

Farming and Ranching with a Disability

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More than 13 million individuals in rural America are affected by disabilities. Nationwide, approximately 288,000 agricultural workers between the ages of 15 and 79 have a disability that affects their ability to perform one or more essential tasks (McNiel, 2000, Bureau of Labor Statistics, 1999). For many individuals disability jeopardizes their rural and agricultural futures. Although farming may be hazardous to agricultural producers with or without a disability, many people within the agricultural/farm community believe that farm hazards and injuries are a part of farming and the inherent uncertainties that are associated with it (Murphy, 1992). Furthermore, "the freedom of and indeed the willingness and necessity of accepting risk are a fundamental value associated with the settling and advancement of this country" (Murphy, 1992, p. 218). Barriers faced by farmers and ranchers with disabilities include lack of information on effective worksite accommodation, economic constraints resulting from lack of wage-loss insurance, isolation from needed services, lack of professionals trained on how to help people accommodate their disabilities in an agricultural occupation, lack of financial resources to pay for needed accommodations, and negative attitudes among professionals in the medical, rehabilitation, and agriculture-related industries about the ability of agricultural workers with disabilities to continue in a high-risk physically demanding occupation. In addition to those barriers related to returning to farming despite disabilities, many farmers and ranchers are also at risk of acquiring secondary injuries or secondary conditions. The Rural Research and Training Center at the University of Montana states that the average person with a disability reports 14 secondary conditions. More than 400,000 people who use manual wheelchairs experience serious secondary injuries to their shoulders, wrists, backs, and other parts of their bodies (Seeman, 2000). Furthermore, Anson and Shepherd (1996) state that individuals who are six or more years post-injury have a higher incidence of secondary complications than those who have been injured less than five years.

Co-workers and caregivers are also at risk when assisting an agricultural producer with a disability or using equipment that has been modified. Caregivers often lift the operator with a disability in and out of farm machinery. In one study of 20 co-workers who were required to use a tractor that had been modified for a farmer with a spinal cord injury, 65% reported cuts, bruises, knee pain or shoulder injury due to slipping, falling, or incidental contact with the tractor modifications (Willkomm, 1997).

Early Services Provided to Farmers with Disabilities

Prior to 1990 four programs/projects assisted farm families affected by disabilities in continuing this way of live. The first of these programs, established in 1966, was the Vermont Rural and Farm Family Vocational Rehabilitation Program. This successful program was a partnership between the University of Vermont Cooperative Extension Service and the state Office of

Vocational Rehabilitation. In 1984, with a grant from the National Institute on Disability and Rehabilitation Research, Purdue University established Breaking New Ground Resource Center. The purpose of this center was to respond to farmers and ranchers around the country who requested information and technical assistance on equipment modifications, resources, and ideas related to farming or ranching with a physical disability. Since 1984, Breaking New Ground has disseminated thousands of resources and publications to consumers and providers worldwide. Also in 1984, The University of North Dakota and Memorial Hospital in Grand Forks partnered in providing specialized rehabilitation services to farmers injured in farm accidents. This program received national attention through their sponsorship of two national conferences on rural rehabilitation technology. In 1986, The Easter Seal Society of Iowa (now called Easter Seals Iowa) established the Farm Family Rehabilitation Management (FaRM) Program to provide onsite rehabilitation and assistive technology services to Iowa farm families affected by disabilities. In 1989, the FaRM program received the national Program Innovation Award from the National Easter Seal Society (now called Easter Seals) and a commitment from the national organization to help other Easter Seals affiliates throughout the country to develop similar programs.

The Birth of AgrAbility

Based on the success of the Vermont, Indiana, North Dakota and Iowa projects, staff of Easter Seals headquarters instigated a grassroots campaign and took the idea of establishing a national program to Congress. Senator Tom Harkin (IA), Senator Patrick Leahy (VT), and the late Senator Quentin Burdick (ND) sponsored federal legislation to establish what is now called AgrAbility. As a part of the 1990 Farm Bill, the AgrAbility Project was authorized to provide education and assistance to agricultural workers with all types of disabilities and their families through unique partnerships between the USDA Cooperative Extension System and private nonprofit disability service organizations. Since 1991, AgrAbility Projects in 24 states have assisted more than 10,000 farmers affected by physical, sensory, cognitive, or emotional disabilities. The AgrAbility Program engages extension educators, disability experts, rural professionals and volunteers in offering an array of services. These services include on-site technical assistance on worksite and home modifications to accommodate disability, education to prevent further injury and disability, training for extension educators and rural professionals to upgrade their skills in assisting farmers with disabilities and development and coordination of peer support networks.

The Population Served

Based on 1999 AgrAbility statistics of 1,171 farmers served, the types of disabilities reported by farmers receiving services through AgrAbility included:

23% orthopedic related disabilities due to: arthritis, joint replacements, or injuries to the back, extremities or joints

16% Amputations including upper and lower extremities

13% Neuromuscular disorders including: multiple sclerosis, muscular dystrophy, polio, cerebral palsy, ALS, Epilepsy, and strokes

21% Spinal Cord injuries resulting in paraplegia or quadriplegia

27% Other disabling conditions due to head injuries, diabetes, heart disease, cancer, respiratory impairments, visual or hearing impairments, mental illness, mental retardation, burns, chemical sensitivities or chemical dependency

Causes of the disabling conditions include:

32% Farm related accidents due to falls, farm machinery/equipment accidents, and livestock related injuries.

24% Non-farm-related accidents due to: recreational accidents, auto accidents, or falls

44% Non-accident related disabling conditions as described above.

The age groups of those served include: 2% ages 0-12; 4% ages 13-19; 32% ages 20-40; 41% ages 41-60; 14% ages 61-75; and 3% over the age of 75. Of the 1,171 agricultural producers who received services in 1999, 15% were female. Also 88% of the agricultural producers were owner/operators versus 12% who were employees.

Services Provided

The National AgrAbility Project is administered by USDA-Cooperative State Research, Education, and Extension Service (CSREES). CSREES promotes the application of research, science and technology to meet the needs of all agricultural producers where they live and work. "AgrAbility is an excellent example of a customer-driven USDA-funded program that reaches an undeserved agricultural population through much-needed education, assistance, and support. CSREES is proud to have a role in enabling people with disabilities, whether they are owners of small farms, hired hands on large ranches, or migrant workers for a corporate grower, to participate fully in the American agricultural workforce and be a part of the rich fabric of rural community life (Rein, 1999, p.2)." In 1991 the first eight State AgrAbility Projects were funded to provide education, technical assistance, and support to agricultural producers and their families affected by disabilities in 12 states. In addition, a National AgrAbility Project was funded to provide training, technical assistance, and information to state projects to help them achieve their goals. The national project was also to provide information and technical assistance to individuals and organizations in states without state projects. Today the national project is a partnership between the University of Wisconsin-Cooperative Extension Biological System Engineering Department and the Easter Seals national headquarters. The services provided by the national project include professional training and technical resources on agricultural worksite assessments, identification of solutions to overcome barriers; strategies and technologies for farming with specific limitations; prevention of secondary injuries or illnesses; alternative agriculture ventures; funding ideas for needed technologies; and method, materials, and

resources for providing effective services.

The State AgrAbility Projects

Currently 18 states have AgrAbility Programs. Each program is a partnership between the extension service at a land-grant university and a private, nonprofit disability-related service provider. It is this partnership that is the key to the success of the state AgrAbility Projects. The diversity of backgrounds of both partners provides a rich resource to producers trying to achieve their goals. The AgrAbility staff includes employees from the state extension services who may be agricultural engineers, agricultural economists, or family living specialists and employees from the nonprofit disability organization who may be occupational therapists, vocational rehabilitation specialists, social workers, assistive technology specialists, special educators, rehabilitation engineers, or rehabilitation technologists. The partners complement each other in providing unique and quality services to the targeted population. In addition to its own high-quality staff, each state project develops a network of skilled individuals and related organizations to which they can refer individuals to or contact for assistance. These resources include fabricators, engineers, health and rehabilitation professionals, durable medical equipment dealers, agricultural equipment suppliers, educators, carpenters, welders, and others. Many states also rely on the use of ingenuity networks comprised of volunteers with a variety of skills who are willing to assist individuals in obtaining or fabricating a needed solution. Agencies such as state Vocational Rehabilitation, state Assistive Technology Projects, assistive technology exploration centers, and independent living centers frequently collaborate with state AgrAbility Projects to provide quality services. Cooperation and collaboration is the key to success with all AgrAbility services.

In addition to the direct services provided to farmers and ranchers with disabilities, over 4,700 educational training and awareness events have been conducted by state projects effecting over one million professionals and members of the rural and agricultural communities. Furthermore, an estimated seven million additional people have learned about the challenges and accomplishments experienced by agricultural producers with disabilities through newspapers and magazine articles, television and radio interviews and public service announcements, and displays at agricultural and health-related expos and fairs.

Preventing Secondary Injuries through Worksite Modifications

Agricultural producers with disabilities and co-workers who assist continue to face many risks when using modified equipment. Modifications to farm machinery, tools, and buildings are made to accommodate the unique needs of the individual. Unlike other industries, where products are tested for years, farmers with disabilities often need one-of-a-kind solutions for one of a kind types of needs. Therefore the chance of the modification failing, causing injury to the individual or co-worker continues to exist. The degree to which an agricultural worksite modification maximized the abilities of the producer and reduces risk of secondary injuries depend on such factors as follows.

1. The severity of the producer's disability and associated secondary complications.
2. The producer's medical history regarding the disability and his or her current prognosis.
3. The nature of the agricultural production tasks to be performed.
4. The skills and abilities of the producer with a disability.
5. The availability of caregivers or co-workers
6. The availability of needed worksite modifications and funding to pay for them.
7. The age of the producer
8. The skills of the individuals making the worksite modifications or providing needed services.

AgrAbility staff must consider all eight factors when working with farmers and ranchers with disabilities to ensure that the goals to be achieved will maximize their abilities as well minimize risk of further injuries or illnesses.

Ergonomics in general, and rehabilitation ergonomics as opposed to rehabilitative adaptations, play an important part in removing or reducing the impact that risk has on individuals with disabilities. Life Essentials, Inc. in Lafayette, Indiana is the largest U.S. commercial manufacturer of lifts for tractors. One of their lifts, called the Life Essential Lift, incorporates ergonomic principles to reduce secondary injuries. In a study conducted at the University of Pittsburgh of 21 tractor lifts, the Life Essential Lift was reported to have the lowest number of ergonomic risk factors compared to the lifts made by farm families themselves or by local machine shops. Although the cost of this professionally manufactured lift is higher than that of a homemade lift, the costs associated with a secondary injury that could result from using a faulty homemade lift would likely far out-weigh the added expense of the professionally manufactured lift. For example, a rotator cuff injury, due to a fall can be so severe that shoulder surgery and rehabilitation costing up to \$100,000 may be needed (Seeman, 2000). In the study of 20 farmers with spinal cord injuries using a homemade lift, 38% reported falls from these lifts (Willkomm, 1997).

The inability to react quickly in a hazardous situation presents another safety risk. Operating machinery, working with livestock, or working around chemicals can be potentially hazardous for producers who are affected by cognitive impairments, mobility impairments, visual impairments or the aging process. The inability to quickly remove him or herself from a hazardous situation can place the farmer at risk of a secondary injury. Farmers using prosthetic devices have the added risk of their prostheses becoming entangled when working with machinery or livestock, or when performing climbing activities. The prevalence of these risks and the frequency of resulting incidents need to be documented and shared. Such information can potentially inspire others who are designing and fabricating modifications for their own

agricultural operations to learn about potential secondary injuries and their causes. The result may be development of effective interventions that prevent or reduce these risks. The issue of informed risk is ethically very important. Risks will always be present in agricultural production, therefore they should be made as clear as possible so that workers affected by them can make informed choices in their regard.

Challenges in Providing Services

State AgrAbility projects face many challenges in providing services, e.g., staff turnover, professional isolation, lack of qualified candidates for technical positions, and limited resources. Staff turnover results in loss of institutional memory and experience and the need for time and resources to train new staff. In addition, new staff members need significant time to rebuild relationships with project partners, funding sources, and agricultural producers affected by disabilities. Relationship building is an important aspect of each state project. While diversity of staff is the strength of the AgrAbility projects, failure to appreciate this diversity can be a weakness. Partnerships require excellent communication and respect for what each partner can contribute to the process of helping the individual farm or ranch family achieve its goals. Finding individuals who have agriculture-related work experiences and disability-related work experience is difficult. A need for ongoing staff development and technical assistance to support those who are working on the front lines remains constant. Project staff frequently experiences a sense of isolation because few other people in the state provide these nearly unique services. The opportunity to share experiences and to problem solve with others is limited or non-existent. Local and national workshops are essential forums during which new and existing staff can share experiences and develop needed expertise. To conduct their work effectively, state project staff need on-going training and technical assistance on:

- * Obtaining updated resource materials on equipment modifications and case history examples of farming or ranching with a specific disability,
- * Identifying links to the valuable information on the Internet
- * Learning from and sharing information with other states.
- * Developing and implementing methods of providing services to such targeted populations as older farm workers, caregivers and co-workers who are at risk, individuals with chronic health conditions that are progressive in nature, or individuals affected by traumatic brain injuries,
- * Understanding the causes of secondary injuries and solutions to prevent or reduce these injuries.
- * Increasing skills in conducting risk assessments based on prior knowledge of accidents and injuries that occurred when performing specific tasks,
- * Locating and coordinating additional funding sources for needed accommodations, and

* Identifying specific methods, materials, and resources for farming with a specific disability.

Another challenge faced by AgrAbility staff is the limited number of resources available to pay for recommended equipment and modifications. Currently the state offices of vocational rehabilitation (VR) are the primary funding sources for major equipment and modification needs of AgrAbility consumers'. Funding available through VR, however, is limited. Both VR counselors and farmers with disabilities may be tempted to make these limited funds go farther by encouraging the use of homemade or locally made lifts that cost less than those commercially manufactured. Such a decision may result in higher risks of potential injuries. In addition, a debate continues on whether VR funding for recommended agricultural accommodations should be considered to be for assistive technology, which is covered, or for labor saving devices or business improvements, which are not covered by VR. An example of this occurred when a farmer with an above knee amputation needed raised decks in his hog confinement building. In one county, the office of VR paid for this accommodation stating that it would allow him to safely work with hogs. In the same state, but a different county, another farmer with exactly the same situation and needs was denied the funds. The local office of VR stated that the request was related to livestock handling improvements and therefore would not be eligible for funds. The farmer was encouraged to pursue a loan from the local bank. The lack of available funding for needed worksite modification often results in farmers doing without the needed modification and, therefore, places them at risk of developing a secondary injury. AgrAbility staff and families must educate potential funding sources regarding the value in funding needed worksite accommodations that will maximize abilities and minimize risks.

Success and Outcomes of AgrAbility

The ultimate goal of the AgrAbility Project is to empower agricultural producers affected by disabilities to remain in production agriculture. While over 10,000 farmers and ranchers have received AgrAbility Services, success must be measured at the individual level. This ultimate goal can be measured through the achievement of one or more of the following primary objectives for each individual who receives services:

1. An increase in ability of the to perform current or new work tasks.
2. A decreased potential for acquiring a secondary injury to the farmer/rancher, co-workers or family member
3. An increase in independence at home and in the community.

AgrAbility staff assist the individual in identifying specific needs associated with achieving the above objectives and providing education and assistance to help the individual in meeting these needs. Not all needs identified, however, are met. The reasons include changes in medical status, acquired secondary injuries or conditions, changes in the farm economy, changes in the individual goals themselves, lack of funding to pay for needed equipment or modifications, lack of assistance from co-workers or care givers, lack of needed expertise, or perhaps an unrealistic

goal to begin with. Frequently the farmer/rancher identifies 10 or more needs which requires him or her to prioritize the list. Often limited resources make it impossible to address all of the needs during one year. In addition, the complexity of an identified need may result in years of services in order to achieve the intended results. Regardless of the reason a specific need is not met, collecting outcome data will provide a basis for ongoing training, technical assistance, and interventions that can ultimately lead to successful achievement of the three primary objectives.

The Future of AgrAbility

The future of AgrAbility will be affected by changes in agriculture, improvements in technology, and improved service delivery mechanisms. Larger farm and ranch operations will have the potential to employ more workers with a variety of skills and abilities. Larger operations could promote the application of effective job restructuring techniques to adequately match the skills of the worker with the appropriate task as well as reduce the potential risk of injury. These techniques could result in employment opportunities for producers affected by severe disabilities. Alternative agriculture ventures will also provide opportunities to effectively use current, land, buildings, and equipment in productive ways.

Furthermore, the implementation of universal design principles will benefit all farmers and not just farmers with disabilities. Automation and labor saving technologies will result in increased employment opportunities for workers affected by disabilities. Newly designed tractors, with ergonomic features, automated feeding systems, or cell phones are just a few of the technologies that benefit all producers through increase productivity and reduced risks.

Advances are also being made in assistive technology. These advances will increase opportunities for completing essential farm or ranch tasks and decrease the potential for or severity of secondary injuries. Examples of these technologies currently or soon to be available include new designs in wheelchairs such as the "Smart Wheel" that will reduce repetitive stress injuries to the manual wheelchair user's hand, wrist, and shoulder; power wheelchairs with independent suspension systems to reduce repetitive trauma to one's neck and back when traveling through rough terrain. New prosthetic devices that save or store energy thus reducing repetitive stress injuries. Assistive technology solutions are also being constructed of stronger materials, which will hold up to repetitive and heavy use, by an agricultural producer. Innovations on the horizon include the use of assistive robotics to perform essential work tasks or the new IBOT chair that can climb stairs and maneuver in the most difficult terrain. These are just two of the technologies yet to be tried in agricultural settings.

Provision of needed services will be improved through the application of new telecommunication technologies. Tele-medicine, has enabled specialists from around the world to provide consultations using real-time videoconference equipment. This technology can be applied to the agricultural setting to observe the unique needs of the individual and the setting in which essential tasks must be performed. The consultant, located thousands of miles away, can immediately ask questions and request additional video camera shots in order to make appropriate recommendations. In addition this information can be instantly sent to others via high-speed data transmission technology. Researching needed information on worksite

accommodations can be quickly achieved over the Internet. A vast majority of agricultural producers now have access to the Internet. The Internet will increase communications from peer support volunteers and access to needed information. Computers with built in video cameras will capture and transmit images instantly. Effective use of this technology will increase timeliness in service provision and reduce the cost associated with service delivery. The need to travel long distances to provide information and assistance will be reduced. The time it takes to find the information on a needed solution, copy this information, and mail it to the producer can be significantly reduced using information that can be accessed over the Internet. Information can be located and immediately e-mailed to the farmer, or with the right instructions, the farmer will be able to perform his or her own research to obtain information or ideas on potential solutions. AgrAbility staff will also benefit from telecommunication technologies through participating in distance learning events that will increase their skills. High-speed Internet connections will enable video, pictures, and technical information to be transmitted immediately to service providers and agricultural producers 24 hours a day. Effective use of this technology will enable access to needed technical assistance in a timely manner and increase the number of needs that can be met, resulting in more farmers and ranchers remaining in production agriculture.

Funding for identified needs will continue to be a challenge. AgrAbility projects and the individual receiving services must continue to advocate for needed funding to pay for recommended equipment and modifications. The "Ticket-to-Work" program will be a new funding source to be explored for funding of specialized equipment or modifications that lead to successful gainful employment for the individual affected by a severe disability.

Innovative technologies, changes in agriculture and new service delivery strategies will continue to develop that will ultimately support the choice of farmers and ranchers with disabilities to remain productive in agriculture. Outcome data must be collected to measure increased ability to perform work or daily living tasks and the reduction of secondary injuries and illnesses as a result of the unique services provided through AgrAbility.

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