December 2002

Breaking New Ground: Assisting Farmers with Disabilities Through the Application of Assistive Technology

William Field
Perdue University

Follow this and additional works at: https://commons.lib.jmu.edu/cisr-journal

Part of the Defense and Security Studies Commons, Emergency and Disaster Management Commons, Other Public Affairs, Public Policy and Public Administration Commons, and the Peace and Conflict Studies Commons

Recommended Citation

This Article is brought to you for free and open access by the Center for International Stabilization and Recovery at JMU Scholarly Commons. It has been accepted for inclusion in Journal of Conventional Weapons Destruction by an authorized editor of JMU Scholarly Commons. For more information, please contact dc_admin@jmu.edu.
Breaking New Ground: Assisting Farmers with Disabilities Through the Application of Assistive Technology

With regards to agriculture in much of Eastern Europe and Northern Africa, the significant problem that landmine detonations present to farmers often goes unnoticed. This problem causes careers in agriculture to be labeled as the most hazardous occupations around the world. However, little attention has been given to rehabilitation practices and assistive technology to help those who have been disabled in this line of work. The Breaking New Ground Resource Center at Purdue University is attempting to resolve the problem at hand by providing technical assistance to those who have been impacted by physical disabilities, in hopes that others may be encouraged to do the same.

by William E. Field, Ed.D, Purdue University, Department of Agricultural and Biological Engineering

"For handihood does not spring from the soil, nor does it grow from the ground." —Eliphaz’s response to Job

Introduction

Eliphaz was most likely one of Job’s more urban friends—certainly not a farmer boy experienced with sones and weeds. His observations were also made prior to the invention of landmines and without consideration of the terrible toll that landmines would someday have on those who work the soil for a livelihood. Eliphaz’s perspective is not unique to his time but continues to be the norm for many today.

Through the introduction of extensive mechanization and fossil fuel-intensive production methods, less than five percent of the population in most industrialized nations is now directly involved in agricultural production. Most of those reading a publication such as the Journal of Mine Action can go days or weeks without encountering an individual who walks the land daily, caring for his or her crops and livestock. In some areas, visiting a working farm and meeting a farmer or rancher has become such a novelty that providing tours for a fee allows visitors to pick their own produce as a form of entertainment which has become a secondary source of income for some farmers. For many, especially children, in more developed regions, the connection between what they eat and agricultural production practices has become transparent, unimportant, and taken for granted. Teenagers living in New York, Brussels, Mexico City or Hong Kong would find it incomprehensible to imagine that half of their peers around the world are participating daily in producing, transporting and processing food, fiber and forestry products. It would also be nearly impossible for most of them (and their parents) to grasp the impact that landmines have on the lives of millions of farmers, ranchers, livestock herders and others intimately involved with the land.

News accounts are easily passed over and forgotten that include brief mention of how landmines are typically placed in agricultural areas that four out of five of farmers in some countries pass over daily. News accounts about the effect that landmines have on the lives of millions of farmers, ranchers, livestock herders and others intimately involved with the land.

News accounts are easily passed over and forgotten that include brief mention of how landmines are typically placed in agricultural areas that four out of five of farmers in some countries pass over daily. News accounts about the effect that landmines have on the lives of millions of farmers, ranchers, livestock herders and others intimately involved with the land.

As odd as it may seem to some, there are numerous commonalities between the hazards faced by farmers and agricultural workers in highly mechanized agricultural workplaces and those encountered by farmers involved in more labor-intensive production practices in regions with a high risk of landmine exposure. In the United States, for example, farming has historically been and remains one of the most hazardous occupations with respect to work-related deaths and disabling injuries. Extreme injuries, including amputations resulting from entanglement in agricultural equipment, impact thousands of farm families each year. An estimated 2.7% percent of all treated farm-related injuries are the result of amputations (Stueland, 1998). Corn harvesting activities in Indiana alone resulted in over 100 hand or arm amputations per year for 25 years following the introduction of the mechanical corn picker in the 1940s (Willkomm, 1986). Amputations are also a primary type of injury resulting from landmine destruction. Cambodia has an estimated 35,000 amputees as a result of landmine. Other commonalities include:

1. Farmers, ranchers, herders and other agricultural workers have historically exhibited a high level of personal risk-taking behavior and a strong affinity to the physical challenges of farming. This group tends to minimize or rationalize the risk of working with hazards that others would generally find unacceptable. They collectively see the rewards of a good harvest and providing for their families as exceeding the risks associated with exposure to hazards, such as aggressive machines, untried livestock, bad weather, snakes and landmines. Agriculture remains for many a risk-taking occupation that rewards those willing to risk their life and limbs.

2. Agricultural production continues to be a male-dominated undertaking in many regions of the world, especially those most highly mechanized and also those most littered with landmines. Over 95 percent of farmer-related fatalities in North America are male (Purchatz, 1990), while over 90 percent of landmine victims are reported as male.

3. Injuries associated with both landmine exposure and agricultural production generally occur in rural or isolated locations with minimal access to rapid emergency medical services (Field, 1999). Delays in the discovery of the injured person, administration of appropriate first-aid and transporting him or her to care, and the lack of high-level trauma care result in survivable injuries often becoming life-threatening.

In conclusion, as seen in this study, the following conclusions are drawn:

1. As a means of enhancing stability and reducing landmine injury, a strap-on milking stool can be readily fabricated.
Disabilities resulting from injury or disease. Most of this work has focused on the needs of farmers and ranchers involved in high-machined operations that require modifications and assistive devices that would enable them to continue operating off-highway equipment such as tractors, combines and other self-propelled farm equipment. Resources designed specifically for farmers have been developed and widely distributed that address specific disability types, such as upper and lower limb amputations, visual and hearing impairments, arthritis and spinal cord injuries. Each resource is intended to provide encouragement and examples of appropriate forms of assistive technology and modified work practices that enable a farmer to complete essential work-related tasks.

One of the Center's most significant undertakings has been the identification, documentation, and cataloging of assistive technology and practices into a single resource that could enhance the independence of farmers and ranchers who desire to return to agricultural-related work following a disability. Hundreds of devices have been identified and described in three editions of Agricultural Tools, Equipment, Machinery, and Buildings for Farmers and Ranchers with Physical Disabilities or as it is now known, The Toolbox. Over 2,600 of these manuals have been placed in rehabilitation facilities, vocational rehabilitation offices and rural county extension offices throughout the United States.

A review of the assistive technologies and practices contained in The Toolbox suggest that there is considerable application of many of the ideas to the rehabilitation process of those disabled due to land mine explosions who require assistance in returning to agricultural-related work. Even the discovery that another farmer on the other side of the globe is still raising sheep or logs or operating a tractor with a serious disability could be a significant source of encouragement to an individual recently disabled.

Recognizing the barriers caused by language, considerable effort is being made to create a national resource guide that presents the assistive devices and practices so that they can be eventually shown via the Internet. The intermediate step will be a fully illustrated CD-ROM with high quality photos and drawings, plus a sampling of video clips of adaptive aids in use. This tool will be designed primarily for rehabilitation professionals and will provide adequate descriptions, when appropriate, for local fabrication.

Attempts to seek collaborative support for this work have yet to strike an appropriate chord or raise interest. Responses from several potential donor agencies and organizations suggest that the spirit of Eliphaz is alive and well. The challenge has been to effectively communicate that disabling injuries, from both work-related hazards and unintentional landmine exposure, are a significant problem for farmers worldwide, and that the quality of life for these individuals and their families could be enhanced through the appropriate applications of assistive technology.

Recommendations

The problem of disability within the agricultural community will not go away. Both a rapidly growing population and increased global tension will continue to present significant problems for persons and their exposure to hazards that will result in disabling conditions. Strategies that might be considered as a means of minimizing the impact of disability on this population include:

1. Recognition

that farmers, ranchers, agricultural workers, and their families worldwide are being seriously impacted by injury. Little has been published on the personal, family, community and cultural issues related to injury in the agricultural community, especially outside the more industrialized regions of the world.

2. Increased opportunities are needed for professionals working on injury-related issues within agricultural communities to share experiences and resources. This would include events that would address injury prevention, risk assessment, emergency medical services in rural areas and rehabilitation of injured agricultural workers.

3. There is a need for increased access, in appropriate forums, of information that would provide for more rapid rehabilitation of individuals disabled due to injury. This would include resources such as The Toolbox discussed earlier and expanded resources that cover the most basic forms of assistive technology that can be easily fabricated in rural settings.

Conclusions

The hazards associated with agricultural production have always been an intrinsic part of the lives of farmers, ranchers, herdsmen and other agricultural workers. The introduction of land mines during the last century added one more deadly risk with which they must contend. With an estimated 115 million mines still buried in farm fields and orchards in over 60 countries, 10 million land mines being manufactured each year, and the number of new mouths to feed only getting larger, the impact of these hazards will out last economically diminished.

Hopefully the demand for food will never become so intense that farmers will be pressed into mine-infested fields, as were the Russian infantry at the Battle of Konska as a means of protecting Russian tanks.

The fundamental response should be, as with all injury prevention strategies, elimination of the hazard. No farmer, or member of his family, should ever have to enter a field with the terror of knowing that a landmine with the potential to maim or kill is present. For those farmers who have been disabled and will be disabled, the focus should be on providing appropriate medical care and rehabilitation services. This includes access to assistive technology that will help them regain the highest level of independence possible. For more information on the resources available through the Breaking New Ground Resource Center visit: www.breakingnewground.info.

References