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Qualitative Assessment of Agritourism Safety Guidelines: A Demonstration Project

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ABSTRACT. In 2007, the National Children's Center for Rural and Agricultural Health and Safety (NCCRAHS) published *Agritourism Health and Safety Guidelines for Children* to provide helpful recommendations for protecting the health and safety of children visiting agritourism farms. *Supplement A*: *Policies and Procedures Guide* and *Supplement B*: *Worksite Guide* were subsequently published in 2009 and provided agritourism farms with checklists to use in reviewing, planning, and implementing their own health and safety practices. In order to better understand what would be required of a farm wishing to implement the guidelines using Supplements A and B, the North Carolina Agromedicine Institute conducted a single-family farm demonstration project with support from the NCCRAHS. The aims of the project were to (1) determine child health and safety risks associated with an existing agritourism farm; (2) determine the cost of making improvements necessary to reduce risks; and (3) use project findings to motivate other agritourism farms, Cooperative Extension agents, and agritourism insurers to adopt or recommend *Agritourism Health and Safety Guidelines for Children* for their own farms or farms with which they work. At the conclusion of the study, the target farm was in compliance with an average of 86.9% of items in Supplements A and B. Furthermore, 89% of individuals self-identifying as farmers or farm workers and 100% of Cooperative Extension agents and agritourism insurers attending an end-of-project workshop indicated their intent to adopt or recommend *Agritourism Health and Safety Guidelines for Children* for their own farms or farms with which they work.

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INTRODUCTION

The number of agritourism farms in the United States has increased over the past decade. In 2007, 23,350 farms in the United States earned over $566,000,000 from agritourism-related activities, representing an income increase of approximately 37% over 2002.[1] These farms provide activities such as corn mazes, fruit picking, educational tours for school children, farm-based festivals, country markets, and stores.[2] Farms established as agritourism centers attract many children and over 29 million youths and children visit these types of farms each year. Most of these children are new to the farm environment and its associated hazards.[3]

The problem of children being injured while living or working on farms, or while visiting them, has been recognized for many decades. In 2006, there were more than 23,000 injuries to children who lived on, worked on, or visited a farm operation.[4] More recent studies show that more than 100 children die on farms each year and more than 16,000 farm-related injuries occur to persons under 20 years of age.[4–6] The annual cost of nonfatal injuries to youths on farms has been estimated at $1 billion.[7] Key findings from a National Institute for Occupational Safety and Health (NIOSH) report reveal about three fourths of farm injuries occur to nonworking children.[6]

Despite the increase in the number of agritourism farms and the problem of agricultural injury to children, little research has been done regarding the potential health and safety hazards to children visiting these farms. The National Children's Center for Rural and Agricultural Health and Safety (NCCRAHS) has provided recommendations for the prevention of agricultural injuries to youths, and it has recommended steps for reducing agricultural injuries on agritourism farms. Possible interventions from this guideline include the construction of secure, dedicated play areas to separate children from the workplace; installation of safety barriers around known hazards; creation of child-free zones on farms and ranches; and communicating health and safety information to visitors. As agritourism expands in the United States, it is important that farm owners evaluate health and safety hazards to all visitors, but especially to children visiting their farms, while at the same time providing an enjoyable and educational experience.

Project Overview

The NCCRAHS leads the nation in research efforts to explore how to create safe environments for children in rural farm environments.[3] Although the NCCRAHS had developed *Agritourism Health and Safety Guidelines for Children* (*Guidelines for Children*), the guidelines had not been validated by application and review of the instrument. Thus, through funding granted by the NCCRAHS Marshfield Clinic Research Foundation, the North Carolina Agromedicine Institute (the Institute) engaged in a participatory research program with an established agritourism farm in Johnston County, North Carolina, from December 2009 through September 2010. The aim of this paper is to present the demonstration project, describe the findings from the project, detail the resultant interventions, and explain the impact the project has had on enhancing the national guidelines.

The agritourism safety project required a commitment from dedicated agritourism farmers with an interest in health and safety of children on their farm, but also an interest in advancing the safety of the agritourism industry as a whole. A farm was selected that had been in the same family for more than 100 years and was in transition from field crop production to agritourism after the death of the preceding generation's male leader. The family farm consisted of a husband and wife team and their teenage son, a member of the Future Farmers of America, where health and safety were a key aspect of his educational pursuits.

In fact, education had been integrated into the design of the family farm agritourism business. The family was interested in learning how to improve the business and how to save money on insurance through safety and health improvements.

Project Aims

The primary aims of this demonstration project were to (1) determine child health and safety risks associated with an existing agritourism farm; (2) determine the cost of making improvements necessary to reduce risks; and (3) use project findings to motivate other agritourism farms, Cooperative Extension agents, and agritourism insurers to adopt or recommend the *Guidelines for Children* for their own farms or farms with which they work. Specific, measurable objectives were set to evaluate interventions that would be implemented after the initial data collection process.

Aim 1: Determine child health and safety risks associated with an existing agritourism farm.
- Identified child health and safety hazards at the participating farm will be reduced by at least 75%, reducing the risk of injury for the estimated 4000 children visiting the agritourism family farm annually.

Aim 2: Determine the cost of complying with the *Guidelines for Children* and the *Certified Safe Farm: Farm Safety Review Checklist*[8] (*CSF Checklist*).
- The participating farm will realize a positive cost-benefit for making child health and safety improvements.

Aim 3: Use project findings to motivate other agritourism farmers, Cooperative Extension Agents, and agritourism liability insurers to adopt or recommend adoption of the *Guidelines for Children* and/or *CSF Checklist* for their own farms or farms with which they work.
- At least 30% of agritourism farmers attending the end-of-project workshop for agritourism farmers will decide to implement the *Guidelines for Children* and/or *CSF Checklist* on their own farms.
- At least 30% of Cooperative Extension agents and agritourism liability insurers will decide to recommend implementation of the *Guidelines for Children* and/or *CSF Checklist* to their constituents.

Aim 4: A new collaborative relationship will be developed between the Institute and the North Carolina Agritourism Networking Association (NCANA) to facilitate adoption of guidelines by membership.

METHODS

This demonstration project included a complex multimethod approach to gather data for evaluation. Those methods consisted primarily of qualitative approaches used in case study traditions and included on-site visits and direct observation, scoring of safety compliance, farm family interviews, intervention documentation and tracking, cost analysis, survey of participants at project dissemination, and a focus group from participants at the project dissemination.

Initially, in order to determine existing child health and safety risks, an on-site visit was conducted at the participating farm in December 2009 using the *Guidelines for Children* and *Supplement A: Policies and Procedures Guide*[9] (*Supplement A*) and *Supplement B: Worksite Guide*[10] (*Supplement B*) developed by the NCCRAHS.[10] The on-site visit was scheduled after the farm had completed its busy holiday season so that it could make needed improvements prior to the start of the new season. The visit was conducted by the primary investigator in conjunction with family farm members and included both interview and direct observation of the farm environment. The score sheet used during this direct observation only allowed for "yes" or "no" responses, it was determined this ranking was insufficient in scoring the level of compliance determined by observation as some items were "partially" met.

After the completion of the on-site visit, a revised score sheet was developed to help the farmers better understand how their farm

performed on *Supplement A* and *Supplement B* on initial evaluation and after corrections were made. Items that were compliant were scored a 1, items that were partially compliant were scored a .5 (e.g., first-aid kits were available in some areas of the farm but not all), and items that were noncompliant were scored a 0.

Results of the applied instruments were validated by a local county Cooperative Extension agent who works with agritourism farms, is familiar with the instruments, and had received training in use of the *CSF Checklist.* A prioritized list of items found to be in noncompliance was developed by the primary investigator and Cooperative Extension agent, with highest priority given to items directly affecting child health and safety. Items of noncompliance were identified in all categories of *Supplement A* and *Supplement B.* In total, 31.5 policy and procedure items were noncompliant, with 50.5 worksite items being noncompliant. These items were discussed with the family and then reprioritized. Priority was also given to the addition of bilingual signage to ensure that Spanish-speaking children and parents visiting the farm are as aware of health and safety precautions as are English-speaking visitors.

Next, site visits were conducted by the project evaluators. Qualitative interviews were conducted with the family farm owners and their son, educational materials were reviewed, and a tour of the operation was done as observation without an instrument. These interviews were conducted as a required part of the grant to determine the demonstration project's compliance with the aims of the grant and to document project progress.

During the months of January–September of 2010, the identified corrections to noted deficits found through the application of the *Guidelines for Children*, *Supplement A*, and *Supplement B* were completed, and a secondary review was conducted. The farm family conducted annual safety training with employees, incorporated new policies and procedures, and took additional steps to provide a safe environment by having their farm inspected by the fire department and establishing a farm emergency plan.

In addition to suggested child health and safety improvements, the farm's agritourism liability insurance rate was determined prior to making safety improvements. The farm family obtained insurance rates from their operation's current liability carrier and at least two other potential insurers. The farm wife kept detailed records of all activities dealing with the agritourism operation's involvement in the research, including phone calls, time on tasks for seeking to resolve the noted safety issues, and associated costs.

Expenses associated with the project were as follows: (1) purchase cost of goods and services necessary to make child health and safety improvements; (2) fair market value of nonmonetary goods and services necessary to make child health and safety improvements; (calculated by the value of goods already on-hand and labor cost for services performed by the farmer or other family members); (3) existing agritourism liability insurance cost; (4) agritourism liability insurance savings; and (5) lost sales through disruption while safety improvements were made (see Table 1).

During the final quarter of the project, an end-of-project workshop was held at the participating farm. The purpose of this activity was to share findings and lessons learned with other agritourism farmers, Cooperative Extension agents, and liability insurers. Resources for assisting with health and safety upgrades were identified; templates for policies, procedures, and emergency plans were also provided. Participants toured the farm and saw child health and safety upgrades. Pictures made of hazards prior to correction were shared so that participants could have an appreciation for

TABLE 1. Implementation Cost

Item description	Cost
Goods and services	$6246.00
Time and effort to research resources, develop policies/procedures/forms and make health/safety improvements (~75 days at $250.00 average farm revenue/day)	$1750.00
Annual agritourism insurance premium savings ($395/year)	($395.00)
Total	$7601.00

scenes "before" and "after." Giveaways of safety equipment such as fire extinguishers, first aid kits, and safety glasses were included as a part of the day's activities.

A self-administered survey was given to participants upon their arrival in which they answered questions in writing and then placed the surveys in an enclosed container prior to departing. Participants were asked to volunteer to stay after the workshop to participate in a focus group with the purpose to better inform education and policy development for the agritourism industry.

The final method used for collection of evaluation data included mapping relationships developed through implementation of the project, with notes taken by the project team. Verification of these data was ensured through member check and sustained relationships for continued project development.

RESULTS

As a result of the project, significant improvements were made to the family farm agritourism operation, which increased child and visitor safety. According to the pre-post checklist comparisons, the number of noncompliant items was reduced on *Supplement A* from 31.5 to 4.5 (85.7% reduction) and on *Supplement B* from 50.5 to 6 (88.1% reduction) for an average of 86.9% reduction, exceeding the objective of a 75% reduction. It is noted that partial credit (.5) was given for items identified as partially compliant. Policies and procedures were implemented as part of daily operations and had already benefited 3,300 children visiting the farm from the time corrections were made in a 3-month period between June and September 2010. In fact, the participating family farm exceeded safety requirements established by the North Carolina Department of Agriculture (NCDA) in order to become recognized as a "North Carolina Agritourism Farm."[11] The NCDA program is designed to promote the state's agricultural economy by helping agritourism businesses meet standards for agritourism practices. The family members received North Carolina Agritourism signs to place at the entrance to their farm indicating that they are part of the "Goodness Grows in North Carolina" program.[12]

Given the safety improvements, the family was able to find alternate agritourism insurance coverage, resulting in a $395 per-year savings. Thus, the risk reduction benefited not only the agritourism owner, but also the insurance industry, which should have to pay less in claims because of the safety improvements.

Thirty individuals participated in an end-of-project workshop along with the Project Coordinator and family farm members. One agritourism operator who was not able to attend requested and received workshop materials. Participants at the workshop included agritourism operators, insurance agents, Cooperative Extension agents, university partners, and members from the North Carolina Agritourism office.

The participating family farm members served as workshop facilitators, taking on primary responsibility for conducting the farm safety walkabout and sharing with participants the lessons learned. This allowed them to demonstrate their natural abilities as leaders and increased the cultural connection to the participants at the workshop. Further, this opportunity gave them confidence in sharing findings with other agritourism leaders to help motivate the industry to adopt safety practices demonstrated by the project.

Eighty-nine percent (89%) of individuals attending the end-of-project workshop who self-identified as agritourism farmers or farm workers affirmed their intent to use the *Guidelines for Children* and/or *CSF Checklist*. Those who did not so affirm indicated uncertainty in their ability apply the concepts from the workshop. These statistics exceeded the projection that at least 30% of agritourism farmers attending the end-of-project workshop would commit to implementation of the *Guidelines for Children* and/or *Safety Review Checklist* on their own farms. One hundred percent (100%) of Cooperative Extension agents and agritourism liability insurers who attended the end-of-project workshop affirmed their intent to recommend the *Guidelines for Children* and/or *CSF Checklist* to their constituents.

It was evident from the participant survey that the farmers, Cooperative Extension agents, and insurers were aware of the North Carolina Limited Liability Law (NCLLL) and perceived that it provides total immunity to agritourism businesses.[13] Participants expressed knowledge about and compliance with posting the required NCLLL statement in clear view on the agritourism premises. However, participants also noted that although the law offered some protection from issues such as negligence, lack of liability insurance coverage, and failure to decrease risk factors, they expressed concern that the NCLLL often times placed the agritourism owner at greater liability due to a false sense of security. Most participants felt that an individual using agritourism facilities and who experienced an adverse effect could still file a lawsuit or file claim against the agritourism owner as the landowner or general farm operator. Respondents further noted that the law had not been tested. Hence, participants conveyed that the *Guidelines for Children* and/or *CSF Checklist* would be helpful to agritourism in reducing perceived liability.

Focus Group Results

Eight workshop participants including agritourism owners, Cooperative Extension agents, and agritourism insurers participated in the postworkshop focus group. A focus group outcome was to help the researchers better understand how to develop education and policy for the agritourism industry. The participants indicated that there was a need for a centralized mechanism to guide development for agritourism activities. Although the NCANA representative or extension specialist was recognized as a resource, many indicated that manuals, Internet resources, and trial and error were how they approached program development. It was noted that those resources may be insufficient in covering this topical area.

When queried regarding the value of the demonstration project as it could potentially affect insurance rates and or cost to agritourism, there was positive response in favor of the program. One individual felt and many agreed that "it lays guideline structure that has been absent . . . where insurance could say you ARE compliant." Others felt that the insurers were not informed of the dangers of farming and that this provided an opportunity to train insurers now that there is a structure. The group found consensus in acknowledging that farms have ordinary risks that are increased when nonfarm visitors and children are on site.

When asked which policies and procedures would be most effective for the agritourism industry, the group noted the great diversity among the agritourism businesses. They noted that any policy to be developed would need to be flexible, with the capability to tailor sections to their various activities or allow them to "build an adaptable policy." It was noted that with provision of grants to make the changes over time and with the right resources, the needed policies and procedures could be implemented. One of the participants noted, "Money is a motivator."

The group acknowledged the need for staff training for what one participant called the "safety aspect" of controlling visitors' risks and of understanding the concepts of danger zones as being relative to knowing "where guests are and what they are doing." Those in the focus group who had experienced staff training applauded the fact that it made staffers "aware of all your surroundings" and that adding policy and procedures brought a greater level of training that was more extensive, improving operations.

The focus group was asked what safety equipment was most needed on agritourism sites in case of emergency. Communication equipment was overwhelmingly number one, followed by an emergency plan with equipment, and a fire extinguisher. When identifying the types of agritourism employee training that was most lacking, the group felt that customer service was essential. Nonfarm individuals in the group felt that an important part of customer service was orienting visitors to the farm and that farmers ". . . do not recognize that most of us are not used to your farm," implying that a lack of environment awareness increases on-farm risks.

Participants felt that expansion of safety improvements would cause an "increase in volume" of business. The group at this point indicated that marketing tools or methods for

marketing their product were needed and that "safety as a marketing tool" or "marketing for business that is geared toward safety" is an important factor.

Surprisingly, when asked what hazards most often create emergencies for agritourism, the response was "heat (the weather) is a hazard." The group also noted that you must be prepared for "fall hazards on the playground" and operators need to tailor activities and signage for injury prevention. It was interesting that the focus group noted that "parents are more remiss than children." Final comments from the group included a request to market the policies and procedures developed through this project.

New, collaborative relationships were developed between the Institute, the NCANA, and other entities important to the agritourism industry. The manager of the Office of Agritourism, NCDA, attended the workshop. As a result of the day's activities, family farm members were invited to present project findings and outcomes at the 2011 NCANA meeting. The NCDA agreed to assist the Institute and collaborative partners with East Carolina University's Center for Sustainable Tourism in disseminating a follow-up survey to learn more about health and safety practices in agritourism statewide.

The family farm members developed new partnerships and networks. Local emergency management and animal control personnel enhanced the operational capacity to respond collaboratively to emergency or animal control issues. A representative from the NCCRAHS conducted a farm visit and review of the successful guideline implementation at the project family farm due to all the hard work and dedication of the new partners and extensive networks. The farm wife participated in a 2010 International Society of Agricultural Safety and Health (ISASH; formerly known as the National Institute for Farm Safety) session on agritourism as well as the Childhood Agricultural Safety Network meeting and contributed valuable information on supervision and agritourism health and safety. This ISASH experience allowed her to learn more about child health and safety initiatives and partners at the national level. Subsequently, the farm wife was invited to serve as an advisor to the NCCRAHS in development of a new Web site for use by agritourism operators across the nation wishing to implement the *Guidelines for Children.*

Another positive outcome of this demonstration project was another project developed by the Institute in partnership with the Center for Sustainable Tourism at East Carolina University. The project surveyed agritourism farms across North Carolina conducting child agritourism activities to learn more about current health and safety practices. The survey was distributed in collaboration with the Office of Agritourism, NCDA, and findings were presented at the 2011 National Extension Tourism Conference.

DISCUSSION

Although many lessons were learned from this project, as noted in Results, there are suggestions for specific guidelines that individuals are encouraged to consider. Centner noted in 2011 that agritourism safety costs are often viewed as "detractable" funds that decrease an ever-narrowing profit margin.[14] Seldom do agritourism farmers take into account the value of claims or damages that may arise from visitors incurring injury. Additional monetary resources in the form of grants or cost-share funds are needed to assist agritourism operations in making necessary improvements in order to increase safety and reduce liability.

Centner alludes to the fact that agritourism farmers should exercise "due care." This embodies precautionary measures for which a duty of care has been established to avoid injury. When an injury occurs on the premises of an agritourism farm, even if there was no breach in "due care," biases such as "hindsight bias" or health "outcome bias" might support a jury verdict favorable to the injured visitor.[14]

In a 2010 publication, Centner notes that in the state of North Carolina statutes require agritourism farmers to establish an affirmative defense against liability owing to participant risk created by the ordinary dangers of farming operations. One such intervention is to post warning signs and to include information in written releases signed by the visitors to agritourism farms. A farmer's failure to provide such notices

leaves that operation vulnerable to claims if a visitor is injured.[15]

For the purposes of this demonstration project, a monetary or safety valuation of the risks of omitting safety interventions (such as the posting of signs) versus the benefit of using such interventions provides a mechanism to establish a cost-benefit analysis. A return on investment is one type of strategy that influences decisions in industry. A cost-benefit analysis is more than a return on investment in that one of its factors is safety. It is acknowledged that evaluating the cost-benefit of safety is somewhat subjective; however, the National Safety Council has provided guidelines for how to estimate such costs.[16] Further, the Centers for Disease Control and Prevention (CDC) notes that one mechanism for evaluating the importance of an adverse health event is cost of premature mortality.[17] The National Safety Council projected in 2010 that the average economic cost to society of a public fatal injury (a fatal accident in a public place) was $1,070,000. This figure does not include any estimate of property damage or any nondisabling injury cost.[16] Thus, it is essential that the agritourism industry take steps to protect itself and the public against claims from accidental injury or public fatality.

In light of the high cost of potential safety liabilities, the following considerations should be reviewed: (1) implementation of *Guidelines for Children* is a process that involves careful thought, investigation, and decision making; (2) steps taken to implement guidelines may result in the discovery of additional items that need to be addressed on the farm; (3) issues related to general farm operations can have an indirect effect on the health and safety of the agritourism operation. Local and state ordinances must be reviewed in consideration of the unique features of the individual agritourism operation; (4) implementation of this safety and health program requires an extensive network of community partners from both public and private sectors; (5) resources and supplies needed to implement guidelines may already be available on the farm or in the community at no cost, so it is important to do a thorough inventory before making expenditures; (6) although it may not be possible to make all health and safety improvements recommended in the guidelines at once, it is possible to include health and safety improvements as part of an overall farm management plan. Grant funds may be available to assist with making some health and safety improvements; (7) implementation of *Guidelines for Children* requires a commitment of time and energy along with a willingness to be open-minded and to look at health and safety issues in a new and different way; and most importantly, (8) ultimately, it is the decision of the farmer as to what he or she views as an "acceptable level of risk" for his or her farm.

Lessons learned relative to specific guidelines can be found in the booklet *Implementing Child Health and Safety Guidelines for Children*[18] from the Institute.

Project Outcomes

A preliminary overview of the project concept and activities was shared by the lead investigator and farmer in conjunction with the NCCRAHS. In addition, presentations have been given of the demonstration project at regional, state, and national levels.

To assist the farm with implementation of the NCCRAHS' *Guidelines for Children* and to correct items of noncompliance identified during the on-site visit, several products were developed. These products are available for use by other agritourism farms wishing to implement the guidelines, and include a booklet (*Implementing Agritourism Health and Safety Guidelines for Children* from the Institute), sample policies, procedures and forms, bilingual signs (e.g., no smoking on farm, animals may bite, hand washing, pond off limits), and a resource list for purchasing health and safety supplies and equipment. All materials are available in hard copy, on CD, and via the Internet at the following URL: http://www.ecu.edu/cs-dhs/agromedicine/child-safety.cfm. Materials were also disseminated at the 2010 NCANA meeting in Carthage, North Carolina.

In order to evaluate and report the project's impact on workshop participants, survey and focus group questions were developed along with a written outcomes report. Findings were listed in the final project report to

the NCCRAHS as well as being included herein. The NCCRAHS was actively involved with the Institute and farm throughout the project. Inquiries regarding clarification of items included in the *Guidelines for Children*, *Supplement A*, and *Supplement B,* findings included in interim and final project reports, as well as project products were used by the NCCRAHS to revise their documents as well as to develop an interactive Web site: http://www.safeagritourism.com.[19]

Implications for the Future

This paper presents an evaluation of a funded demonstration project for agritourism safety, and it is believed that the strategies and resources identified and/or developed could be easily replicated across other agritourism farms. In order to determine whether similar positive outcomes could be achieved and risks to children reduced generally through the use of these resources in addition to the *Guidelines for Children*, the implementation should be completed using a larger farm sample.

Follow-up investigation is also recommended with farms to determine whether or not they sustain health and safety practices after implementing guidelines, as well as to determine trends in child health and safety (e.g., number of incidents) for farms implementing guidelines as compared to those that don't.

Additional work is needed with insurance companies to determine whether they will adopt *Guidelines for Children* as an underwriting tool in developing agritourism insurance products and/or determining agritourism insurance rates.

Additional guidelines are needed to address the diversity in agritourism operations (e.g., equine, gem mining, rides other than hayrides, etc.). Widespread efforts are needed to assist agritourism farms with development of policies and procedures, staff training, and marketing relative to health and safety.

REFERENCES

1. United States Department of Agriculture: National Agricultural Statistics Service. 2007 Census of Agriculture, Table 6. Income from farm-related sources: 2007 and 2002. October 2012. Available at: http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_US_State_Level/st99_2_006_006.pdf. Accessed June 7, 2012.

2. Humann, MJ, Lee BC. *Agritourism Health and Safety Guidelines for Children*. Marshfield, WI: Marshfield Clinic; 2007.

3. National Children's Center for Rural and Agricultural Safety and Health. Agritourism: keeping young visitors safe. April 2012. Available at: http://www.marshfieldclinic.org/patients/?page=newsreleases&id=4692. Accessed June 7, 2012.

4. Hendricks KJ, Goldcamp EM. Injury surveillance for youth on farms in the U.S., 2006. *J Agric Saf Health.* 2010;16:279–291.

5. The National Children's Center for Rural and Agricultural Health and Safety. 2011 Fact Sheet—Childhood Agricultural Injuries. Marshfield, WI: National Farm Medicine Center, Marshfield Clinic Research Foundation; updated January 2011. Available at: http://www.marshfieldclinic.org/proxy/MCRF-Centers-NFMC-NCCRAHS-ChildAgInjuryFactSheet_Jan-2011.1.pdf. Accessed June 7, 2012.

6. National Institute for Occupational Safety and Health. Agricultural safety; Internet topic page. Atlanta, GA: Centers for Disease Control and Prevention; updated May 20, 2011. Available at: http://www.cdc.gov/niosh/topics/aginjury. Accessed June 7, 2012.

7. Zaloshnja E, Miller TR, Lee B. Incidence and cost of nonfatal farm youth injury, United States, 2001–2006. *J Agromedicine.* 2011;16:6–18.

8. Rautiainen R, Grafft L, Donham K., Schneiders S. *Certified Safe Farm: Farm Safety Review*. Iowa City, IA: The University of Iowa. 2005.

9. National Children's Center for Rural and Agricultural Health and Safety. *Policies and Procedures Guide: Supplement A to Agritourism Health and Safety Guidelines for Children.* Marshfield, WI: Marshfield Clinic. 2008. Available at: http://www.marshfieldclinic.org/agritourism. Accessed January 19, 2010.

10. National Children's Center for Rural and Agricultural Health and Safety. *Worksite Guide: Supplement B to Agritourism Health and Safety Guidelines for Children.* Marshfield, WI: Marshfield Clinic. 2008. Available at: http://www.marshfieldclinic.org/agritourism. Accessed January 19, 2010.

11. North Carolina Department of Agriculture and Consumer Services. North Carolina agritourism farm road signs program. September 2010. Available at: http://www.ncagr.gov/markets/agritourism/documents/FarmRoadSignPackage.pdf. Accessed September 18, 2012.

12. North Carolina Department of Agriculture and Consumer Services. Goodness grows in North Carolina. (n.d.). Available at: http://www.ncagr.gov/markets/gginc/index.htm. Accessed September 18, 2012.

13. NC Gen. Laws Ch. 99E, § Section 1. An Act to Limit Liability Arising from Certain Agritourism

Activities. 2005. Available at: http://www.ncleg.net/sessions/2005/bills/house/html/H329V6.html. Accessed September 18, 2012.

14. Centner TJ. Have US legislatures fully considered causal factors in assigning liability for inherent risk accidents? *J Business Syst Govern Ethics.* 2001;6:25–37.

15. Centner TJ. New state liability exceptions for agritourism activities and the use of liability releases. *Agric Human Values*. 2010;27:189–198.

16. National Safety Council. Estimating the cost of unintentional injuries. (n.d.). Available at: http://www.nsc.org/news_resources/injury_and_death_statistics/Pages/EstimatingtheCostsofUnintentionalInjuries.aspx. Accessed September 18, 2012.

17. Klaucke DN, Buehler JW, Thacker SB, Parrish RG, Trowbridge FL, Berkelman RL. Guidelines for evaluating surveillance systems. 1988. *MMWR Morb Mort Wkly Rep*. 1988;37:1–18.

18. North Carolina Agromedicine Institute. *Implementing Agritourism Health and Safety Guidelines for Children*. Greenville, NC: North Carolina Agromedicine Institute; 2010.

19. National Children's Center for Rural and Agricultural Safety and Health. Integrating safety in agritourism. 2012. Available at: http://www.safeagritourism.com. Accessed September 18, 2012.