations but also to find ways that COVID-19 infection control practices can be applied to these unique work settings. Health research has led to a variety of pandemic solutions, such as rapid testing and vaccines. Yet, it is clear the scientific community needs to share information about how we know what we know and why it is important. The pandemic has also highlighted the need for scientists to understand public health and safety issues from the community's perspective, so that we can more effectively translate what we know into action.

Even the most brilliant health and safety solutions will do little good if people do not embrace them. The public needs to be aware of effective health and safety solutions, how to access these solutions, and how to implement them. In the coming years, we hope to make this easier by launching the Northeast Center Clear Communications Campaign. The campaign will build on promising communication strategies initiated in 2021. It will also include a number of novel approaches for improving staff expertise and dialogue with agricultural, forestry and fishing (AgFF) communities in the years ahead. Here are just a few examples of our efforts to improve research transparency and communication:

**Fishing Forward Podcast**-[page 4] This national podcast will bring health researchers and commercial fishermen together to discuss how diet, sleep, fitness and stress can impact the health of fishermen. It will include recommendations for improving worker wellbeing in commercial fisheries operations.

**Farmworker Fotonovelas**-[page 28] Salvador Saenz has been working with the Northeast Center for several years, combining stories and illustrations that show workers how to effectively identify farm

hazards and safety solutions. Saenz received the NYS Agricultural Society's 2021 Farm Safety Award for his efforts to develop bilingual farm safety materials tailored specifically to farmworkers.

**Scientific Dialogue Gatherings**-[Planned for 2022]-Trust has been identified as one of the most important factors in the public's willingness to adopt recommended prevention measures. Building scientific literacy and sharing research outcomes helps to democratize "expert knowledge." In the coming years, the Center will organize online sessions between scientists and AgFF communities to discuss the research process. Community members will be invited to ask questions and share their experience and knowledge of workplace health and safety.

**Alda Center for Communicating Science Workshop**-[Planned for 2022]-Our research staff will participate in training to help identify opportunities for building trust and increasing our understanding of AgFF community perspectives. These sessions will emphasize the need to appreciate a variety of perspectives and to identify opportunities for honest, productive conversations around science, research and health solutions.

In keeping with our efforts to improve the way we communicate with AgFF populations, we would like to extend an open invitation to all AgFF workers, business owners and stakeholders to reach out and communicate with us. If we are to make research relevant and actionable, farmers', loggers' and fishermen's perspectives must be an essential part of the equation. To share your ideas, concerns or views, just visit our website ([www.necenter.org](http://www.necenter.org)) and email us, or give us a call at 1.800.343.7527. We look forward to hearing from you and hope you enjoy the stories and updates provided in this year's edition of the Year in Review.



*Julie Sorensen*

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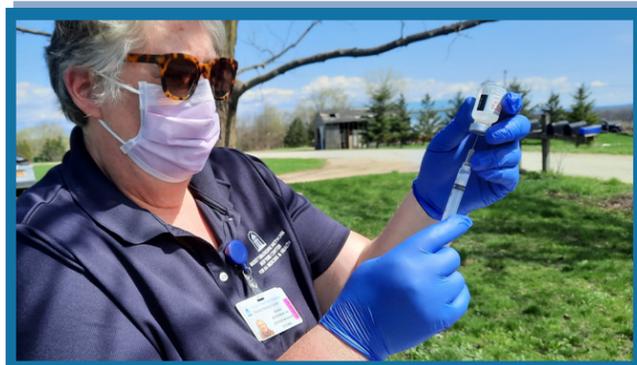
# HIGHLIGHTS

## COVID-19

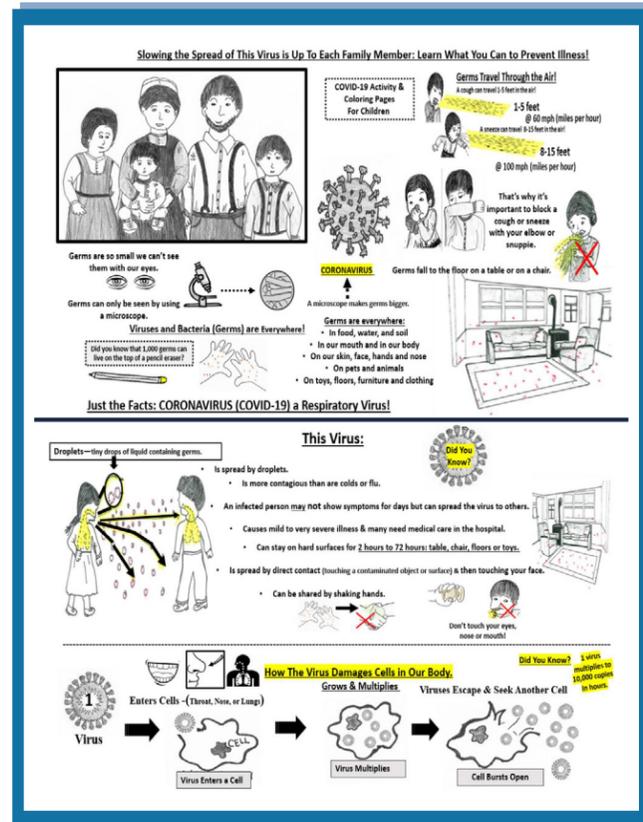
### Bringing COVID-19 vaccines direct to farms

In New York State, COVID-19 vaccines started to become available just as the growing season had kicked off. Our solution was to bring vaccine clinics to farms.

“Working in public health, you prepare for community emergencies through drills,” said coordinator Nicole Blanchard, DrPH. “These drills are typically held in big open spaces—a gymnasium or a parking lot. But we had to set up in just about any corner of a farm you can imagine. On one freezing cold and snowy day, we were jammed into a 10 by 10 foot space in the back of a milk house. Another day we were in the back of a barn with people working on tractors and cows wandering by. We can plan, but you can only prepare for so much.”



Nearly 200 workers received vaccines through this initiative before availability improved in rural communities.



### COVID-19 education materials for Anabaptists reaches thousands

With a small grant from the Northeast Center, Penn State Extension educator Kay Moyer created a two-page children’s coloring book and a 51-page informational booklet about COVID-19 specifically for Anabaptist communities. More than 23,000 copies of the publications have been distributed to “plain people” communities throughout the Northeast.

### From Bad to Worse: The impact of COVID-19 on Northeast farmers, loggers and commercial fishermen

To understand how COVID-19 was affecting the populations we serve, we surveyed each respective industry. While a common theme among all three was that the pandemic was making difficult circumstances worse, each survey uncovered specific situations or events that compounded the strain, such as labor shortages or loss of income due to shifts in sales and product distribution channels. Some were unique to the Northeast, such as a paper mill explosion in Jay, Maine that magnified the pandemic’s impact on the logging industry. You can read more about the COVID-19 impact findings for each industry as follows: *Agriculture, page 15, Forestry, page 20, Commercial Fishing, page 17*

### In person or through Zoom, our educators adapted to keep safety trainings available

To ensure that there was never a pause in safety training delivery, our agricultural educators remained flexible through ever-changing COVID-19 transmission conditions in the past year.

In fall of 2020, educators used farms’ locations, state “cluster zone” maps and county positivity rates to make travel decisions on a case-by-case basis. By December, a region-wide spike in COVID-19 cases resulted in the temporary suspension of all in-person training activities. During this time, educators relied on video teleconferencing to deliver safety training to any farms unwilling or unable to postpone. When in-person training resumed in February, groups were initially limited to 15 people and masks were required. These restrictions eased as case numbers improved and vaccination rates increased.





# HIGHLIGHTS (CONT.)

## INNOVATION

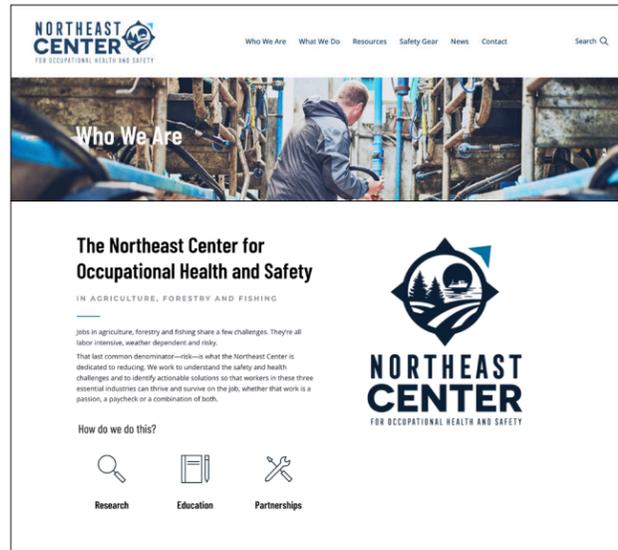
### New podcast to expand reach with information, stories and ideas

As part of our ongoing effort to more effectively and dynamically connect and share information, we have begun laying the groundwork for a podcast for commercial fishermen titled “Fishing Forward.”

The podcast will focus on maximizing productivity, health and profitability for fishermen and seafood harvesters. Topics will include sleep deprivation, pain management and crew retention among others. It also will include practical solutions for staying healthy and productive.



Dr. Philip Loring and Dr. Hannah Harrison, the creators and producers behind Coastal Routes Radio’s Social FIShtancing podcast, are producing the bi-monthly episodes. Additional partners are: Alaska Marine Safety Education Association, Fishing Partnership Support Services, NIOSH, Oregon University, Maine Coast Fishermen’s Association, the Southwest Ag Center and the Pacific Northwest Agricultural Safety and Health Center, and University of Guelph. The podcast will launch in mid-January, 2022. Look for information on [coastalroutes.org/fishingforwardpod](http://coastalroutes.org/fishingforwardpod).



### Delivering a new look and a new voice

The Northeast Center launched a redesigned website in March, with a new logo and overall look for the organization. The new website also adopted the CDC-recommended plain communication approach for sharing health-related information.

“When I started as a research assistant, the team I joined was strategizing to help boost lagging enrollment in a study. I noticed we didn’t have a website designed for loggers, farmers or fishermen to learn about what we do,” says Maryellen Driscoll, the Northeast Center’s marketing and communications coordinator. “It’s hard to build relationships with people if they don’t see themselves in the work you do. The website redesign was all about improving upon that.”

The new site features straightforward text and colorful, lively photos, testimonials and videos of people on the job—milking cows, pulling up lobster traps, or felling trees deep in the Maine woods.

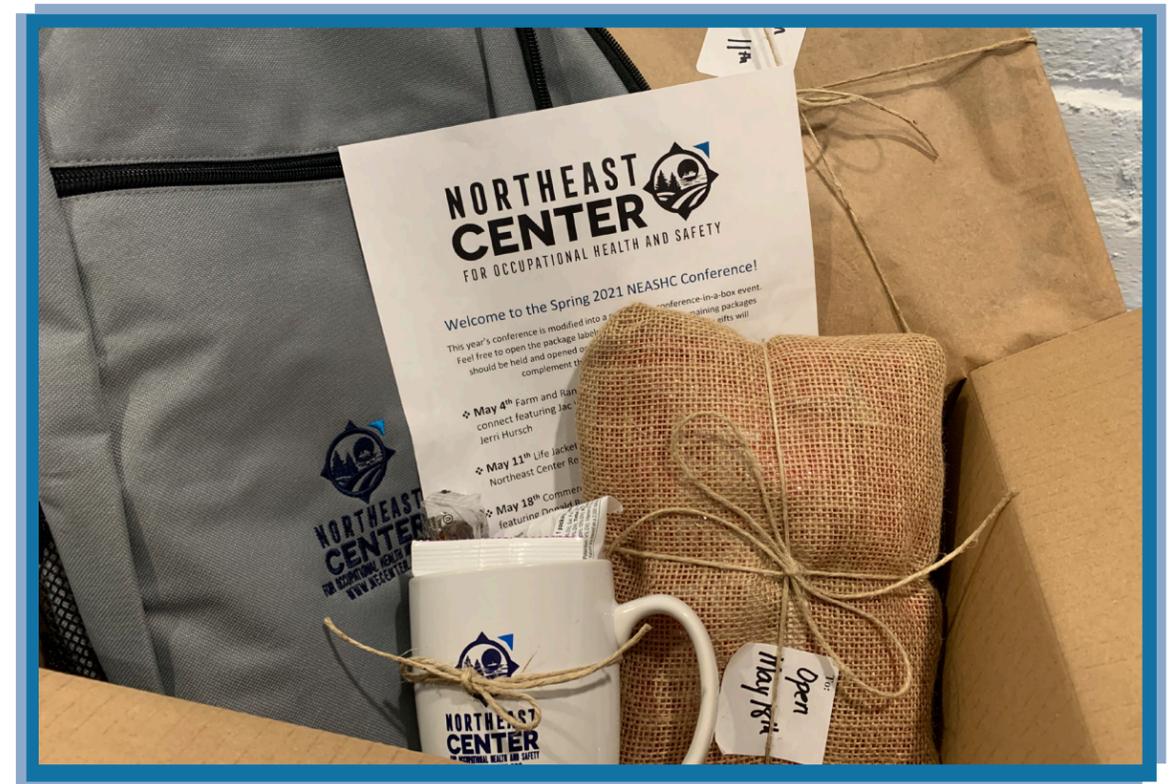
[Check us out at necenter.org](http://necenter.org)

### “Conference in a Box” generates out-of-the-box ideas for trainers

Hoping to hold members’ attention on Zoom, our Northeast Ag Safety and Health Coalition reconfigured its annual one-day conference into four, one-hour “Conference in a Box” virtual sessions in May. (Before the pandemic, the group met annually in person.)

The attendees—25 safety educators representing eight Northeast states—received boxes containing wrapped “surprises” in advance for each of the following one-hour weekly session topics. The boxes contained small, education-related items such as a lockout/tagout kit. As a bonus, in the final session on tips and tricks to recording safety videos using a smartphone, one member from each coalition state received a package containing start-up video recording accessories.

In post-event surveys many of the attendees said they actually preferred the once-a-week, one-hour intensive sessions over full and multi-day conferences. For information about becoming a member of the coalition, e-mail [info@necenter.org](mailto:info@necenter.org).





# HIGHLIGHTS (CONT.)

## COLLABORATION

### Long-term collaboration with Mennonite community facilitates unique farm fatality investigation



The death of an 11-year-old Mennonite boy fatally entangled by a silo sweep auger catalyzed a first-of-its-kind partnership between the Northeast Center, the New York Center for Agricultural Medicine and Health (NYCAMH) and New York State Department of Health's Fatality Assessment and Control Evaluation (NY FACE) program in July.

Agricultural safety specialist Jim Carrabba, who had provided many years of safety services to the Mennonite community, was instrumental in arranging the collaborative, fact-finding investigation into how the tragedy occurred and how such an incident might be prevented in the future.

"Knowing an investigation might save lives certainly mattered to the community," said Northeast Center Deputy Director Erika Scott, PhD. "But it was the trust built over a decade of partnership between Jim (Carrabba) and a community committed to farm safety that convinced them to go forward." NY FACE is not an enforcement program; participation is voluntary.

NY FACE is developing a report to highlight prevention strategies. The three organizations will work together to develop culturally appropriate educational materials to help prevent future incidents.

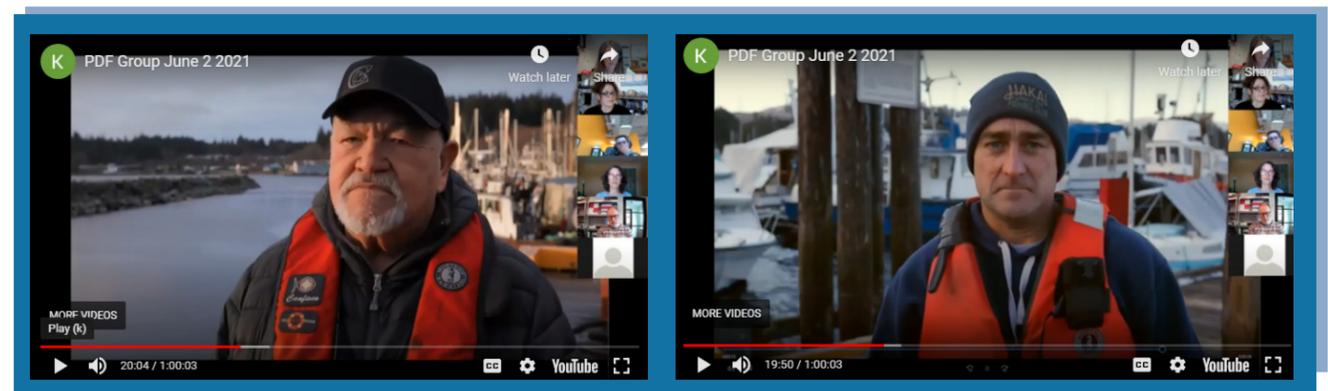
### Building capacity for program evaluation

In response to the Evidence-Based Policymaking Act (2018) the National Institute of Occupational Safety & Health (NIOSH) began building its capacity for program evaluation. As part of that process, Research Scientist

Pamela Tinc, PhD led an effort with three other NIOSH Agricultural Research centers to conduct a "contribution analysis" of NIOSH tractor rollover intervention efforts. Tractor rollovers cause more fatalities in farming than any other type of incident, and several NIOSH centers have worked for years to address these preventable injuries. The question is, have these efforts worked?

Contribution analysis is a useful method for understanding whether a desired change occurred because of an action or actions taken to make that change occur. In the examination of NIOSH tractor overturn programs, contribution analysis researchers have gathered a great deal of evidence, which will be used to explore whether these programs have indeed had their intended impact.

### Center forms international working group on increasing "lifejacket" use in commercial fishing



At the 2018 International Fishing Industry Safety and Health Conference (IFISH5), one session yielded so much interest that presenters and attendees asked how they might keep the conversation going. Its title: "Changing commercial fishing personal flotation use behavior: what can we learn from efforts to address the most important safety technology adoption challenge of our time?" In response, the Northeast Center organized follow-up meetings that, in December 2020, led to an international personal flotation device (PFD) work group that meets quarterly via videoconferencing. Consisting of 88 commercial fishing researchers, safety trainers and other stakeholders from around the globe, the group seeks to increase PFD use in commercial fishing by building connections, sharing resources and furthering collaborations. Recordings of presentations and discussions may be found on the IFISH website: <https://ifishconference.ca/pfd-work-group/>. To join or learn more about this working group, contact [rebecca.weil@bassett.org](mailto:rebecca.weil@bassett.org).



# SURVEILLANCE

## ICD-10-CM – OIICS CROSSWALK Agriculture, Forestry, and Fishing (AFF)

### PAINTING A CROSSWALK BETWEEN DATA AND DECISIONS

#### 2021 Publication

The development of a machine learning algorithm to identify occupational injuries in agriculture using pre-hospital care reports.

Scott, E., Hirabayashi, L., Levenstein, A. et al. Health Inf Sci Syst 9, 31 (2021).

Using hospitalization data for injury surveillance in agriculture, forestry and fishing: a crosswalk between ICD10CM external cause of injury coding and The Occupational Injury and Illness Classification System.

Scott, E., Hirabayashi, L., Graham, J. et al. Inj. Epidemiol. 8, 6 (2021).

#### Learn More

For more detailed information on this method, visit <https://necenter.org/portfolio/surveillance/>.

Understanding the root causes of injuries to farmers, loggers and fishermen is critical to making their jobs safer. While systems exist to track most workplace injury and illness data at state and regional levels, they do not catch all incidents that take place in work settings, particularly in agriculture, forestry and commercial fishing.

We have been working to improve tracking of occupational injuries in these three industries with advanced computer methods, including machine learning, that can sift through large volumes of electronic health data.

Machine learning is a form of Artificial Intelligence (AI). By providing a computer algorithm with examples of data we are seeking—such as a tractor rollover injury—it makes predictions about what other records might also be of interest to us. In the past five years, the Northeast Center has developed a machine learning algorithm based on Naïve Bayes' classifiers that dramatically reduces the time required to identify and track incidents in pre-hospital care reports that may be related to agriculture, forestry or commercial fishing.

By using the machine learning algorithm rather than a keyword search strategy alone, we reduced the volume of cases that required visual inspection by nearly 70 percent. Additional testing showed the algorithm performed well in new datasets, making it a sustainable and cost-effective way to understand injury trends in agriculture.

Beyond machine learning, the Northeast Center developed data “crosswalks” for quickly identifying agricultural, forestry and fishing injuries in hospital records and translating those injuries into statistics. Both ways of finding injuries help to prioritize future programs and interventions in these industries.



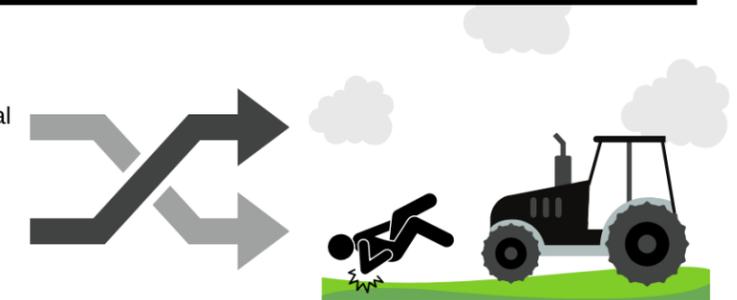
Hospital records, which use ICD-10-CM codes to describe injuries, offer a promising source of information about occupational injury trends if connected to the OIICS system.

#### ICD-10-CM

ICD-10-CM improves options for describing injuries using 6,810 external causes of injury codes (E-codes)

#### OIICS

Characterizes work-related injury and illness incidents



### STEP 1

Review E-codes for AFF relatedness. 263 AFF E-codes identified

### STEP 2

Assign causes of injury and type of event/exposure OIICS codes to the 263 E-codes

### STEP 3

Apply crosswalk to hospital records from Northeast states



Industry	True/Suspected	MA	VT	NY
	True	128	93	655
	Suspected	958	506	3536
	Suspected	199	132	717
	Suspected	405	42	1103

### MEET THE STUDY TEAM



**Erika Scott, PhD**  
PRINCIPAL INVESTIGATOR



**Liane Hirabayashi, MA**  
SENIOR RESEARCH COORDINATOR



**Paul Jenkins, PhD**  
CO-INVESTIGATOR AND BIOSTATISTICIAN



**Nicole Krupa, BS**  
RESEARCH INFORMATICS ANALYST



**Alex Levenstein, BS**  
MACHINE LEARNING CONSULTANT



**Cristina Hansen Ruiz, PhD**  
RESEARCH ASSISTANT



[www.necenter.org](http://www.necenter.org) | 800-343-7527 | Read the full article at: <https://rdcu.be/cfdKO>

# FARMING



## NUDGING

Applying what we know about how people think (or don't think) to improve farm safety



The dairy industry has more worker injuries and deaths than any other type of farming. In an effort to create safety solutions that are affordable, easy to implement and that increase efficiency, the Northeast Center launched the [Dairy Safety Nudging Project](#).

The purpose of a “nudge” is to adjust the work environment or how a task gets done in ways that redirect or nudge people to do the right thing, the safer thing, sometimes without having to even think about it. Unlike traditional ways of promoting work safety, such as training and informational materials, nudging

doesn't assume that people are paying attention or that people will put what they've learned into action.

Northeast Center Director Julie Sorensen proposed the project after seeing how nudging projects were successfully trialed on a pig farm and on a dairy in Denmark. A grant by the New York Farm Viability Institute provided funding for the project, which will trial three cycles of “nudging projects” projects on New York dairy operations. An international team is advising on the process.

To date, the Center has implemented one project. Evaluation of the project is still in progress, yet the research has already generated attention on a national scale. The National Milk Producer's Federation invited Sorensen in July 2021 to present on nudging at the National Dairy FARM Evaluator Conference. Another presentation on the nudging project—“Incorporating Behavioral Science Insights into Agricultural Programs”—is available online at [nyfvi.org](http://nyfvi.org).

*“If you want to encourage someone to do something, make it easy.”*

Richard Thaler, winner of the Nobel prize in economics and co-author of “Nudge: Improving Decisions about Health, Wealth and Happiness.”

The Dairy Nudging Project seeks out creative, affordable solutions that increase efficiency and improve safety.

Nudging solutions focus on people's tendency to:

- ▶ do what's easy
- ▶ take shortcuts
- ▶ rely on habit
- ▶ have a short attention span
- ▶ do what others do

By adjusting the work to make it easier, quicker or more cost-effective, nudges stand a better chance of changing behaviors.

## STEPS TOWARDS CREATING THE NUDGE

01

### ANALYZE THE PROBLEM

- Break down the behaviour
- Identify key factors to modify

02

### ALIGN WITH NUDGING STRATEGY

- Look at nudging strategies
- Align strategy with key factors

03

### TAILOR AND EVALUATE

- Customize to workers and the environment
- Evaluate outcome- did it work?

## MEET OUR INTERNATIONAL NUDGING TEAM



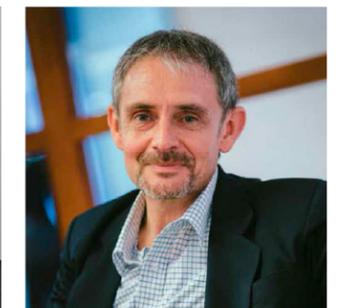
Julie Sorensen  
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Helle Birk-Domino  
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Denmark



John McNamara  
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and Food Development  
AuthorityPiltown, Ireland



Stephan Van den Broucke  
Psychology of Public Health and  
Aging, Universite Catholique De  
Louvain, Belgium

# FARMING (CONT.)



## Nudging project 1

### Tapping into the competitive spirit of a soccer-savvy farm crew



Colleen Pank operates an 800-head dairy farm in New York, with her son Dustin. Through on-farm discussions with Pank, the herd manager and other workers, our nudging team identified one of the farm's most pressing needs—better communication between the day and night milking crews—as a good candidate for a nudging strategy.

Failure to communicate effectively between crews alternating milk shifts meant issues were not always being addressed in a timely manner. This problem had already resulted in product loss and had the potential to affect worker safety as well.

Using the nudging creation process, the team developed a communication system designed to be fun, eye-catching, rewarding, social and easy to use,

thus subconsciously encouraging workers to share information with each other.

“Learning that Milk Train’s workers enjoy playing soccer in their free time prompted the idea of creating a cross-shift communication board that looks like a soccer field,” Sorensen explains.

The day shift and night shift teams earn points by using the colorful, bilingual board. Items for attention with the cows (vacas), machinery (maquinaria), materials (materiales) or other (otro) can be written into open blocks, or a box for “Nothing to Report” can be checked off. The board also has space for questions from workers. The points are recorded on a scoreboard.



“The crews thought the board was cool,” Pank says. “They play a lot of soccer on nearby fields and understand the value of being a team on the field and at work. Plus the board is easy to use and connects with who they are as people.”

To learn more about the cross-shift communication board project implemented at Milk Train, view the video at <https://necenter.org/portfolio/dairy-safety-nudging-project/>.

## Demand for life-saving ROPS continues to exceed funding availability

The National ROPS Rebate Program (NRRP) provides rebates for approximately 70% of the cost to purchase and install a ROPS (Rollover Protective Structure; rollbar) kit. Several state programs halted funding in 2020, which resulted in many farmers being waitlisted for rebate assistance. Once states began to open, so did funding streams. Massachusetts, which started a waitlist in 2019, provided \$10,000 in funding for the ROPS program in May 2021.

The NRRP is currently working with three states that have high tractor rollover rates—Kansas, Iowa and Missouri—to measure how a media campaign might raise awareness of and interest in ROPS rebate funding in these states. New York’s program has demonstrated cost-effectiveness of ROPS rebate investments, saving NY State close to \$4 million over a decade.

The NRRP’s administration is funded by NIOSH and facilitated by the Northeast Center. Program administration is available at no cost for states that wish to provide rebates to their farmers.

## Tractors are the leading cause of death on a farm; the most frequent incidents are rollovers.

**1 in 7**  
tractor overturns  
result in permanent  
disabilities

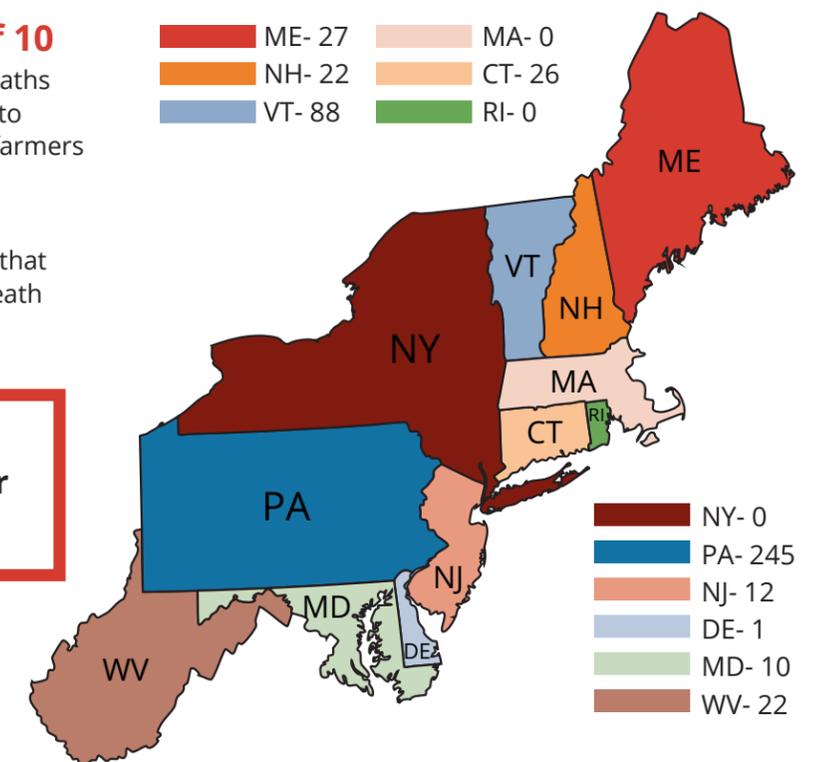
**8 out of 10**  
rollover deaths  
happen to  
experienced farmers

**99%**  
of tractors with ROPS and a seatbelt that  
overturn do not result in injury or death

**There are currently  
1,741 farmers waiting for  
ROPS in 48 states.**

## NE farmers on ROPS rebate waitlist

ME- 27 MA- 0  
NH- 22 CT- 26  
VT- 88 RI- 0



# FARMING (CONT.)



## Applying engineering controls and best practices to reduce the risk of grain bin entrapments



About 35 grain bin-related deaths occur each year, with additional cases suspected but not reported. Most happen when a person is located inside a grain bin or structure while equipment is running. A person may enter the bin to loosen crusted, spoiled, or frozen grain and become helplessly trapped in flowing grain in less than five seconds and completely submerged in less than 30 seconds.

In 2018, the American Society of Agricultural and Biological Engineers published the Grain Bin Access Design Safety standard. This standard recommends that manufacturers begin designing structures to accommodate a bin entry lifeline system. The system includes two anchor attachment points, with one located near the roof peak and the other near the roof access. Each anchor point must support a

minimum ultimate load of 2,000 pounds.

Through the Northeast Center grant, Penn State University researchers combined computer modeling and experimental measurements to examine safe use of anchor points on a grain bin manufactured before 2018. The researchers compared measurements to a grain bin model created in a computer-aided design and engineering program to estimate additional scenarios.

Based on the research findings, the project team developed the recommendation that before installing a lifeline and anchor point system on any grain bin—no matter its age—a consultation from the manufacturer or an evaluation by a structural engineer is necessary.

“Over time, a bin may have been modified, damaged, or have signs of degradation—which is the case for many on-farm grain bins. So we recommend that it be inspected and evaluated by a structural engineer,” says the project’s principal investigator Linda Fetzer, Extension Associate at Penn State University.

The research team is developing inspection guidelines for structural engineers to help determine whether an on-farm grain bin can safely accommodate a lifeline and anchor point system.

The researchers’ next steps are to develop training materials based on its findings. They also want to explore emerging technologies and best practices to reduce the need to enter grain bins altogether.

## COVID-19 Farmerworker Survey

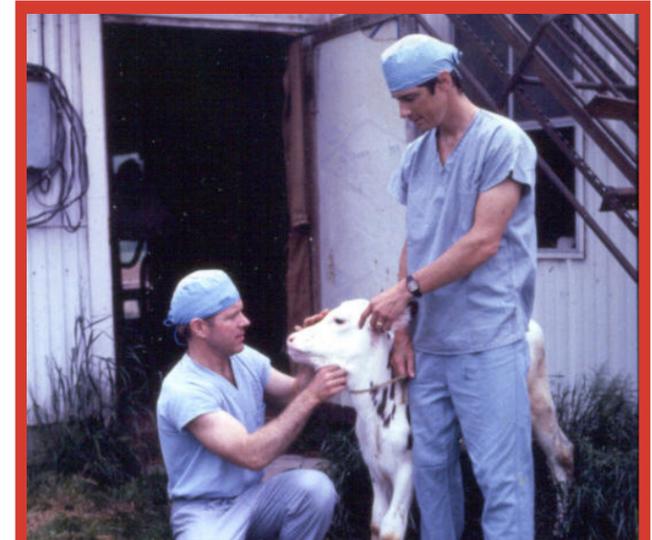
To understand the pandemic’s impact on farmworkers and to improve COVID-19 prevention efforts, the Northeast Center and the Western Center for Agricultural Health and Safety developed a survey for workers. In the Northeast, 102 farmworkers completed surveys (50 in Spanish, 52 in English). Main findings were as follows:

- a high rate of respondents reported using COVID-19 related personal protective equipment (PPE)
- 12% of respondents reported pre-existing conditions that could lead to more severe health impacts if they contracted COVID-19
- almost half worried about getting enough work hours
- one in five were concerned about having enough income to pay bills
- most depended on the internet or their employer for preparedness training and PPE

## John May Farm Safety Fund



The John May Farm Safety Fund provides up to \$5,000 in matching financial assistance for small- and mid-sized farm operations in New York to make safety improvements. The cost-sharing program was modelled after the ROPS Rebate Program (p. 13).



Dr. John May founded the New York Center for Agricultural Medicine and Health in the early 1980s with Bassett colleague Dr. David Pratt to improve the health and safety of New York farmers. The John May Farm Safety Fund honors his profound dedication to the agricultural community.

The goal of the program is to help small and mid-sized farms, which face slim profit margins, invest in needed safety repairs and upgrades. Now in its sixth year, the John May Farm Safety Fund program is reaching more and more farmers.

The program is successful because it places the farmer’s unique needs at the center of the process and provides ongoing assistance from staff throughout the project. The positive relationships built with farms has influenced many to make further safety improvements, such as seeking technical assistance, purchasing PPE and enrolling in the ROPS rebate program.

As of August 2021, the program has awarded more than \$545,000 in grants to 141 farms (average award of \$3,700). More than 65% of the projects are related to animal handling safety for cattle, sheep and other livestock, 15% focus on electrical hazards and 10% address general farm safety.

As the John May Farm Safety Fund program continues to grow and reach more farmers, the staff are working to ensure the program’s financial sustainability by securing a stable, diversified funding portfolio.

# FISHING



“MY LIFE IS MY HEALTH IS MY LIFE”  
CAPTAIN, COMMERCIAL FISHERMAN, ALASKA

## Sleep Deprivation at Sea



On a mid-Atlantic trawl out of North Carolina, Robert and Jim Ruhle volunteered to trial different wearable devices to track their sleep and provide information on whether boat motion impacted the devices' data collection.

Hard work and little sleep is standard in commercial fishing. Yet little research has been done on how sleep deprivation affects fishermen or how they might manage the effects.

To change this, the Northeast Center is collaborating with fishermen in Alaska, Oregon and the Northeast to better understand their concerns about sleep deprivation and its possible effects on their health and safety.

The project—“Assessments of Sleep Deprivation and Associated Health and Cognitive Impacts in Commercial Fishermen”—is funded through a grant from NIOSH and the U.S. Coast Guard. Researchers and trainers from the Alaska Marine Safety Education Association (AMSEA), Oregon University and George Mason University are also participating in the project.

Wearable technology that measures quantity and quality of sleep on commercial fishing boats is being tested also. Fishermen are being provided access to multiple devices, each with different wear configurations, to identify which are most accurate aboard a pitching and rolling boat as well as safe and comfortable to wear while fishing. This trial is meant to identify potential solutions for optimizing sleep while fishermen are working at sea.

## Lifejackets for Lobstermen: the sequel



Owen Linehan of Chatham, MA, tries on the Stormline flotation bibs he won in a PFD raffle that takes place at each FPSS safety training class. Safety Instructor, Russell Kingman, at left, remarked, “Owen was psyched...(the bib pants) fit great and give him the lifesaving buoyancy he needs, without the bulk of an old-fashioned orange PFD!”

In 2021, the Northeast Center transitioned its “Lifejackets For Lobstermen” project to Fishing Partnership Support Services (FPSS), a non-profit that brings critical services and programs to more than 20,000 Northeast fishing families. FPSS has integrated the lifejacket van into their safety trainings and expanded the program to include all fisheries.

During FPSS' hands-on trainings, fishermen learn how to select a lifejacket that fits their needs.

Fishermen who attend trainings can then purchase a lifejacket from any retailer and request a rebate from FPSS for 50% of the total cost.

## Testimonial | A close call



Rolf Winters with his wife after purchasing his PFD at the Lifejackets for Lobstermen vans in 2019.

*“Two weeks ago I was going out from the front of my house to my mooring in my skiff. The wind was pushing me back on shore so I stood up to push myself away from the shore. As I stood up the skiff tipped and I fell overboard. As I was falling an oar bounced up and hit me in the forehead with considerable force.*

*I did not get knocked out but I was seeing stars for a bit. The good news was that I was wearing my inflatable life jacket which I purchased from the lifejackets for fishermen project.*

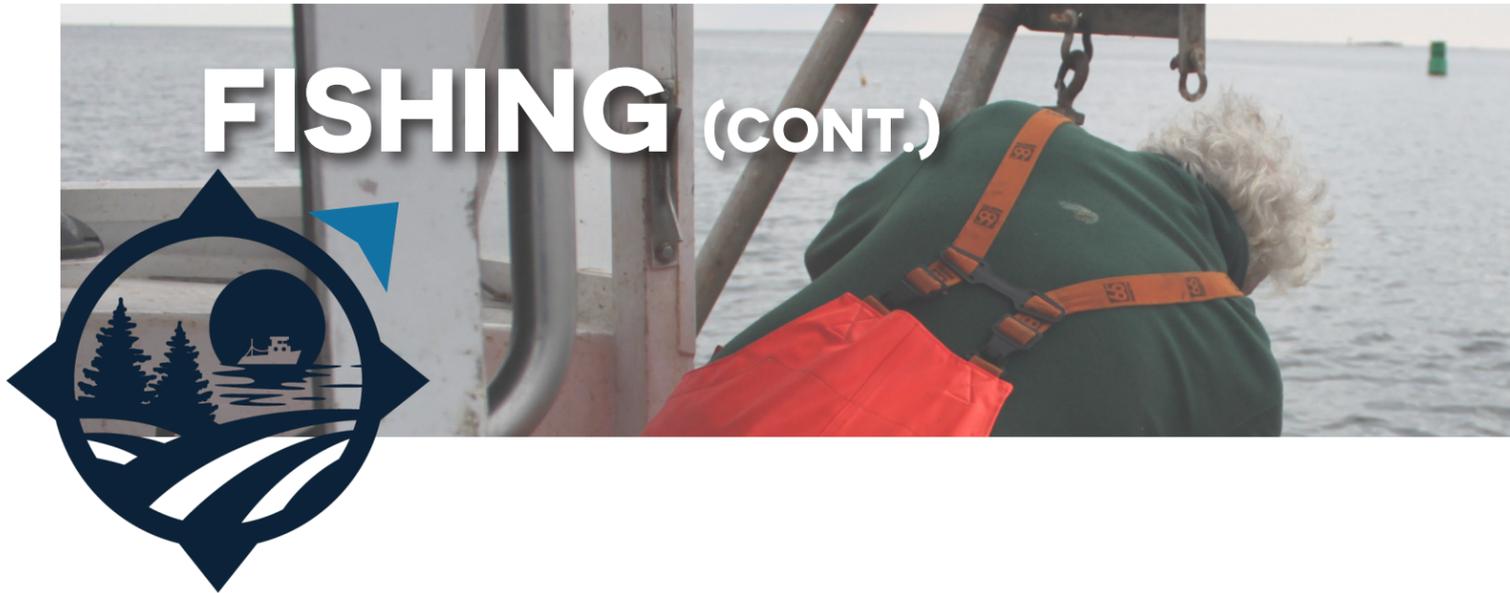
*The jacket inflated as designed and supported me face up in the water. If I had been knocked out, the jacket would have saved my life. I am a good swimmer but without a life jacket I would have drowned if unconscious. I never used to wear a life jacket until the jackets were offered to lobstermen at heavily discounted prices. Since I purchased it, I always wear it. They work.”*

*Rolf Winters, South Thomaston, Maine*

## COVID-19's impact on commercial fisheries workers

In the fall of 2020 researchers at the Northeast Center collected first-hand accounts from fishermen, fishing industry experts, health and safety advisors and advocates regarding COVID-19's effect on the Northeast fishing community. In a commentary published in the *Journal of Agromedicine*, they describe the immediate and expansive impacts of COVID-19 on fisherman's health and well-being. The economic impact of market disruptions and logistical challenges of protecting workers on fishing vessels is also discussed. Recommendations for providing much-needed support for commercial fishermen in light of the pandemic are also offered. To read the full text, go to <https://doi.org/10.1080/1059924X.2020.1815617>





### Testing automated claw bander to protect Northeast lobstermen from hand and wrist injuries

Commercial fishermen are at high risk of developing musculoskeletal disorders. Lobstermen in the Northeast handle tools and equipment that require forceful movements, repetitive motions, and awkward postures associated with pain and injury. One such task is the repetitive task of banding lobster claws. Previous research suggests that simple tool improvements and better technology could literally ease the pain.

Scott Fulmer, PhD, a researcher in the Biomedical Engineering Department of University of Massachusetts Lowell, recently completed a study comparing the muscle activity and wrist movements of lobstermen banding claws with a handheld tool and with a fully automated bander in which lobster workers insert a lobster's claw into a machine. The pneumatic bander showed potential in improving lobstermen body pain and reducing risk of injury, as well as saving work time for fishermen in the course of a normal day's work.

Fulmer's research on the claw banders and opioid overdoses in the fishing industry was funded through the Northeast Center. The prototype was developed by Alliance Rubber, a small, woman-owned American manufacturer founded in 1923.

### Fishermen from two MA port cities found to be 4x more likely to die of opioid overdoses than non-fishing peers

A study of two Massachusetts cities with large fishing Industries found that residents who worked in commercial fishing were four times more likely to die from accidental poisonings, chiefly opioid overdoses, than non-fishing residents. In those cities, the findings suggest that opioid addiction and overdose death may be consequences of all-too-frequent job-related injuries in fishing, followed by treatment with prescription painkillers, resulting in addiction. The authors advocate for policy that prioritizes injury prevention in commercial fishing as a way to reduce opioid overdose deaths among commercial fishermen.

Commercial fishing as an occupational determinant of opioid overdoses and deaths of despair in two Massachusetts fishing ports. Fulmer S, Jain S, Kriebel D. 2000-2014. *New Solutions: A Journal of Environmental and Occupational Health Policy*. Jun 22 2021.

### Maine Logger Health & Safety Study's finds loggers' health a key priority for future efforts

Recent data show the logging profession to be 20 times more fatal than the average American job. Northeast logging, however, has become significantly safer now than it was decades ago. Much of this change has been attributed to an increase in forest mechanization.

The nature of logging dramatically changed when workers shifted from felling trees with chainsaws to operating heavy logging equipment from an enclosed cab.

Today, the majority of Maine's logging workforce is mechanized. Our research has shown that cardiovascular risk factors pose a significant concern to the mechanized workforce. The sedentary nature of heavy equipment operation, extremely long work days and commutes, limited food choices and lack of wellness opportunities in rural areas all contribute to the "cards being stacked" against loggers' cardiovascular health.

The Maine Logger Health and Safety Study found that nearly half (46%) of loggers screened were in stage II hypertension and another third (35%) were in stage 1 hypertension. The mean body mass index (BMI) of this same group was obese at 30.6 (St. Dev 4.9). Statistically, the 75 loggers who participated in the health screenings were similar to the nearly 400 Maine loggers in the full study in terms of age, gender, self-reported injury/illness, musculoskeletal pain, medical insurance coverage,

workers' compensation filings, commute time and work hours.

We look forward to working with the industry to find practical ways to improve the overall health of loggers in the Northeast. For more information about the Maine Logger Health and Safety study, visit [necenter.org](http://necenter.org) or follow us on Facebook @MaineLoggerHealthSafetyStudy.

### Trialing wearable sensors deep in the Maine woods to test loggers' cardiovascular risks on the job

Researchers from the Northeast Center and the Center for the Promotion of Health in the New



England Workforce (CPH-NEW) teamed up in July to conduct a wearable sensor field trial north of Bangor, ME. Three wearable sensors were tested for their effectiveness at measuring cardiovascular

# LOGGING (CONT.)



risk factors among Maine’s mechanized logging workforce while on the job.

“Our research has shown that Maine loggers have a significantly higher rate of hypertension than the average American man,” says Erika Scott, PhD, principal investigator for the Maine Logger Health and Safety Study.

The trial involved testing a custom-designed armband that continuously monitors pulse transit time, a biomarker of blood pressure, through two types of cardiovascular monitoring sensors. It was compared against results collected from the Empatica E4 wristband and a Hexoskin sensor shirt.

“The opportunity to see how it performs in outdoor workers was especially welcome,” says the device’s



developer, Insoo Kim, PhD, from the University of Connecticut Health Center (part of CPH-NEW). Before the Maine trial, the armband’s functionalities had been tested on nurses in indoor settings only.

The team tested the three devices with loggers, ages 18 to 66, at two worksites in the woods. All loggers reported the armband was comfortable and safe to work in, with the majority preferring the armband to any wrist devices. An initial review of the data show strong signals in the recording. Kim will apply loggers’ feedback to further adapt the armband for remote, outdoor workers.

## COVID-19’s impact on NE loggers

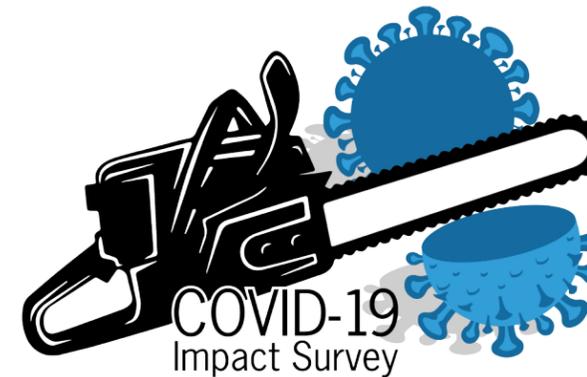
In the interest of understanding the impact of COVID-19 on loggers in the Northeast region, the Northeast Center developed and distributed a survey to loggers in six states. The COVID-19 impact survey responses revealed that the pandemic has had a significant impact on Northeast loggers. The impact was exacerbated—and in the case of Maine loggers, eclipsed—by a paper mill explosion in Jay, ME, in April 2020.

Despite their remote work locations, loggers were not able to escape the highly infectious coronavirus. They reported significant increases in stress in their communities but relatively strong emotional and social supports, demonstrating resilience in the face of adversity.

The survey, which consisted of 61 questions, was mailed in late November/mid-December 2020 to

3,652 loggers. Four hundred eighty-four loggers submitted responses.

Results from the survey will be used to inform policymakers, medical institutions and logging



stakeholders on how to better assist this essential workforce in the future. A 21-page report entitled “Northeast Logger Executive Summary: The impact of COVID-19 on loggers in the Northeastern United States” can be found at [necenter.org](http://necenter.org).

## Tick-borne diseases in New York forestry workers

Tick-borne diseases, such as Lyme and anaplasmosis, are rapidly on the rise across the country, especially in the Northeast and upper Midwest. While outdoor workers are at an increased risk of being bitten by ticks and getting tick-borne diseases, U.S. forestry workers’ exposures have not been evaluated since the 1990s. Recent studies in

Europe show that forestry workers are four times more at risk of being exposed to tick-borne diseases than indoor workers.

This past year the Northeast Center conducted a study to compare the rate of tick-borne diseases in forestry workers to firefighters and indoor workers. Two hundred fifty-six workers (105 forestry, 101 firefighters, and 50 healthcare) participated in the study, providing information on tick bites, tick-borne disease exposure and preventive use as well as blood samples to screen for tick-borne diseases.

Average # of ticks removed in one year

**23 ticks**  
Forestry workers



**3 ticks**  
Firefighters

**<1 tick**

Healthcare workers

Forestry workers who reported taking preventive measures, such as wearing permethrin-treated clothing, reported fewer tick bites. As we continue this research, we will be looking to test ways to prevent tick-borne diseases.

# FARM SERVICES



The Northeast Center's farm services and educational programming staff works with hundreds of farm businesses every year. These connections keep us in touch with Northeast agriculture so that our offerings stay relevant and responsive to real needs.

Our outreach services and programs are typically provided at no cost. We offer them at the worksite or at a convenient central location for participants.

We have farm safety specialists located in multiple states for on-farm visits and trainings as well as for consultations by phone or video conferencing. They offer an array of safety trainings related to on-the-job safety for farm employees as well as for owners and managers.

To prevent disruption of services during the COVID-19 pandemic, many of our trainings have been adapted for videoconferencing. We are also building our video collection of safety demonstrations, such as the "Shoelace Challenge," a PTO safety demonstration video we filmed this past winter.

While we can help a farm meet its regulatory standards, the Northeast Center is not a regulatory organization.



## Safety Trainings in Spanish

**99** sessions **1,287** workers trained

The majority of our Spanish trainings cover the Worker Protection Standard, hygiene, food safety, sun and heat protection, and animal and machinery safety. All of our training topics, however, can be provided in Spanish.

## Safety Trainings in English

**68** sessions **874** workers trained

We offer trainings on a broad range of topics, including animal handling, Lyme disease prevention and Worker Protection Standards. We customize each training based on the individual farm's needs.



## Farm Emergency Response Program

**41** sessions **299** trained

Farm Emergency Response Program trainings help farm workers and farm families learn what to do in an emergency without putting themselves at risk. They include CPR, First Aid, fire safety and fire extinguisher use.

We also provide agricultural hazard awareness trainings to fire departments and EMS personnel. Agricultural Safety Specialist Jim Carrabba is a master trainer for the Rural Firefighters Delivering Agricultural Safety and Health national program.

The Farm Disaster Preparedness Certificate is a Cornell Cooperative Extension course that helps farms plan for situations such as power outages, floods, fires, and roadway incidents. Our trainers often co-teach this course. Several insurance companies offer an incentive for farms to participate in the program.

Our educators deliver many American Heart Association courses to farms, as third-party food safety audits may require CPR and first aid certification for key workers.

# FARM SERVICES (CONT.)



## Logging Safety Trainings

**16** **99**  
classes trained

We offer logging safety classes according to levels of experience. The courses are regularly evaluated using pre- and post-training tests as well as direct observation.

COVID-19 continues to impact availability of courses. There are currently more than 200 people on the waiting list for our logging safety courses.



## Youth Trainings

**16** **212**  
trainings youth served

Every day about 33 children are injured in farm-related incidents. More than half of those children who were not working at the time. Tragically, about every 3 days a child is fatally injured on a farm. Using a combination of discussions, visuals, and hands-on activities, we have safety trainings geared towards grade school, high school and college level students. We benefit from information and resources developed by the National Children's Center for Rural and Agricultural Health and Safety and sponsor their annual child ag safety and health workshops.



## Farm Safety Surveys

**28** **7** **57**  
in-person sessions virtual sessions served farm owners and managers

For on-farm safety surveys, a Northeast Center safety specialist typically tours the farm operation with the owner or manager to identify specific safety hazards and provide verbal and written recommendations for how to eliminate, fix or mitigate these hazards.

These safety surveys provide farm owners and managers one-on-one consultation time to ask questions and receive advice on improving safety and complying with regulatory standards.

In 2021, we purchased a GoPro camera to trial virtual visits to farms to comply with COVID-19 travel restrictions and to save on time and travel expenses visiting farms that are many hours away. One cattle farm provided a short video demonstrating their existing setup for loading cattle into a trailer. The 30-second video clip provided a great example of how quickly a worker could be injured in that process. The farm was applying to the John May Farm Safety Fund (page 15) for an animal handling system that would minimize risk to workers and stress to the cattle.

## Technical Assistance

**198** **198**  
consultations farms served

Our trainers regularly respond to farms' technical questions related to farm safety and regulatory compliance. They receive requests by phone and email as well as in person at farm shows and meetings. Examples of some of the questions we assist with include:

- *What are the regulatory requirements for eye wash stations?*
- *How do I measure my driveline for a replacement PTO shield?*
- *I am having a hard time ordering N95s due to the pandemic – are there other respirators I could use instead?*
- *My workers are wearing half-face elastomeric respirators. I want to make sure they have the right level of protection for the products they are handling. Please help me review the Safety Data Sheets and select the appropriate cartridges.*
- *What credentials do I need in order to deliver EPA Worker Protection*
- *Standard training? How do I properly document this?*
- *Are there easy-to-read Spanish language flyers available about COVID-19 vaccines and secondary effects?*
- *I need help understanding what I need to do in order to comply with the EPA Worker Protection Standard and OSHA requirements related to respirator fit testing, medical clearance and worker training.*
- *How often do I need to deliver OSHA powered industrial truck (forklift) refresher training?*



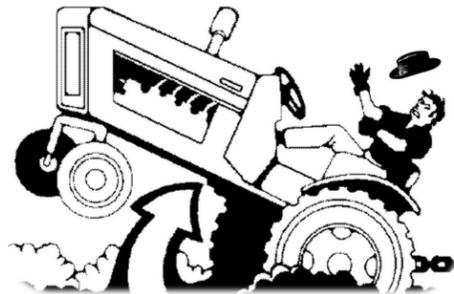
# 2021 CHAMPIONS

## Menonite farmer receives 2021 Hero Award

Being recognized as a “hero” is not a comfortable fit for someone whose belief system prioritizes community over the individual. Yet it’s those very qualities plus perseverance, courage and a dedication that earned Menonite farmer Henry Martin the 2021 NYCAMH Hero Award.

The New York-based affiliate of the Northeast Center, NYCAMH created the Hero Award to recognize the extraordinary accomplishments of an individual or community partner whose work has enhanced agricultural safety and health in New York.

## Yates Farm Safety



**IN OUR SCHOOL PROGRAM**

**2018**

A member of the Groffdale Conference, an Old Order Menonite community of about 450 families, and a founding member of the Yates County (NY) Farm Safety Committee, Martin has been instrumental in leading many of the committee’s initiatives including:

- A schoolhouse farm safety program that presently provides training at 40 schools
- Yates Farm Safety Days for Families, a biennial

event held at the Benton Volunteer Fire Department that draws about 300 attendees

- “Farm Safety for Families” evenings held every other winter at the Benton firehouse and the Himrod Fire Departments
- A grant-funded initiative with the Yates County Soil & Water Conservation District to purchase hydrogen sulfide gas meters that area farmers’ may borrow and fire departments can use to educate farms on the hazards of gypsum bedding

Martin was instrumental in bringing a manure pit rescue and safety simulator and a grain bin rescue and safety simulator to the county to train fire fighters and community members. Inspired by the training, a local grain farmer bought a grain rescue tube and gave it to the Benton Fire Department. Martin then helped to get all of the other equipment needed for the fire department to perform grain rescues, such as body harnesses, lifelines, a rescue auger and brushless drill.

Martin was instrumental in the farm safety committee’s acquisition of a grant from the National Children’s Center for Rural and Agricultural Health and Safety to build a farm safety hazard display board. Mahlon Hurst, another key safety committee member, built an impeccably detailed miniaturized version of an operating farm that depicts typical hazards for children to identify.

Perhaps the most difficult and heroic challenge Martin has faced, however, came in the past year when an 11-year-old child in his community was fatally entangled in a sweep auger. In hopes of preventing such incidents in the future, Martin reached out to the bereaved family in order to facilitate an in-depth assessment of the incident by NYCAMH, the Northeast Center for Occupational Health and Safety, and the New York State Department of Health’s Fatality Assessment and Control Evaluation (NY FACE) program (page 6).



A crowd gathers at the Benton Fire Department for a demonstration during a Yates Farm Safety Days for Families event.



# 2021 CHAMPIONS (CONT.)



## Anna Meyerhoff Honored at North American Ag. Safety Summit

The American Safety and Health Council of America (ASHCA) honored Anna Meyerhoff with the 2021 Safety and Health Researcher Award. Meyerhoff is a Senior Bilingual Safety Education Coordinator for the Northeast Center and NYCAMH. She has delivered on-farm training and outreach for the last 13 years. The bilingual low-literacy resources she creates have been adopted by organizations nationwide. She has developed curriculum and has been involved in respirator fit-testing and training for Spanish speaking farmworkers, sharing this model with other trainers across the nation. She assists with research development, data collection and program evaluation.

Anna is a champion when it comes to encouraging farms to replace, install and use safety equipment, such as PTO shaft shields and respirators. She visits new workers, ensuring that they have the safety equipment they need and know how to use it.



## Illustrator Salvador Saenz Receives NYS Agricultural Society Award

Salvador Saenz's colorful and compelling posters and booklets promoting farm safety can be found in farm offices, break rooms and on barn walls nationwide. The El Paso, Texas residents' accomplishments, which include developing a number of bilingual illustrated materials for the Northeast Center and NYCAMH, earned him the New York State Agricultural Society's Farm Safety Award in 2021.

Saenz has developed two fotonovelas (comic books) and over 20 safety posters for the Northeast Center and NYCAMH. Salvador's ability to use storytelling to convey important farm safety messages makes his work distinct. The fotonovela format is commonly used in Mexico and other Latin American countries to teach about health topics.

The farm safety award recognizes farm operators, mentors and collaborators who work to protect employees and valuable resources within the food system. Cargill, Inc. sponsors the award.





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# NORTHEAST CENTER



FOR OCCUPATIONAL HEALTH AND SAFETY

## YEAR IN REVIEW 2021

### ACKNOWLEDGMENTS

The Northeast Center would like to express its appreciation to the organizations and individuals that enable us to carry out our mission.

The following grants provide support to facilitate our operations:  
National Institute for Occupational Safety and Health (NIOSH)

Award 2U54OH007542

NYS Department of Labor: Hazard Abatement Board

NYS Department of Health

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