

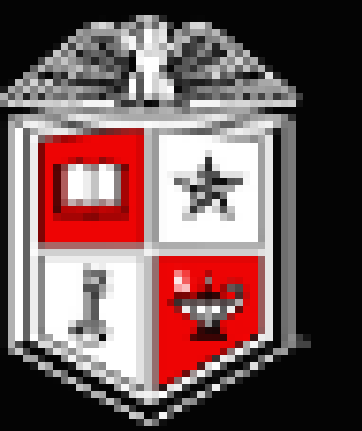


The Auger: An Unlikely Villain in Devastating Farmer Injuries

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Abstract

In the United States, farming is crucial to allow both the population and economy to flourish. However, this should not overshadow the fact that modern farming requires the use of advanced tools and machinery that are dangerous if not used properly. One such tool is the auger, a device used in the farming of grain. Severe injuries occur and grow more prominent every year, including injuries to the face, limbs, and other parts of the body. This poster aims to delve into why these injuries occur with an instrument that should be safe, what this means for farmers, and how to take steps to solve the issue. This will be accomplished by reviewing a local case study of a serious auger eye injury, while investigating other journals and research pertaining to the issue; this will allow the comparison of total auger injuries to those that occur in the Panhandle of Texas, giving a more holistic approach to the study. We predict that these injuries may occur due to a low priority for auger safety training provided to farm workers and due to poor understanding by the farm workers of the safety training provided.

Introduction

The grain auger (**Figure 1**) is an efficient, yet complicated tool used in agriculture. It is a tool used to transfer grain from the ground in order to transport them, consisting of a long metal shaft; inside the shaft is a continuous, spiral blade which rotates. As of the 1990s, agriculture yielded 37 deaths for every 100,000 workers (an around 140,000 workers were disabled). The grain auger often played a role in these disabilities or deaths. The grain auger has often been referred to as the worst or most dangerous agriculture machinery, as it could produce injuries that ranged from amputations, severe mutilation of the forearms, entrapment, face and eye injury, and death. The CDC created a specific guideline on safety measures (eleven steps) to help prevent injuries and death related to the auger, yet they persist, including the use of a barrier and the prevention of children under 18 using the auger. Furthermore, there are endless reports on news channels discussing grain auger injuries, yet very limited and dated official studies on the topic.

Purpose

The purpose of this project is to determine why these auger injuries continue to occur, despite clear safety guidelines on grain auger operations, and to bring awareness to such injuries.

Methodology

First, an understanding of the grain auger, its purpose, how it is used, how it can injure was studied. After establishing firm knowledge on the grain auger, a local case study of a grain auger injury was done. Then, a comprehensive literature review—pertaining to auger injury, farm injury, awareness, medical costs, and pediatric farm injury-- was conducted. Finally, the information gathered from the literature review, consisting of national and global studies, was compared and contrasted with the local one.



Figure 1: Grain auger.



Figure 2: Left upper extremity amputation by grain auger.



Figure 3: Eyelid laceration and left cheek laceration-- link between eye health and agriculture.

Age	Number	Percent
0-5	1	4
6-15	2	8
16-25	7	28
26-45	5	21
46-75	9	38
Total	24	100

Table 1: Age group distribution of auger injuries over a 2 year period. Table adapted from (Beatty et al. 1982).

Results

After conducting a large literature study, the results indicate that more priority and education must be given to farmers who operate augers, in order to make sure that the steps for using an auger is fully understood. However, there was a lack of recent, reliable research papers in this topic; most papers were quite antiquated and recent reporting of such injuries were usually from news outlets, instead of a medical or agricultural journal.

Conclusion

This study has shown a clear lack of representation and priority for farm workers who operate grain augers. When conducting literature research, very few recent articles about auger injuries that provided analysis, solution, or even acknowledgement were yielded. Instead, endless news reports from recent years were seen; this indicates that the injuries are still occurring, but they are not garnering much attention or awareness from the medical or agricultural communities, at least in terms of research being done. The local case report also stated that the man (whose injuries are seen in **Figure 2** and **Figure 3**) got his sleeve stuck in the auger, which led to the severe injuries; this could possibly have been prevented with proper use of a barrier and no loose clothing. Furthermore, a 2003 survey of farmers on auger-related topics showed that proper safety techniques were often not used, such as auger barriers; meanwhile, **Table 1** shows that it is sadly not uncommon to see children operate grain-augers. Both of these are a direct contrast to two of the CDC guidelines. The fact that children are being permitted to operate augers indicates a lack of priority that goes towards farm-workers. Furthermore, improper use may be a combination of poor understanding of guidelines, a lack of auger education, or individual mistakes. Though there were not enough recent studies to draw a firm reason for auger-related injuries, there is clearly a lack of awareness. Thus, the next steps are to reach out to farmers around the nation and determine how many auger injuries occur in more recent times, how they are addressed, and how farmers are taught to use the augers. Farmers and agriculture workers are essential to our society and have a large impact on the well-being of those that live in the United States; they must be treated as such, so much more research is needed in order to keep them safe.

Acknowledgments

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1. "Auger-Related Arm Amputation with Multiple Facial Injuries: A Case Report," Texas Tech University Health Sciences Center.
2. Beatty, Michael E. M.D.; Zook, Elvin G. M.D.; Russell, Robert C. M.D.; Kinkead, Lewis R. M.D. Grain Auger Injuries, Plastic and Reconstructive Surgery: January 1982 - Volume 69 - Issue 1 - p 96-102