



National Children's Center

for Rural and Agricultural Health and Safety

2021 Annual Report

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National Children's Center
for Rural and Agricultural Health and Safety

Key Personnel

Barbara Lee, PhD

Director

715-387-9182

lee.barbara@marshfieldresearch.org

Casper Bendixsen, PhD

Associate Director

715-387-9410

bendixsen.casper@marshfieldresearch.org

Andrea Swenson, PhD

Evaluation

715-389-7984

swenson.andrea@marshfieldresearch.org

Amy Liebman, MPA, MA

Migrant Clinicians Network Advisor

512-579-4535

aliebman@migrantclinician.org

Marsha Salzwedel, EdD

Outreach Core

715-389-5226

salzwedel.marsha@marshfieldresearch.org

Bryan Weichelt, PhD

Research Core

715-221-7176

weichelt.bryan@marshfieldresearch.org

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The National Children's Center for Rural and Agricultural Health and Safety strives to enhance the health and safety of all children exposed to hazards associated with agricultural work and rural environments.

2021 Highlights from the Director



This year marked the beginning of another 5-year cycle for our center, with new research studies, expansion of outreach endeavors, a stronger evaluation process, and the additional focus on policy-relevant work. All this occurred while sustaining “legacy” roles such as our public education website, agricultural injury news database, management of the *Journal of Agromedicine*, and involvement in national-level leadership activities. In addition, our work was impacted by the COVID-19 pandemic that has shaken every aspect of life. Several projects reflect the relationship between COVID-19 and children living and working on farms.

Highlights of this year include:

- Each component of the Center integrated elements of the Socio-Ecological Model with our theme of “*expanding public- and private-sector capacity in childhood agricultural injury prevention across the U.S.*”
- Center personnel participated in collaborative initiatives with NIOSH leadership and across all 11 NIOSH Agricultural Centers of Excellence. Among these were the National Occupational Research Agenda (NORA) working group, monthly teleconferences with the Evaluation and Center Outreach (ECO) group, Contribution Analysis task force, and the COVID-19 recommendations group.
- Six distinct 5-year research projects were launched and a seventh project was resubmitted and approved for years 2-5.
- Management of the *Journal of Agromedicine* continued with social media promotion of papers addressing childhood agricultural safety and health topics.
- The Outreach Core delivered a 3-day virtual Childhood Agricultural Safety Workshop that was co-sponsored by all 10 regional Ag Centers.
- A new Emerging Issues Program was launched that will fund external projects with a focus on the impact of COVID-19 on farmworker youth.
- Scientists and staff have disseminated research findings and safety recommendations via publications, presentations, abstracts, posters, webinars, media interviews, and press releases.

The following report provides details on our fiscal year 2021 activities. We hope you enjoy reading about our accomplishments along with plans for the future. Your feedback is always welcome and your ongoing support of improving the well-being of children living and working in agricultural environments is absolutely appreciated.

Best regards,

A handwritten signature in blue ink that reads "Barbara Lee". The signature is fluid and cursive, with the first name and last name clearly distinguishable.

Section 1: Planning and Evaluation Core

Barbara Lee, PhD, Marshfield Clinic Research Institute

Overview

The goal of the National Children's Center for Rural and Agricultural Health and Safety's (NCCRAHS) Planning and Evaluation Core is to strategically guide overall activities of the Center as we address the mission to enhance the health and safety of all children exposed to hazards associated with agricultural work and rural environments. The Planning and Evaluation Core, including the Director, Associate Director, Evaluation Lead, Outreach Core Leader, Research Core Leader, and Senior Advisor, meets twice monthly to ensure the Center-wide and individual projects are effectively and efficiently planned, implemented, and evaluated. Focus during this first year of the grant cycle included ensuring adequate budgeting and staffing of projects, compliance with Institutional Review Boards, resubmission of three research projects, establishing monthly meetings with all staff, and establishing a manuscript preparation process.

Evaluation



Andrea Swenson, PhD, Marshfield Clinic Research Institute

The Evaluation team provides infrastructure, personnel, and support to effectively monitor and evaluate NCCRAHS to continually improve the quality of the center. Evaluation metrics for each of the projects and center-wide metrics were established during year one of the Center. Quarterly reports based on the metrics were developed and submitted by project teams. A summary report was created for each quarter and shared with all staff. Additionally, a dashboard of key evaluation metrics was created in Excel and shared during meetings to visualize progress towards key objectives. Future activities include development of individual project dashboards.

A survey to assess leadership in child agricultural health and safety among NCCRAHS personnel was developed and baseline data were collected. In year one of the grant cycle, NCCRAHS had representation on several national advisory boards influencing the inclusion of youth in agricultural health and safety (e.g., ASHCA, ISASH) as well as the inclusion of agriculture in child health and safety (e.g., Children's Safety Now Alliance). NCCRAHS members sit on 13 Advisory Boards, 7 Board of Directors, 27 committees, and review for 19 journals, 5 conferences, and 5 grant mechanisms. This survey will be deployed in future years of the grant cycle to assess changes in leadership and document success stories.



At mid-year, a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis was conducted with staff. Using identified strengths and weaknesses, key opportunities included building relationships with at-risk, hard to reach, and diverse communities through communication and collaboration as well as leveraging the window of opportunity COVID-19 has provided health and safety personnel to connect and discuss safety. The SWOT analysis enabled the team to collectively reflect on the status of NCCRAHS and identify key opportunities to build towards the future.

A key evaluation component is completing a contribution analysis for NCCRAHS activities. The first two steps of the contribution analysis were established in year one: identifying a cause-effect issue and develop a theory of change. A meeting will be held in December 2021 to discuss the contribution analysis as well as an evaluation evidence package from the first year. This meeting will ensure the contribution analysis is informing center activities and will provide feedback on evaluative processes currently used within the center.

Stakeholder Advisory Board (SAB)

The SAB is composed of eight partners knowledgeable about agricultural health and safety, influential within agricultural communities, and with a vested interest in promoting childhood safety and well-being as well as mitigating childhood injuries and disease. The SAB is responsible for providing input to NCCRAHS leadership regarding the center-wide goals and objectives, especially the primary objectives to: 1) increase the number of individuals and organizations engaged in agricultural childhood injury prevention as well as increase their knowledge of the field and 2) ensure that research is being translated effectively and disseminated to the wider field of professionals and to agricultural communities.

The SAB convened virtually with center leadership, PIs, and project staff twice in 2021.



An in-person meeting was originally scheduled for Year 1, but travel and in-person activities were not advisable or restricted due to the ongoing COVID-19 pandemic. Project teams were given opportunities to update the SAB members, ask questions, and troubleshoot together. In particular, the SAB members motivated the center and project leads to address an NCCRAHS position about COVID-19 pandemic and its impact on projects as well as children in agricultural communities. A subcommittee of SAB members was formed and guided an internal Emerging Issues Program initiative to formulate an NCCRAHS position statement regarding the current pandemic effects on children in agriculture as well what we could learn for the future disease outbreaks and global crisis.

The Evaluation Core conducted evaluations of the two SAB meetings. The evaluations included an assessment of meeting objectives, COVID-19 response, engagement, and planning for future meetings. Information from the evaluations were used to plan future meetings, including shortening the length of the virtual meetings and requesting hearing more from the SAB members. At the end of year one, SAB members were queried about continuation in their role. For 2022 the advisors will include:

Name	Affiliation
Dee Jepsen, PhD, Chair	Ohio State University
Joseph Grzywacz, PhD	Florida State University
Matthew Keifer, MD, MPH	Emeritus NFMDC Director
Bryan Kuhl	Progressive Agriculture Foundation
Jennifer Leonardo, PhD, MSW	Children's Safety Network
Athena Ramos, PhD	University of Nebraska Medical Center
David Schwebel, PhD	University of Alabama at Birmingham
Suzanne Wright, MD	Marshfield Clinic Health System

COVID-19 Response

The COVID-19 pandemic influenced several activities for NCCRAHS staff during year one. Some activities represent continued efforts since the start of the pandemic, while other activities were guided by the SAB and the internal SWOT analysis to have NCCRAHS leverage its position as a leader in childhood agricultural health and safety in different capacities.

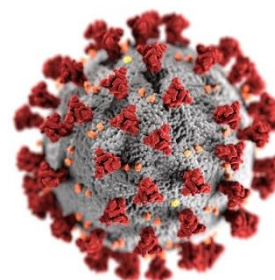


Photo Credit: CDC

COVID-19 Advisory Sub-group

Based on the SAB recommendation, a subcommittee of SAB members was formed and guided an internal Emerging Issues Program initiative surrounding the issues related to the COVID-19 pandemic. Several options were considered by the subcommittee and NCCRAHS staff, including convening a panel of experts, conducting a “think tank” event, conducting virtual town-hall type discussions, and creating an NCCRAHS position statement. After meeting with the SAB subcommittee, the subcommittee was tasked with formulating an NCCRAHS position paper regarding the current pandemic effects on children in agriculture as well what we could learn for the future disease outbreaks and global crisis. A position paper was outlined and drafted by internal PIs. It was continually updated as the landscape of the pandemic continued (and continues) to shift. The draft was given to two external NCCRAHS PI/leaders for their edits and contributions. It is anticipated having a full draft for the full SAB to review in its first meeting of Year 2. Following guidance from the subcommittee, the CDC, and the American Academy of Pediatrics, NCCRAHS staff continued to include information on addressing issues related to COVID-19 in information and materials disseminated by NCCRAHS, including presentations, collaborations, and social media posts.

Cross-Center Collaborations

NIOSH convened a communications work group made up of representatives from the 11 NIOSH agricultural centers to draft the Interim Guidance for Agriculture Workers and Employers. The guidance provided a template of action to aid in decreasing the spread and impact of COVID-19 across agricultural work sites, shared worker housing, and shared worker transportation. NCCRAHS contributed a section addressing “special considerations for children,” which included guidance against taking children into work sites and using the Agricultural Youth Work Guidelines to aid in assigning age-appropriate tasks to youth farm workers. The interim guidance was released jointly by Centers for Disease Control and Prevention (CDC) and the U.S. Department of Labor.

NCCRAHS also participated in an interdisciplinary group of NORA Sector Council members who came together to 1) describe national COVID-19 rollout to rural agricultural communities; 2) examine distinguishing features of available and upcoming COVID-19 vaccines; and 3) highlight evidence-based strategies for overcoming vaccine hesitancy and examples of best-practice for effective distribution of vaccines. The group drafted a white paper on COVID-19, including recommendations on overcoming logistical challenges in vaccine storage and distribution, limited trust in government among rural populations, immigration-related fear among farmworkers, and general vaccine hesitancy. These draft recommendations emphasize two essential elements: the need for information in multiple languages and in formats that are easy to understand and the critical importance of collaborating with trusted local partners across rural industries and cultural organizations. The group shared their findings and draft recommendations at several meetings, including a poster presentation at the 2021 ASHCA Summit.

Journal of Agromedicine

A special issue of the Journal of Agromedicine, guest edited by Casper Bendixsen, Associate Director of the Center, was dedicated to COVID-19. The special issue contained 18 commentaries on the intersection of occupation risks and the COVID-19 pandemic. Topics of the commentaries varied from worker trainings, mental health, and childcare. The special issue has reached several audiences. *The COVID-19 Impact on Childcare in Agricultural Populations*, authored by NCCRAHS staff has been cited by two academic publications and referenced in popular press.

Pilot Projects

Using funds from the former mini-grant program, the Administrative team agreed to fund two small internal pilot studies to quickly assess COVID-19 issues relevant to the Center’s mission. These laid the groundwork for the Emerging Issues program that would solicit external applications. The projects by Drs. Becot and Swenson are reported here.

Taking Care of Farm Children during COVID-19 and their Exposure to Farm Risk, Florence Becot, PhD. To understand how farm parents were taking care of their children in the early months of COVID-19 and implications for their children’s safety, an on-line

survey was conducted in July and August 2020. Findings from the univariate and inductive content analysis based on responses from 134 farm parents from 38 U.S. states overall indicate that the move to distance learning for about three-quarters of respondents with school-age children and changes in childcare arrangements for over half of those with pre-school-age children led respondents to contend with fewer options and added responsibilities. Most frequently-used adaptation strategies reflected lower reliance on the traditionally important social networks, a desire to preserve household income, and greater involvement of children on the farm. As a result, taking care of their children became harder for more than half of respondents, with repercussions for their ability to get the farm work done and for the safety of the children. The empirical insights of these findings provide baseline and contextual data for future research on the impact of COVID-19. The conceptual insights expand the farm safety literature by illustrating the need to study underappreciated structural factors shaping how farm parents juggle responsibility for children with their professional obligations. Findings around the complexity of raising children and connections to farm productivity and farm safety highlight the importance of considering farm women's well-being alongside the safety of their children. Outputs based fully or in part on this project thus far include two conference presentations, a conference abstract published in the *Journal of Agromedicine*, a manuscript submitted to the *Journal of Agromedicine*, a media article published in The Conversation and re-published by over 40 media outlets across the U.S., and a staff briefing for a sitting U.S. Senator.

Responding to Needs during COVID-19, Andrea Swenson, PhD. To understand NCCRAHS's response to the health and safety needs of farm families during a crisis, this pilot study conducted interviews with 15 NCCRAHS team members to understand actions and perceptions of NCCRAHS' response to COVID-19 as well as a quantitative survey that was administered to 41 dairy farmers in the Midwest. Results from the 41 dairy farmers found that family and internet searches were the most common places individuals actively looked, while family and friends were the most common source of hearing about or coming across youth health and safety information. Findings also highlighted the importance of hearing about or coming across youth health and safety information from individuals within their local network, such as extension agents and professional organizations. Additional COVID-19 related data indicate children engaged in remote education were working more, with 34% of parents reporting that children spent more time than usual in labor on the farm (paid and unpaid chores). Together with the findings of the staff interviews, this study demonstrated a continued need to understand how to effectively mobilize knowledge and leverage flexibility during times of crisis to reach end-users with their socio-ecological systems in mind. This pilot study provided feedback to NCCRAHS leadership as well as provided pilot data for two successful grant applications.

Emerging Issues Program

To address new and unresolved environmental, policy, technology, and agricultural production issues affecting the well-being of children, an Emerging Issues Program was

created for this grant cycle. Identifying emerging issues is an agenda topic at monthly NCCRAHS meetings as well as the SAB meetings. This ensures Center leadership is hearing a variety of perspectives from across the country.



Based on early feedback from the SAB, an internal emerging issues initiative on COVID-19 was established. A sub-group of the SAB and staff meet to discuss priorities and process for moving forward. Due to the rapid changing nature of COVID-19 information and responses, several strategies were discussed. A position paper on the effects of the pandemic for children in agriculture and lessons learned for future pandemics is in progress.

An external call for emerging issues occurred later during year one. A [press release](#) of the [Request for Applications](#) (RFA) followed by a collaborative promotion across social media platforms and email distribution lists (e.g. AgInjuryNews.org registered users, and the national FFA/Ag Educator listserve). The program received 24 Letters of Intent (LOIs) (see Fig 1). A review committee of seven research scientists reviewed the LOIs and invited 11 to submit full applications for review. Ten full applications were reviewed. Suitable proposals will be awarded funding and will complete their projects within Year 2. The review team also received guidance from members of the SAB on the final funded projects.



Figure 1 - Geographic dispersion of LOI submissions

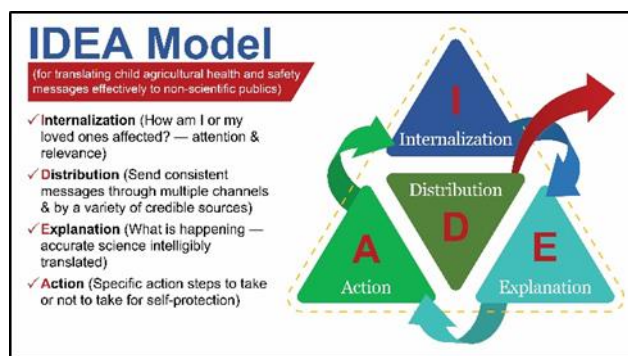
Section 2: Outreach Core



Marsha Salzwedel, EdD, Marshfield Clinic Research Institute

The purpose of the NCCRAHS Outreach Core (NOC) is to mobilize child agricultural health and safety knowledge, ensuring that evidence-based approaches, technologies, guidelines, policies, best practices, and similar activities are promoted and disseminated. Their goal is to reach populations and organizations that work with farm parents and supervisors of young workers, so farm families, young workers, and associated agricultural industry members benefit through reduced child injuries and fatalities. The NOC is responsible for translating child agricultural health and safety research findings into practice and engaging with stakeholders to build and sustain capacity in child agricultural safety and health.

NOC works hand in hand with the Planning and Evaluation Core and with the research projects to use the IDEA (Internalization, Distribution, Explanation, and Action) model to develop appropriate messaging and deliver these messages through appropriate channels. To help maximize promotion and dissemination of child agricultural safety and health information and materials, the NOC also collaborates with numerous organizations, including the 10 NIOSH regional agricultural centers, key agricultural media, youth serving organizations, minority-serving organizations and numerous other organizations invested in child/youth agricultural safety and health. As part of their collaborative work, NOC also leads the Child Agricultural Safety Network (CASN).



The Outreach Core maintains communications with project teams through quarterly meetings. These meetings ensure we are able to promote their projects and assist with developing communication materials as needed in a timely fashion. This year, we also created web pages for all of the projects and continue to update web pages to keep project information relevant. Specific activities throughout the year included media relations, CASN online community, Child Agricultural Safety and Health (CASH) workshop, and Learning Labs. The NOC team also laid the groundwork for three key initiatives for year two of the grant cycle: storytelling, an all-terrain vehicle/utility task vehicle (ATV/UTV) campaign, and updating NASD and Wikipedia.

Media Relations. As evidence of our center's national media profile, we fielded more than 20 interview requests, including reporters from the Los Angeles Times, New York Times, WGN Radio Chicago, and Inside Edition. We conducted another 27 interviews describing our resources and programs at the virtual 2020 National Association of Farm Broadcasters conference, where we spoke with broadcasters representing local and

regional radio networks nationwide. We became more efficient in disseminating news releases and newsletters to our 560-address media/communicators list by adopting an e-template from Constant Contact. Constant Contact enables us to manage mailing lists and track open-rates. We produced and distributed seven media releases, two Nurture newsletters, and the 2020 National Farm Medicine Center/National Children's Center Year in Review. In terms of social media, we posted more than 2,900 times across three Facebook pages, three Twitter accounts, one Linked-In page and one Instagram page. The pages/accounts have a combined 5,814 followers. To enhance our posts' visibility, we started using two additional tools: Animaker, a video software that enables us to animate our social media content, and Hootsuite, a social media management platform that facilitates scheduling of posts based on our unique analytics. We also post NCCRAHS content to the National Farm Medicine Center YouTube channel. A short video named "[Lifting Safely](#)" went viral and now exceeds 24,000 views. To improve the content of our messages, we implemented the use of the IDEA Model into our communication, including developing video templates, press release templates, and website templates based on the IDEA Model.

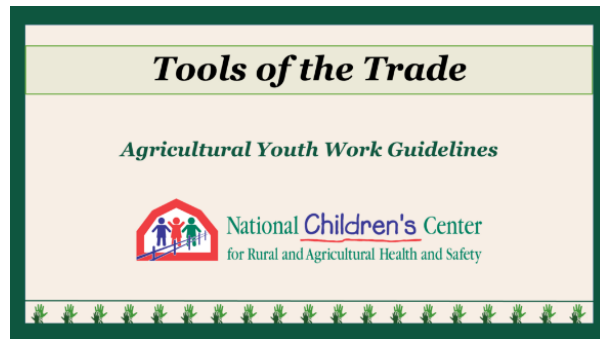


CASN Online Community. Traditional correspondence among CASN partners has been through one-way mailings and a singularly managed email listserv. The growth and diversification of membership, coupled with the advent of social media and an increased reliance on virtual methods of communication fueled the need for a more dynamic method of communication. Building an online, real-time community provides a modern forum for CASN members to share information and resources, exchange ideas, and participate in online discussions, ultimately enhancing communications, collaborations, and networking. When building the online community, NOC evaluated several different platforms including Higher Logic, Hivebrite, Mighty Networks, and Tribe. Mighty Networks was chosen for its flexibility and affordability. In spring of 2020, the online community was implemented as a soft launch, with an accompanying abstract and video ("*Amplifying Community Member Engagement for a Virtually Connected World*") presented at ASHCA 2021. The community launched to the public on August 2, 2021 via <https://ChildAgSafety.org/>. As of November 1, the online community has 103 members (86 referred and 17 organic).

CASH Workshop. A CASH workshop was conducted for Extension personnel, health care providers, farm organizations, public health professionals, media, and others who work with farm parents and supervisors. The purpose of the workshop was to increase knowledge and awareness of child agricultural safety and health issues and extend the reach and dissemination of safety and health strategies and resources. Due to the COVID-19 pandemic, an in-person workshop was not feasible, so the format was changed to a virtual workshop. Held in September of 2021, the workshop was co-hosted by the 10 NIOSH regional ag centers and recruited experts from across the country to present sessions and facilitate small group activities. The workshop had 40 participants from across the U.S. and Canada, as well as 13 session facilitators. Participants who

registered by the September 8th deadline received a workbook and hard copy resources. Workshop materials were made available to all participants online in the workshop section of the CASN Online Community (<https://ChildAgSafety.org/>), including recordings of the workshop sessions. Evaluation of the workshop sessions and impact is currently underway.

Learning Labs. NOC created sessions to host Learning Labs at the 2021 ASHCA Safety Summit. These sessions featured interactive activities on various topics designed to educate participants on agricultural hazards and protective strategies used to prevent injuries and illness. The Learning Labs were originally conceived as live interactive sessions, where lab facilitators would assist participants with using these resources. Due to the COVID-19 pandemic and the transition of conferences to a virtual format, the sessions were revised to virtual booths that included a video demonstrating a safety resource/tool and handouts that describe the tool, how to access/build/rent or buy the tool, and activity sheets enabling participants to practice using the tool. NOC recruited 16 organizations who facilitated 18 virtual booths (re-named “Tools of the Trade” sessions or TOTs), including booths featuring Agricultural Youth Work Guidelines and AgInjuryNews. Over 60 people visited the booths. After the Summit, a new section was developed on the Cultivate Safety website to house the 18 Tools of the Trade session videos and supporting documents (<https://CultivateSafety.org/tools-of-the-trade/>). Evaluation of the learning lab sessions is underway.



Storytelling. The outreach team began working with the Boomsma family of Yankton, S.D. in early 2021 to tell the story of Jaxon Boomsma, who was 7 years old when he lost his life in a farm tractor run-over in 2017. This is also the story of a family and community coming together for farm safety advocacy in the wake of tragedy. Scott Heiberger and Melissa Ploeckleman of the outreach team traveled to Yankton in July, interviewing the five members of Jaxon's immediate family, his first grade teacher, his aunt, a family friend, and two co-workers of Jaxon's father, Troy Boomsma (pictured here). The team audio-recorded nearly 10 hours of interviews, video-recorded more than 5 hours and shot more than 100 photos. A Storytelling web page is being developed where stories and videos are scheduled to be posted by late February 2022, shortly before the 5-year anniversary of the fatal incident involving Jaxon. Embedded prevention messages will include the importance of keeping



young children away from tractors, and a promotional campaign will be carried out in late winter/early spring of 2022.

ATV/UTV campaign. The huge increase in the number of ATVs and UTVs used on farms, both for work and recreation, in combination with the changes in the size and power of the vehicles spurred the need for an update to the CASN “I Didn’t KNOW” ATV campaign (<https://cultivatesafety.org/campaigns/atvs/>). A trifold safety brochure and poster are currently under development for this campaign. Once finalized, they will be added to the current web page, a media kit will be created, and a promotional campaign will be launched in 2022. All CASN members will be invited to participate in the campaign.

NASD/Wikipedia. NOC has been working with the web manager for the National Agricultural Safety Database (NASD) on ensuring that all NCCRAHS information and resources contained on their website is up to date. In recent months, the NOC team reviewed the NASD website and identified NCCRAHS materials hosted on the site. All materials identified were reviewed and three groups were identified: 1) outdated or obsolete materials were removed from the site; 2) materials that need updates were (or are currently being) updated, and 3) missing resources will be added. As part of the process for adding resources, NOC is working with the NASD team to create a process for adding new materials to streamline the process. Over the next several months, NCCRAHS will continue to update and add resources to NASD, until all resources are current. In addition, NOC will begin the process of adding information on childhood agricultural safety and health to existing Wikipedia articles on relevant hazards, hazard controls, and industrial hygiene methods. It is anticipated that a process for adding the articles will be established and information added to three to five articles within the next year. When completed, updates to Wiki pages and relevant information will be shared on the CASN online community, and other CASN members will be encouraged to disseminate the information through their networks.

AgInjuryNews.org. The growing AgInjuryNews dataset and web-based system is one of the most utilized products funded by the NCCRAHS. Emerging as a collaborative hub, the dataset has produced 16 peer-reviewed manuscripts since 2018, published in 9 different journals, with 26 co-authors from 15 different organizations. Most of these papers include foci on youth injury data, including investigations into the gaps of current ag injury surveillance.

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What about the Rest of Them? Fatal Injuries Related to Production Agriculture Not Captured by the Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI)

Bryan Weichelt ^a, Erika Scott ^b, Rick Burke ^a, John Shutske ^c, Serap Gorucu ^d, Wayne Sanderson ^e, Murray Madsen ^f, Emily Redmond ^a, Dennis J. Murphy ^g, and Risto Rautiainen ^h

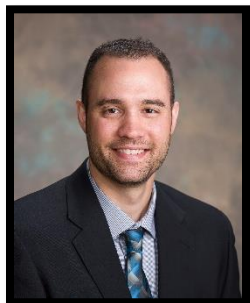
^a National Farm Medicine Center, Marshfield Clinic Research Institute, Marshfield, WI; National Children's Center for Rural and Agricultural Safety and Health, Marshfield, Wisconsin, USA ^b Northeast Center for Occupational Health and Safety (NEC), Bassett Medical Center, Cooperstown, New York, USA ^c Department of Biological Systems Engineering, University of Wisconsin-Madison ^d Department of Agricultural and Biological Engineering, University of Florida, Gainesville, Florida, USA ^e Department of Biosystems and Agricultural Engineering, University of Kentucky, Kentucky ^f Consultant ^g Department of Agricultural and Biological Engineering, Penn State University, University Park, Pennsylvania, USA ^h Central States Center for Agricultural Safety and Health, University of Nebraska Medical Center, College of Public Health, Omaha, Nebraska, USA

ABSTRACT

Surveillance of injuries in production agriculture is necessary to inform stakeholders about workplace hazards and risks in order to improve and advance injury prevention policies and practices for this dangerous industry. The most comprehensive fatal injury surveillance effort currently in the United States is the Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI). While some occupational fatalities in the

Section 3: Research Core

Assessing Impact of Traumatic Injury News



Bryan Weichelt, PhD, Marshfield Clinic Research Institute

Overview:

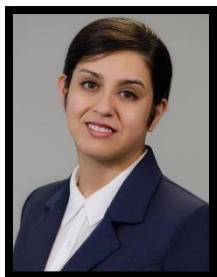
This project will assess change in farm parents and farm educators' knowledge, attitudes, and behavioral intentions (KAB) towards agricultural safety after exposing parents and educators to news reports of childhood agricultural injury. Following recruitment through online social media, respondents will complete a pre-test survey to determine baseline levels of KAB towards agricultural injury. Following the survey, half will read childhood agricultural injury news reports and half control articles on overall child health. They will then complete an assignment regarding the content of these reports once per week for 4 weeks. Following the intervention, participants will complete a post-test survey to measure changes in KAB. Additional follow-ups 6 and 12 months post participation will identify any lasting effects of the intervention.

Accomplishments to Date:

This project led to the publication of a pilot project assessing the feasibility of recruiting farm parents through Facebook.com for an online survey project. A comprehensive survey instrument based on the EPPM (Extended Parallel Process Model) and theory of fear appeal was created, and reviewed by scientific and farm parent advisers, to assess changes in participants' KAB. This instrument also measures participants' trust in science and news media. The instrument was successfully and comprehensively entered into REDCap alongside the injury news articles with the added capability to measure the study recruitment effectiveness of each of our three different Facebook advertisements. Our phase 1 of recruitment via paid Facebook advertisements was completed. We spent \$5,944, which led to 776,444 impressions, 5,532 ad clicks, and enrolled approximately 25% of our 200-participant target. Future activities include continuing participant recruitment to reach our target counts via national ag email Listservs. Existing participants will continue to move through the intervention and should complete the main portion of the intervention study within the first quarter of Year 2. We will also conduct a 6- and 12-month follow-up utilizing a survey similar to our current instrument to measure change over time. Agricultural educators will start to be recruited within the next year through additional email Listservs and snowball and convenience sampling.



Capabilities of Youth Operating ATVs



Farzaneh Khorsandi, PhD, University of California, Davis

Overview:

All-terrain vehicle (ATV) crashes are one of the leading causes of injury and death among youth in the agriculture industry. The long-term goal of this project is to provide empirical evidence of physical and ergonomic factors that may put youth at risk of injury or death while operating utility ATVs on farms. This study will provide critical evidence to encourage, facilitate, and guide recommendations and public policies regarding youth operating ATVs for agricultural work. These goals will be achieved by a) identifying potential strengths and anthropometric discrepancies between the requirements for operating utility ATVs and the physical characteristics and strength of youths of varying ages and height percentiles; b) updating existing guidelines and future resources regarding the required physical capabilities of youth to safely operate utility ATVs; and c) encourage, facilitate, and guide industry and organizational recommendations and public policies regarding youth operating ATVs for agricultural work by developing an "Action Plan for Guidelines on Youth Operating ATVs".

Accomplishments to Date:

This year, the research team has been able to develop 60 human and 30 ATV mock ups and interactive human-vehicle scenarios for reach and field of vision (sensing setups, and computer simulations are presented in figure 1).

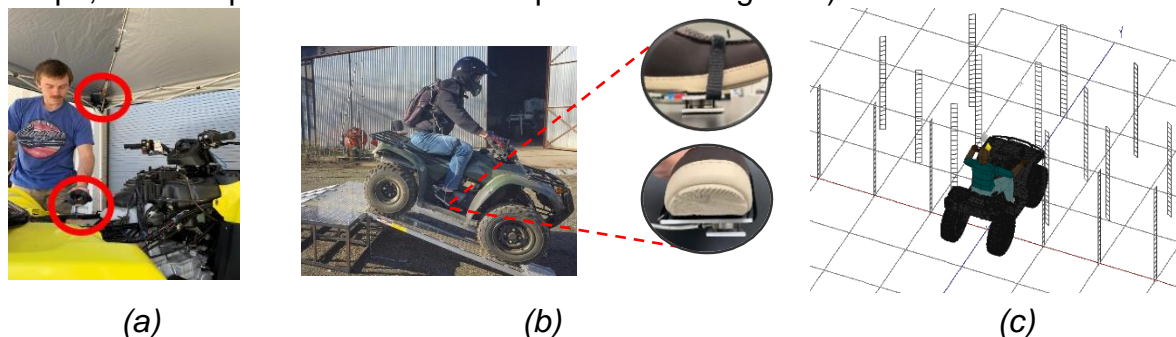


Figure 1. (a) Application of Vive tracker system for simulating ATV, (b) The developed force measurement setup to measure the required activation force for the foot brake, and (c) The simulated ATV, human mock up, and the bars to evaluate field of vision.

Field-testing for 30 ATVs have been completed to-date. Evaluation of activation force analyzed for the 21 ATVs. The youth's strength with the required actuation forces for 21 ATVs were compared. A clear trend was observed in the results in which older youths are capable of riding a larger percentage of ATVs, indicating they are less likely to get involved in ATV accidents compared to their younger counterparts.

The research team has completed four presentations on initial findings from the ATV field-tests. One presentation received the best poster award in the American Society of Agricultural and Biological Engineers CA/NV section. Next steps include finalizing field tests for 70 ATVs and evaluating the force, reach, and field of vision for 70 ATVs.

Farm Adolescent Mental Health



Josie Rudolphi, PhD, University of Illinois Urbana-Champaign

Overview:

There is converging evidence agricultural work contributes to poor mental health; however, the mental health experience of youth on farms is unknown. The results from this study will inform targeted programming and policies that improve the mental health of farm youth.

This project uses a multi-modality, innovative series of studies to examine the mental health of youth on farms, including identifying the prevalence of common mental health conditions and stressors among farm adolescents and their parents and consider the association between family members. This study will test a novel method to surveil farm youth mental health and provide insight into the shared experiences of farm families to identify vulnerable members to provide new knowledge about the mental health status of farm youth and inform the needs for continued surveillance and future intervention.

Accomplishments to Date:

The project team developed survey questionnaires for farm adolescent and farm parents, which received institutional review board approval. Three surveys (adolescent, adult 1, and adult 2), consent forms, and a resource guide were developed in REDCap, a secure online delivery platform. There were 1,000 study packets and reminder postcards mailed to potential participants. Additional participants were recruited through social media, email listservs, newsletters via partners such as Extension, commodity groups, and the Child Ag Safety Network. Data analysis is ongoing.

Future activities for the research team include continued analysis of the surveys and sharing of findings and results. Results of recruitment efforts (response rate, completion rate) will also be disseminated this next year.

Farm Kid Paradox



Casper Bendixsen, PhD, Marshfield Clinic Research Institute

Overview:

Though raising children on farms can improve work ethic, enhance problem-solving skills, and strengthen a child's immune system, farming is one of the most hazardous industries in the U.S., with about 33 children seriously injured on farms and ranches each day. Referred to as the "Farm Kid Paradox," researchers have explored these risks and benefits separately, creating a gap between farm parents and safety training/information. In this project, researchers at Marshfield and Kansas State University are working with both farm parents and professionals who deal in safety to bridge this gap and combine safety information with messaging that includes the benefits of farm life.

This project will unite farm/ranch parents and professionals who deal in safety around a common goal: reducing risks and enhancing the benefits to children who live and work around livestock. Over the course of 5-years, the project will identify perspectives of the three communities (dairy, beef, and safety professionals) regarding risks and benefits around common livestock activities children perform. This project will characterize target communities' understanding of the relationship between the risks and benefits of child-livestock interaction through free-listing, pile sorting, ranking, and interviewing methods.

Accomplishments to Date:



The study has received wide attention in its early stages--it has been promoted on two farm podcasts and 13 news articles. Free list and in-depth interview tools were developed by the study team with input from the scientific advisors. The dairy research team at Marshfield has conducted 8 parent interviews, and the beef research team at Kansas State University has conducted 15 parent interviews. Recruitment for interviews with professionals who deal in safety are currently being planned. One early finding is the lack of saliency for the term "safety professional". In speaking with both scientific advisors and early farm parent enrollees, several issues with this term have been identified, including vagueness of the term and that few parents specifically seek out agricultural safety information. For example, a skills-based training on animal behavior in 4H will have safe animal handling safety practices embedded in it. While originally regionally focused, the early interest in the project by parents and professionals led the team to expand the data collection nationally. This expansion will result in more nuanced data to inform improvements to safety materials.

Linking Childcare to Farm Safety



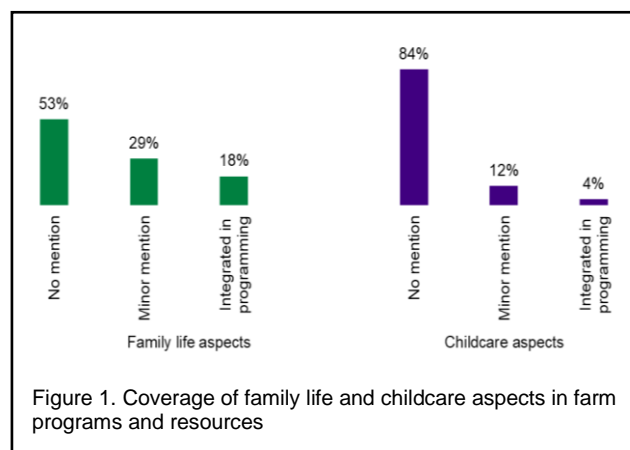
Florence Becot, PhD, Marshfield Clinic Research Institute
Shoshanah Inwood, PhD, The Ohio State University

Overview:

One of the most effective strategies to prevent incidents among non-working farm children is through their supervision by an adult off the worksite. As such, farm safety experts have aimed to encourage childcare use through educational programming aimed at changing parents' knowledge and attitudes around dangers on the farm and best practices. While evidence dating back to the 1980s identifies childcare as a challenge for farm parents, current farm safety research and interventions seldom consider how farm parents' lived-realities with childcare may intersect with their ability to use it and how their decisions intersect with farm safety. Through an environmental scan of farm programs and resources, interviews with key informants, focus groups and photovoice activities, and a representative survey of farm parents, this project will lead to an understanding of the range of social, cultural, political, and economic factors that shape farm parents' childcare decisions and the ways in which farm parents factor farm safety when making these decisions.

Accomplishments to Date:

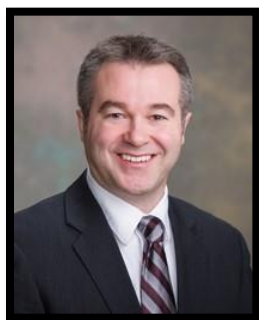
In year 1, we assessed the integration of family life and childcare aspects in farm programs and resources. We identified 91 programs and resources through an environmental scan. Fifty-three percent of the material made no mention of family life while 84% made no mention of childcare. Looking at the integration of family or childcare in the material, 18% of the material integrated family life aspects while 4% integrated childcare aspects (figure 1).



Preliminary findings from 37 interviews with farm safety and business informants align with findings from the environmental scan. Despite being aware of challenges juggling farm work and children, few interviewees integrated family life and childcare topics in their work. When they did, the integration was largely woven through other discussions or when brought up by farmers. Several factors explain the limited coverage: perception that these topics are not connected to the farm business, had not thought about it, did not know how to do it, and lack of funding.

Next steps for the project include completing the analysis of interviews and disseminating findings and preliminary recommendations. The research team will also conduct focus groups and photovoice activity with women raising children on farms.

Surveillance of Medically Attended Injuries



Jeff VanWormer, PhD, Marshfield Clinic Research Institute

Overview:

There is no deadlier work for children and adolescents in the United States than farming. Despite this, relatively little is known about trends in agricultural injury risk because there is no comprehensive surveillance system for non-fatal, hospitalized, and fatal agricultural injuries.

The purpose of this project is to establish a surveillance system of medically attended agricultural injuries among children and adolescents who reside on farms in north-central Wisconsin. Multi-year epidemiologic trends in medically attended agricultural injuries, as well as population subgroups at highest risk for agricultural injury, will be estimated. A retrospective cohort will be assembled including children and adolescents who reside within a target 20-county region served by Marshfield Clinic Health System (MCHS). The outcome will be medically-attended agricultural injuries, per MCHS diagnostic codes and vital status from electronic health records, Wisconsin Trauma Care Registry events, or Wisconsin Ambulance Runs Data System keywords indicative of an agricultural injury. Study findings will identify the strengths, limitations, and lessons learned, which can be applied to future research designed to build a model of childhood agricultural injury surveillance to be replicated and scaled across other large healthcare systems and linked in a national surveillance network. Such a resource will help direct agricultural injury prevention initiatives in the U.S. toward farm families and young workers who are most apt to benefit.

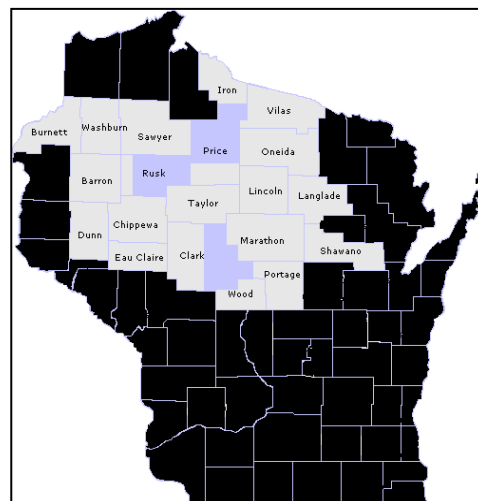


Figure 1. Source population, including individuals who reside on an active farms within the outlined 20-county region of Wisconsin.

Accomplishments to Date:

The project team was able to acquire the Wisconsin State register of licensed dairy producers as well as a commercial vendor listing of farm residences in the target population. Using the location information, the team was able to link MCHS child/adolescent patient records with farm residency. With the linkages in place, extraction of initial agricultural injury counts in the target population has started.

In the next year, the project will be linking remaining agricultural injury data from State sources to the location information. A complete chart review verification (and document precipitating factors) of agricultural injuries will follow. With the data sources linked, the project team will be able to estimate recent trends in agricultural injury incidence.

Selected Year 1 Outputs

Publications

1. Weichert B, Scott E, Burke R, Shutske J, Gorucu S, Sanderson W, Madsen M, Redmond E, Murphy DJ, Rautiainen R. What about the rest of them? Fatal injuries related to production agriculture not captured by the Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI). *Journal of Agromedicine*. 2021;1-6. DOI:[10.1080/1059924X.2021.1956663](https://doi.org/10.1080/1059924X.2021.1956663)
2. Burke R, Pilz M, Redmond E, Gorucu S, Weichert B. Stakeholders' consumption of agricultural injury reports from news media: A six-year analysis of website usage and visitor analytics. *Safety*. 2021;7(2):48. DOI:[10.3390/safety7020048](https://doi.org/10.3390/safety7020048)
3. Becot F, Bendixsen C, Barnes J, Rudolphi J. Broadening our understanding of farm children's risk exposure by considering their parents' farming background. *International Journal of Environmental Research and Public Health*. 2021;18(10):5218. DOI:[10.3390/ijerph18105218](https://doi.org/10.3390/ijerph18105218)
4. Becot F. Pushing beyond boundaries as a pre tenure rural sociologist who is not from around here. *Agriculture and Human Values*. 2021;38(3):615. DOI: [10.1007/s10460-021-10209-x](https://doi.org/10.1007/s10460-021-10209-x).
5. Nour MM, Field WE, Ni J-Q, Cheng Y. Farm-related injuries and fatalities involving children, youth, and young workers during manure storage, handling, and transport. *Journal of Agromedicine*. 2021;26(3):323. DOI:[10.1080/1059924X.2020.1795034](https://doi.org/10.1080/1059924X.2020.1795034)
6. Weichert B, Burke R, Redmond E, Shutske J. Farm suicides in Wisconsin, 2017–2018: Preliminary findings and a call for future research. *Safety*. 2021;7(3):51. DOI: [10.3390/safety7030051](https://doi.org/10.3390/safety7030051)
7. Gorucu S, Weichert B, Diehl D, Galindo S. An overview of agricultural injuries in Florida from 2015 to 2019. *Journal of Agricultural Safety and Health*. 2021;27(3):135. DOI:[10.13031/jash.14533](https://doi.org/10.13031/jash.14533)
8. Gorucu S, Weichert B. Injuries involving skid steers: What can we learn? 2021 ASABE Annual International Virtual Meeting 2100657. 2021. DOI:[10.13031/aim202100657](https://doi.org/10.13031/aim202100657)
9. Burke RR, Weichert BP, Namkoong K. Facebook ads manager as a recruitment tool for a health and safety survey of farm mothers: A pilot study. *JMIR Formative Research*. 2021;5(4):e19022. DOI:[10.2196/19022](https://doi.org/10.2196/19022)
10. Gorucu S, Weichert B, Redmond E, Murphy D. Coding agricultural injury: Factors affecting coder agreement. *Journal of Safety Research*. 2020;75:111. DOI:[10.1016/j.jsr.2020.08.006](https://doi.org/10.1016/j.jsr.2020.08.006)

Workshops

1. Child Agricultural Safety and Health Workshop. Sept 14, 21, 28 2021. Online.

Presentations

1. De Moura Araujo G, Khorsandi F, Kabakibo S, Kreylos O. Can youth reach agricultural all-terrain vehicle controls? *American Society of Agricultural and*

- Biological Engineers Annual International Virtual Meeting*. July 12-16 2021. Online.
2. Becot F, Bendixsen C, Barnes K, Rudolphi J. Broadening our understanding of farm children's risk exposure by considering their parents' farming background. *International Society for Agricultural Safety and Health Conference*. June 21–24 2021. Online.
 3. Charlier D, Schossow M, Ploeckelman M. Collaborative campaigns: Understanding impact. *International Society for Agricultural Safety and Health Conference*. June 21–24 2021. Online.
 4. Becot F, Inwood S, Contzen S, Shortall S, Tanaka K. International perspectives on the integration of the farm household and operation in agricultural programming. Roundtable organized for the *Annual Joint Conference of the Association for the Study of Food and Society; Agriculture, Food, and Human Values Society; Canadian Association for Food Studies; the Society for the Anthropology of Food and Nutrition*. June 9-15 2021. Online.
 5. Salzwedel M. What went wrong and how do we stop it from happening again? *2021 North Central Regional Trauma Advisory Council (NCRTAC) Trauma Conference*. Apr 22 2021. Online.
 6. Kilanowski J, Salzwedel M, Jepsen D. Workshop in agricultural safety resources – keeping children safe. *National Conference on Pediatric Health Care*. Mar 24 2021. Online.
 7. Becot F. Taking care of children while working on the farm: Lessons learned from COVID-19. *Agricultural Safety & Health Council of America Safety Summit*. Mar 22–24 2021. Online.
 8. De Moura Araujo G, Khorsandi F. Are youths capable of riding agricultural all-terrain vehicles safely? *Agricultural Safety & Health Council of America Safety Summit*. Mar 22–24 2021. Online.
 9. Ploeckelman M, Heiberger S, Salzwedel M. Marking safety the norm in a digital world. *Agricultural Safety & Health Council of America Safety Summit*. Mar 22–23 2021. Online.
 10. Salzwedel M, Sauer M. Development and use of topic-based agricultural youth work guideline booklets. *Agricultural Safety & Health Council of America Safety Summit*. Mar 22–24 2021. Online.
 11. Salzwedel M, Goldberg S. Safe portrayal of the ag industry & how to spot harmful messaging. *Canadian Agricultural Safety Association (CASA) 2020 Annual Conference*. Nov 19 2020. Online.
 12. Becot F. Taking care of farm children during COVID-19 and implications on children's exposure to farm risk. *Midwest Rural Agricultural Safety and Health Conference*. Nov 17 2020. Online.
 13. Salzwedel M. Farm safety and ag communications. *Farmsafe Conference*. Nov 13 2020. Online.
 14. Salzwedel M. Working in agriculture: Ensuring workers are equipped to work safely. *Farmsafe Conference*. Nov 13 2020. Online.

Webinars

1. Mazur J, Jepsen D, Schwebel D, Pate M, Salzwedel M. High Plains Intermountain Center for Agricultural Health and Safety Webinar and Panel Discussion. May 6 2021.
2. Rademaker A, Salzwedel M. Farm safety for children and youth: Risks and rewards. Children's Safety Network. Mar 4 2021.
3. Salzwedel M, Davidson J, Rohlman D. Youth farm safety. University of Minnesota Extension and North Dakota State University Extension Farm Safety Webinars. Feb 8 2021.

Research Posters

1. De Moura Araujo F, Khorsandi F. Are youths' physical capabilities enough to operate utility all-terrain vehicles? *International Society for Agricultural Safety and Health Conference*. June 21–24 2021. Online.
2. Pilz M, Salzwedel M. Amplifying community member engagement in a virtually connected world. *International Society for Agricultural Safety and Health Conference*. June 21–24 2021. Online.
3. Sauer M, Salzwedel M. Tools of the trade sessions: Lessons learned. *International Society for Agricultural Safety and Health Conference*. June 21–24 2021. Online.
4. Ramos A, Greer A, Salzwedel M, Grzywacz JG. Recommendations for efficient rollout of COVID-19 vaccine in the agricultural sector. *Agricultural Safety & Health Council of America Safety Summit*. Mar 22–24 2021. Online.
5. Sauer M, Salzwedel M. Interactive learning labs: Lessons learned. *Agricultural Safety & Health Council of America Safety Summit*. Mar 22–24 2021. Online.

Press Releases

1. New online community links child farm safety advocates. Sept 23 2021
2. Grants up to \$25,000 available to address emerging issues in childhood agricultural health. Sept 9 2021
3. Women new to farming may falsely believe their farms safer—study. Sept 2 2021
4. National datasets fall short in capturing agricultural production deaths. Sept 1 2021
5. Child injury prevention workshop set for Tuesdays in September. Aug 4 2021
6. Assigning farm work to youth: Dos and don'ts. May 4 2021
7. New resources help youth work more safely in agriculture. Apr 30 2021
8. New resources help youth work more safely in agriculture. Jan 26 2021
9. NIOSH pledges \$6 million for child agricultural injury prevention. Oct 27 2020
10. Harvest time on the highways. Oct 13 2020
11. Free training for supervisors aims to keep young agricultural workers safe. Sep 30 2020



National Children's Center
for Rural and Agricultural Health and Safety

For more information, please contact us.

Phone: 1-800-662-6900

Email: nccrahs@marshfieldresearch.org

www.marshfieldresearch.org/nccrahs

www.cultivatesafety.org