Journal of Agromedicine

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/wagr20

Childhood Agricultural Injury Prevention Among Organic Farmer Mothers

Kathrine L. Barnes, Josie Rudolphi, Lisa Kivirist & Casper G. Bendixsen

To cite this article: Kathrine L. Barnes, Josie Rudolphi, Lisa Kivirist & Casper G. Bendixsen (2021) Childhood Agricultural Injury Prevention Among Organic Farmer Mothers, Journal of Agromedicine, 26:2, 273-277, DOI: 10.1080/1059924X.2020.1744495

To link to this article: https://doi.org/10.1080/1059924X.2020.1744495

Published online: 22 Mar 2020.

Submit your article to this journal

Article views: 129

View related articles

View Crossmark data

Full Terms & Conditions of access and use can be found at
https://www.tandfonline.com/action/journalInformation?journalCode=wagr20

JOURNAL OF AGROMEDICINE
2021, VOL. 26, NO. 2, 273–277
https://doi.org/10.1080/1059924X.2020.1744495

Taylor & Francis
Taylor & Francis Group

Check for updates

Childhood Agricultural Injury Prevention Among Organic Farmer Mothers

Kathrine L. Barnes[a], Josie Rudolphi[a,b], Lisa Kivirist[c], and Casper G. Bendixsen[a]

[a]National Farm Medicine Center, Marshfield Clinic Research Institute, Marshfield, WI, USA; [b]Department of Agricultural and Biological Engineering, University of Illinois, Urbana-Champaign, Urbana, IL, USA; [c]Rural Women's Project, Midwest Sustainable Education Services, Spring Valley, WI, USA

ABSTRACT

Purpose: Rates of organic farms and women organic farmers are increasing. Yet, this recent surge brings new and uncertain challenges for injury epidemiology. Since many in the population are of child-bearing age, and child agricultural injury is a significant threat, of particular relevance are the knowledge, attitudes, and beliefs towards risk of child injury.

Methods: A paper, self-administered 11-question questionnaire was distributed at four events geared towards early career women organic farmers. The questionnaire generated data around select demographics, attitudes towards farm safety, and sources of safety knowledge.

Findings & Discussion: The questionnaire had a 45% response rate. As expected, most respondents were new to farming (1–3 years' experience as a primary owner/operator), and 47% reported having a child under the age of 18 years work on the farm. While respondents recognized farms were generally unsafe for children, they reported their own farm as safe for children. Preferred sources of safety knowledge were those with user-generated content from other farmers.

Conclusion: Interventions with new women organic farmers in the Midwest are likely to be most effective by incorporating social media, networking with area farmers' groups, and addressing the optimism bias. Information not explicitly marketed as safety information may gain traction. A more complete analysis of risk, incidence, and prevalence of this niche population is important.

KEYWORDS
Special populations; epidemiology; organic; children

Introduction

Agriculture is a particularly dangerous industry, leading the nation in rates of occupationally-related fatalities.[1] While child agricultural injuries have decreased over time, they show unique patterns and high morbidity.[2] Estimates indicate approximately 33 children are injured every day in agricultural-related incidents.[3] Young workers are particularly vulnerable, being 44.8 times more likely to be fatally injured in agriculture when compared to all other industries combined.[3] Injuries are most likely to occur when children are unsupervised in the worksite. Farm injuries for children tend to be particularly severe and require greater clinical management, with children injured on farms hospitalized at 14 times the rate of children injured in incidents unrelated to farming.[4]

Meanwhile, more farmers are experimenting with the higher mark-up on organic products to stay viable.[5] The cost of organic products compared to their conventional counterparts ranges widely depending on location, seasonality, product, and other factors. Some sources put the premium of organic products at more than 30-100%, or in some cases as high as 300%.[5–7] The move is touted by many advocates as a way to both revolutionize America's food supply, making it more environmentally sustainable in the long-term, and for empowering women to take formal leadership roles on farms as principal owner-operators. The USDA reports certified organic acreage and livestock has been expanding in the United States for several years, particularly for fruit, vegetable, dairy, and poultry production.[8] Unfortunately, little data exist on rates of female organic producers. However, the gap between male and female organic and conventional producers is narrowing in the new generation of farmers, which the USDA defines as a farmer with 10 or fewer years' farming experience (Table 1).[9] Of new producers, 59% are male and 40% are female, a difference of 19 percentage points. In comparison,

CONTACT Kathrine L. Barnes barnes.kate@marshfieldresearch.org National Farm Medicine Center, Marshfield Clinic Research Institute, 1000 North Oak Ave, ML-1, Marshfield, WI 54449, USA

© 2020 Informa UK Limited, trading as Taylor & Francis Group

Table 1. Numbers, percentages of organic farms, female farmers[a].

	Male n (%)	Female n (%)
2017 New Producers		
All Producers	538,610 (59%)	369,664 (41%)
Principal Producers	443,424 (66%)	231,516 (34%)
2017		
All Producers	2,172,373 (64%)	1,227,461 (36%)
Principal Producers	1,941,953 (71%)	798,500 (29%)
2012		
All Producers	2,210,402 (70%)	969,672 (30%)
Principal Producers	1,821,039 (86%)	288,264 (14%)

[a]2017 Census of Agriculture United States Summary and State Data. Census of Agriculture (2019).

approximately 64% of producers (new or experienced) were male compared to 36% females. These numbers would indicate that women are increasingly represented amongst new and beginning farmers. These trends are also observable in the 2012 USDA Agricultural Census, which recorded 70% of all producers were male and 31% of all producers were female; the gap between male and female producers narrowed between the 2012 and 2017 USDA Agricultural Census. Women are also increasing as principal producers, where their numbers increased 15 percentage points from 2012 to 2017, while men principal producers actually decreased from 86% in 2012 to 71% in 2017. Thus, organic farming is consistently increasing in the United States, concurrent with an increase in female producers, although data are not widely available to ensure rates of female organic farmers are also increasing.

Gender differences in safety and health are well documented across space and time,[10–16] but the overall risk profile of organic agriculture is largely unexplored.[17] Even further, how gender coincides with organic modes of production to culminate in either an increase or decrease of risk to women, and by proxy their children, is also largely unexplored. Thus, understanding the risk of women principal owner-operators within the growing sector of organic agriculture could be of great potential impact to preventing the future incidence of agricultural injury and mortality amongst women and children.

This brief report summarizes a questionnaire with the goal to preliminarily describe and assess the safety knowledge, attitudes, beliefs, and practices of a sample of upper Midwest female organic farmers who are making their entrée into agriculture. The survey was deemed exempt from Institutional Review Board oversight.

Methods

As organic agriculture continues to evolve, several groups arose to foster women's entrée into organic agriculture, but the Midwest Organic and Sustainable Education Service (MOSES) is one of the more prominent. The non-profit is dedicated to educating and promoting sustainable production in communities, organizations, and through policy and hosts the world's largest Organic Farming Conference. Staff also help guide farmers looking to start or transition to organic production towards becoming certified organic. Additionally, they hold educational events specific to certain demographics, such as women and/or new farmers. In Her Boots (a project of MOSES) exemplifies the unique type of training, resource connections, and networking that aims to help organic women farmers succeed. In Her Boots aims to provide training, outreach, and a voice for women in organic and sustainable agriculture. Since 2009, the program facilitates various on-farm trainings throughout the summer. As one of the only year-round programs by an organic agriculture non-profit dedicated to women, In Her Boots delivers tailored programming and attracts consistent, enthusiastic attendees, particularly beginning women farmers without an agriculture background.

The study goal to collect attitudinal and behavioral data was achieved via a brief, self-administered questionnaire utilizing attendees at four summer field days hosted by In Her Boots between July 2017 to August 2017. Questions were generated and refined by the study team based on the specific aims of the study protocol. The specific aims of the protocol were to develop a grounded understanding of the attitudes of beginning farmers and ranchers (BFRs) towards children's safety in agriculture, including the recruitment, education, and support for BFRs, assess possible challenges for different communities of BFRs (in this case, female organic farmers), and determine preferred modes of communication. The questionnaire was designed to answer two main questions: what are the knowledge, attitudes, beliefs, and practices of beginning women organic farmers? And What opportunities could exist to disseminate safety information to this niche population? Ultimately, the work was intended to generate preliminary hypotheses surrounding the safety needs and dissemination preferences of women new organic farmers that could

Table 2. Farming background, demographics.

	Farming, no kids n = 21	Farming, kids n = 19
Have you ever worked in a profession other than farming?		
Yes, in the past	67%	42%
Yes, I currently farm and work in another profession	29%	53%
No	5%	5%
How long have you been the principal owner/operator of a farm?		
Less than 1 year	24%	16%
1-3 years	29%	37%
4-7 years	19%	11%
8-10 years	10%	11%
10+ years	19%	26%
Wanting to raise my child on a farm is part of what attracted me to farming		
Strongly Disagree	0%	0%
Disagree	29%	0%
Neither Agree or Disagree	33%	11%
Agree	14%	32%
Strongly Agree	19%	58%

Table 3. Farm safety attitudes, sources of safety knowledge.

	Farming, no kids n = 21	Farming, kids n = 19
Farm Safety Attitudes		
How cost effective is farm safety?		
1- Safety costs too much	0%	0%
2	5%	0%
3	24%	26%
4	29%	42%
5-Safety saves money	33%	32%
How safe is the typical farm for children?		
1-Not at all safe	5%	5%
2	29%	42%
3	48%	37%
4	14%	11%
5-Very safe	0%	5%
My farm is safer for a child compared to similar farms.		
Agree	78%	82%
Disagree	22%	18%
Sources of farm safety knowledge		
Do you regularly use any of the following sources to find information on farm safety? *Multiple answer choices were allowed		
MOSES	52%	21%
Web search	48%	16%
Friends	38%	37%
Local farmers groups	38%	16%
Social media	29%	21%
Insurance company	14%	5%
State or national Farm Bureau Federation	10%	0%
National Children's Center for Rural Agricultural Health and Safety (NCCRAHS)	5%	0%
National Farm Medicine Center	0%	0%

be explored in more depth and across a larger population through further quantitative approaches.

The questionnaire was an 11-question self-administered paper questionnaire (see Tables 2 and 3). Only seven of the questions are reported here. The questionnaire was administered to attendees at the conclusion of the event along with an evaluation of the event itself. Anyone attending the events could receive the questionnaire. Respondents completed the questionnaire and submitted it for a random drawing to be selected to win one of a limited number of small door prizes (seeds, book). Questionnaire data were summarized with descriptive statistics using SPSS software.

Results

Response rate was calculated by recording the number of questionnaires distributed (n = 169) to the number of returned questionnaires. In total, 76 questionnaires were returned, resulting in a 45% questionnaire response rate. Data were then analyzed in two groups: current farmers without children (n = 21) and current farmers with children (n = 19). Respondents who were not currently farming (n = 34) or whose farming status was unknown (n = 2) were excluded from the analysis, resulting in 53% of questionnaires being usable (Table 2).

Respondents were generally new to agriculture – 53% of both groups had 3 years or less experience farming while 19%-26% had been farming more than 10 years (Table 2). Of farmers who had children on the farm, approximately 47% reported having a child under the age of 18 years who worked on the farm. Of respondents with children, 90% agreed or strongly agreed with the statement, "Wanting to raise my child on a farm is part of what attracted me to farming." Also, farm parents more commonly worked another job (53%) compared to farmers without children (29%).

The two groups had comparable responses on questions related to attitudes on farm safety (Table 2). Most respondents (those with no children [78%], those with children [82%]) felt their farm was safer for children than other farms. Yet the majority of respondents (those without children [34%], those with children [47%]) reported the typical farm is unsafe for children.

Event attendees reported using a wide range of resources. Respondents without children seemed to access a greater variety of farm safety resources with web searches, friends, local farmers groups, and social media being some of the most popular sources.

Discussion

First and foremost, accurate data are needed in the rate of female organic farmers. As described earlier, rates of female farmers and organic farmers are independently increasing; however, data are needed on the gender of organic farmers to further understand these trends.

Given that many respondents were new to agriculture and indicated youth under the age of 18 years on the farm, such farmers may benefit from knowledge and awareness of age-appropriate tasks for youth on farms. Furthermore, previous research indicates parents are poor predictors of the age-appropriateness of farm tasks, which places additional pressure on agricultural health and safety professionals to reach farm parents and increase uptake of youth agricultural safety information.[18]

Respondents generally felt the typical farm is unsafe for children, yet rated their own farm as safe. Further evaluation should explore this discrepancy and help generate strategies to counter this phenomena, which could be a fruitful line of inquiry.

Data suggest new female organic farmers may seek out particular sources of information. Respondents reported seeking out information from MOSES, web searches, social media, or local farmers groups. Such sources can generally be described as non-empiric and characterized by farmer-to-farmer dissemination. Thus, new women organic farmers may prefer word-of-mouth-type and experiential resources over those that seem authoritative.

The study had several limitations. The questionnaire was only administered to individuals who attended events as part of a particular series within a particular organization. These results may have limited generalizability outside the Midwest, to male organic farmers, or female organic farmers in general. However, these data hint that agricultural safety and health information could have an audience in niche groups, such as women beginning organic farmers, especially if information is tailored to them. While this limits generalizability, the effectiveness and receptivity of information tailored to niche groups and dissemination into targeted communities versus a broad, generalizable sample would be an interesting avenue of further scholarly inquiry. Additionally, the questionnaire was administered at the end of the event, so some attendees may have been missed if they chose to leave the event early. However, administering the questionnaire alongside the evaluative questionnaire for the event streamlined the two separate questionnaires for attendees. The small sample size of women beginning organic farmers made comparative analysis difficult. Despite these limitations, hopefully attention will be drawn to this niche and understudied subpopulation of farmers, so their health and safety needs as they enter agriculture can be addressed and general emerging trends can be described for future study.

Conclusion

The study was meant to increase visibility of women organic farmers taking the initial steps into joining agriculture and provide preliminary data and hypotheses to guide future research and intervention with a niche group of farmers who are under-researched and largely excluded from existing scholarship. As such, these data suggest a number of topics for further inquiry and underscore many potential unique characteristics of burgeoning female farmers.

In summary, women organic farmers' health and safety needs may differ from women farmers more broadly and/or conventional farmers. Yet, this group of farmers remains understudied. There exists a great need for further research to empirically explore their unique needs and how these could best be addressed.

Acknowledgments

The authors wish to acknowledge the In Her Boots participants for their time and effort in providing the data. Great appreciation for the host farms in the summer of 2017.

Disclosure Statement

The authors report no conflicting or competing interests in this study.

Funding

This work was supported by The National Children's Center for Rural and Agricultural Health and Safety under Grant NIOSH U54OH009568-10.

References

1. Bureau of Labor Statistics. Number and rate of fatal work injuries by industry sector, 2016 and Civilian occupations with high fatal work injury rates. In: *Census of Fatal Occupational Injuries*. Washington, DC: Bureau of Labor Statistics; 2016: 14. https://www.bls.gov/iif/oshwc/cfoi/cfch0015.pdf. Accessed August 9, 2019.
2. Zagel AL, Kreykes NS, Handt EA. Pediatric farm injuries presenting to united states emergency departments, 2001-2014. *J Rural Health*. 2019;35(4):442–452. doi:10.1111/jrh.12371.
3. Marshfield Clinic Research Institute. *Fact Sheet: Childhood Agricultural Injuries in the U.S*. Marshfield, WI: National Children's Center for Rural and Agricultural Health and Safety/Marshfield Clinic; 2018. https://www.marshfieldresearch.org/Media/Default/NFMC/PDFs/2018%20Child%20Ag%20Injury%20Factsheetpdf.pdf. Accessed August 9, 2019.
4. Cooper G, Zagel A, Nickel A, Ortega H. A comparison of pediatric traumatic injuries on farms and residences from 2009 to 2014. *J Rural Health*. 2019;35(4):443–459. doi:10.1111/jrh.12372.
5. Organic Market Overview. United states department of agriculture, economic research service. https://www.ers.usda.gov/topics/natural-resources-environment/organic-agriculture/organic-market-overview/. Published October 9, 2019. Accessed February 21, 2020.
6. NASS Highlights, 2016 Certified organic survey. National agricultural statistics service. Available at: https://www.nass.usda.gov/Publications/Highlights/2017/2016_Certified_Organic_Survey_Highlights.pdf. Published October, 2017. Accessed August 9, 2019.
7. The cost of organic food. Consumer Reports. https://www.consumerreports.org/cro/news/2015/03/cost-of-organic-food/index.htm. Published March 19, 2015. Accessed August 9, 2019.
8. Organic Production. USDA ERS - organic production. https://www.ers.usda.gov/data-products/organic-production/. Published September 30, 2019. Accessed January 16, 2020.
9. 2017 Census of Agriculture United States Summary and State Data. Census of Agriculture. https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_US/usv1.pdf. Published April 11, 2019. Accessed January 16, 2020.
10. Habib RR, Hojeij S, Elzein K. Gender in occupational health research of farmworkers: a systematic review. *Am J Ind Med*. 2014;57(12):1344–1367. doi:10.1002/ajim.v57.12.
11. Raczkiewiz D, Owoc A, Sarecka-Hujar B, Saran T, Bojar I. Impact of spinal pain on daily living activities in postmenopausal women working in agriculture. *Ann Agric Environ Med*. 2017;24(1):134–140. doi:10.5604/12321966.1233996.
12. Andersson E, Lundqvist P. Gendered agricultural space and safety: towards embodied, situated knowledge. *J Agromedicine*. 2014;19(3):303–315. doi:10.1080/1059924X.2014.916644.
13. Tutor-Marcom R, Bruce J, Greer A. North Carolina farm women: opportunities for support and farm-related education. *J Agromedicine*. 2014;19(2):191–200. doi:10.1080/1059924X.2014.886540.
14. Orantes Navarro CM, Herrera Valdes R, Lopez MA, et al. Epidemiological characteristics of chronic kidney disease of non-traditional causes in women of agricultural communities of el salvador. *Clin Nephrol*. 2015;83(S1):24–31. doi:10.5414/CNP83S024.
15. McCoy CA, Carruth AK, Reed DB. Women in agriculture: risks for occupational injury within the context of gendered role. *J Agric Saf Health*. 2002;8(1):37–50. doi:10.13031/2013.7224.
16. Kirkhorn SR. Gender health and safety issues may increase in importance as more women work in agriculture. *J Agromedicine*. 2010;15(1):1–2. doi:10.1080/10599240903542817.
17. Soto Mas F, Handal AJ, Rohrer RE, Tomala Viteri E. Health and safety in organic farming: a qualitative study. *J Agromedicine*. 2018;23(1):92–104. doi:10.1080/1059924X.2017.1382409.
18. Yang J, O'Gara E, Cheng G, et al. At what age should children engage in agricultural tasks? *J Rural Health*. 2012;28(4):372–379. doi:10.1111/jrh.2012.28.issue-4.