

AGRABILITY QUARTERLY

Promoting Success in Agriculture for People with Disabilities and Their Families

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*The National
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Easter Seals

Maintaining a Way of Life in Minnesota

Both Vern and Kathryn DeRaad grew up on a farm in southern Minnesota. After military service and 15 years working for the General Motors Corporation, Vern went back to dairy farming. The DeRaads have now run their 240-acre farm for 32 years. In 1991 Vern DeRaad was diagnosed with chronic leukemia for which there was no immediate treatment prescribed. In November 1993, he fell from a ladder while building a heifer shed and broke his back. He sustained a burst fracture of his L4 and L5 vertebrae, which required surgery to repair. During surgery a steel plate was placed in his back. Following the surgery he wore a body cast to keep his back stable and supported. The cast, however, often left him stiff, sore, and hot. In spring 2002 he was able to switch to a type of corset, which is much lighter and cooler.

After the accident his push-pull strength was diminished to 25 lbs. and he often experienced back pain, which together limited his ability to do the chores necessary to sustain the dairy operation. Kathryn could not handle all the chores by herself. They decided that to continue farming they would need to reorganize the operation. They chose to convert from a working dairy operation to a replacement dairy heifer operation. They sold the dairy cows, kept only the young Holstein heifer stock, and bought additional replacement heifers. It took about two years to build the new herd. During that time they had almost no farm income. Kathryn, a licensed practical nurse (LPN), started working fulltime at a regional hospital. After three years they had a 75 to 100 head herd but Vern still needed to find ways to modify the operation to accommodate his disabilities. In addition to the livestock, up until this spring 2002, the DeRaads grew corn, beans, hay, and oats.



Vern DeRaad installed a drive-through gate to save him time and effort by eliminating the need for him to leave his vehicle when entering the pasture.

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Client Feature

Maintaining a Way of Life in Minnesota, Continued from page 1

While Vern was at home recovering after the back surgery, Kathryn received a call from a family friend (a social worker) who gave her information about the Minnesota AgrAbility Project. Kathryn contacted the AgrAbility Project staff and asked for assistance. Staff talked with Vern about his abilities and limitations and then conducted a worksite assessment. They discussed the results and decided that the modifications and accommodations necessary for him to continue to farm would include several items.

First of all, each of his three tractors were updated with several items including new, vibration-absorbing seats to minimize the discomfort and aggravation to his back, wide-angle mirrors to eliminate the need for him to twist in the seat to watch behind him when hitching and unhitching equipment, steps with a handrail to provide him easier access and more stability when getting on and off the tractors, and quick hitches to eliminate the need for him to get on and off the tractor to hitch and unhitch equipment. Electric winches were added to the silos to eliminate the need to hand turn the unloader crank and make it easier for him to operate the silo unloader without stressing his back and shoulder. Purchasing a Gator with a hydraulic lift on the box made it possible for him to back up to the feeders and fill them without needing to get off to fill them by hand. A self feeder for cattle was purchased to eliminate the need for him to stoop and bend when filling the feeders by hand. Two drive-through gates were added to save him time, energy, and discomfort caused by getting on and off a vehicle to open and close them. Kathryn says that, “AgrAbility staff told us about equipment we didn’t know existed, like automatic hitching devices. We were so happy to learn about them.”

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Kathryn and Vern DeRaad discuss how the Minnesota AgrAbility Project worked with them.

In 2002, Vern injured his left rotator cuff and required more surgery. This year the DeRaads rented out their cropland and only handled their livestock. They have

kept 80 acres and continue to raise heifers. Vern is now transporting the livestock to the buyers and is making an effort to establish a private trucking business.

The AgrAbility staff helped the DeRaads complete the necessary

forms and paper work to request this assistance from the Minnesota Department of Vocational Rehabilitation (VR). VR staff approved the request for purchase of the assistive technology. The DeRaads were then able to make all the modifications the AgrAbility staff recommended. The DeRaads say, “Without these changes we couldn’t have stayed in business. We certainly appreciate what they [AgrAbility staff] did for us.” They feel it is important to give something back to the program, so Vern has become an AgrAbility spokesperson for the Minnesota Farm Fest and a peer support volunteer. “It’s [AgrAbility] there to help people...it’s a very good program and it’s a deal!”

From the Cow's Point of View

Most livestock farmers and ranchers treat their cattle like extended family members, and for good reason. The better farmers/ranchers understand the behavior of their livestock, the smaller the chance they will place themselves in an unsafe situation and/or place undue stress on their livestock. A basic understanding of livestock behavior can be useful while choosing and installing livestock guards, gates, and latches. This article provides only a brief introduction to livestock behavior. For more in-depth information, please visit some of the Internet sites listed in the resources section.

Unlike humans, cattle have panoramic vision (see Figure 1), which means they can see almost all the way around themselves without moving their heads. A cow's depth perception, (see Figure 2) however, is only focused in a small forward view (e.g., while a cow might be able to see you standing at its side, it cannot necessarily judge how close or far away you actually are). This might explain why a cow can be startled when you approach even though you have been in its field of vision for some time.

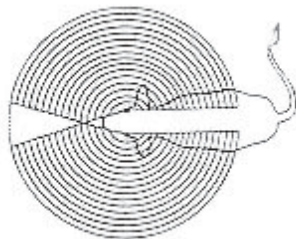
Grazing animals are much more sensitive to high frequency sounds than humans (e.g., cattle are most sensitive to 8 kilohertz [khz], while humans are sensitive to 1-3 khz). Cattle also fear abrupt contrasts of light and dark and have a different reaction to moving objects than might be expected. Some of these differences are a natural consequence of grazing animals being "prey" species. Finally, an animal's "flight zone" or "how close you can get to an animal before it moves away from you" is an important fact to know in order to determine how best to corral, gate, and generally handle cattle without causing them stress.

In the next section on Assistive Technology, we'll review different models of livestock guards, gates, and latches. The proper use of guards, gates, and latches will contribute to improved livestock behavior along with improved safety for cattle and for farmers/ranchers with and without a disability.



Figure 1. Cattle have panoramic vision; they can see everything except what is directly behind them.

Figure 2. Cattle have very limited depth perception. While a cow may see you standing at its side, it cannot judge your distance.



To learn more about animal behavior and animal handling safety, visit these websites:

<http://www.cdc.gov/nasd/> (search on animal behavior)

<http://www.grandin.com/>

<http://www.agr.gov.sk.ca/>

<http://www.fao.org/> (search on livestock)

Assistive Technology Notes

Guards and Gates

Livestock Guards:

Various models of livestock guards are available and can be applied in different ways. The basic objective of a cattle guard is to allow the farmer/rancher to pass through a fenced livestock area without having to open and close a traditional gate, while simultaneously keeping the livestock from passing through. If the guard is properly designed to contain a particular animal, the cattle would get their feet (i.e., hooves) caught in the guard when trying to pass over it. Cattle guards are usually applied on the ground surface. Sometimes cattle guards are placed over a shallow pit or have a supporting structure underneath them to raise them slightly above the ground surface.

Some livestock guards are designed to limit the size of vehicles they allow to pass, such as an ATV cattle guard. Other livestock guards are wide enough to allow pickup trucks, tractors, and even large farm implements to pass through them.

Livestock guards are more likely to be found in southern and western areas of the United States. The reasoning for this differs, but as one farmer told us, “that is just the way my grand dad did things”.

Example Livestock Guards:

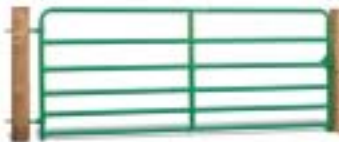


The Texas “Portable” Pitless Cattle Guard (from HiQual) can be set up when and where needed.

A hydraulic Cattle Guard (from Richardson Farm Supply) uses a raised bridge which deters cattle but is supported by the ground when vehicles pass over.



Example Livestock Gates:



Standard “pipe” livestock gate with wrapped chain latch is the most common gate (available at most farm supply stores).

This drive through electric gate by Koehn allows the operator to pass through the gate without getting out of or off their vehicle.



The Mighty Mule Powered gate opener feature is designed for home, farm or ranch use on single or dual swing gates from 3.5 to 16 feet in length.

Assistive Technology Notes

Guards and Gates

Example Gate Latches:

Close-up of a wrapped chain latch (available at most farm supply stores).



Hop Lock Spring Loaded Latch (from Duffy Manufacturing) provides easy closure with positive locking.

Quick Gate Latch (from Ramm Fence) can withstand incredible abuse. The latch is rust proof and easy to open with one hand.



Sure-Latch gate latch can be opened with one hand and supports the gate when closed.



Sure-Latch gate latch showing both sides of the latch and the gate connector which allows the gate to swing either way.

Livestock Gates:

While livestock guards work well in many situations, a livestock gate with a gate latch is more commonly used to allow the farmer/rancher to pass through a fenced livestock area. Livestock gates with latches are also preferred over livestock guards for use inside barns, smaller paddock/fenced areas, loading chutes, and corrals.

The variation in livestock gates and gate latches is almost endless. Livestock gates and gate latches sometimes consist of whatever material is most readily available to farmers/ranchers when they construct or design their fenced livestock areas. If a livestock gate is to be used frequently (i.e., entrance to a barn yard or feedlot area), certainly the type of gate and gate latching used should be carefully considered, especially if the farmer/rancher has a disability which affects his/her mobility or strength.

Farmers/ranchers with a mobility or lack-of-strength issue would certainly benefit from a gate which easily (i.e., requires minimal effort) latches and opens/closes, or perhaps from a gate that swings freely or is automatically opened/closed. This style of free swinging or automatic gate would allow a farmer/rancher to drive their truck or tractor through the gate without having to get out of or off of their vehicle. Whenever automatic “powered” gates are installed, the farmer/rancher needs to be aware of the additional safety issues resulting from an powered auto-opening/closing gate structure.

When choosing gates and gate latches, remember that livestock, especially cattle, are curious creatures that often investigate fence oddities and use stationary structures to rub against. Therefore, be careful that gate latches are not too easily operated so that when a cow rubs against them, the gate will not inadvertently open. This would be especially important if the gate opens to a nearby busy highway or to a very remote area of your farm/ranch operation.

Company Contact Information:

Duffy Manufacturing Company, Inc.

P.O. Box 4545
 Beeville, TX 78104-4545
 (800) 959-6145
<http://hoplok.com/>

Koehn Marketing, Inc.

PO Box 577
 Watertown, SD 57201-0577
 (800) 658-3998
<http://www.koehnmarketing.com/>

Mighty Mule Gate Openers

GTO, Inc.
 3121 Hartsfield Road
 Tallahassee, FL 32303
 (800) 543-4283
<http://www.gtoinc.com>
 (can be purchased at places such as ACE, True Value,
 Tractor Supply, etc.)

Texas “Portable” Cattle Guard

<http://www.hi-qual.com/>
 (has distributors of their products in US/Canada)

Quick Gate Latch, Sure-Latch Products

RAMMfence
 13150 Airport Highway
 Swanton, OH 43558
 (419) 825 - 2422
<http://www.rammfence.com/>

Richardson Farm Supply

<http://www.richardsonfarmsupply.com/gates.htm>

Sure Latch Products

Co-Line Welding, Inc.
 Metal Fabrication
 1232 100th Street
 Sully, IA 50251-8000
 (800) 373-7761
<http://www.surelatch.com/>

**For additional resources check
 the AgrAbility Assistive
 Technology Database at
[http://www.agrabilityproject.org/
 assistivetech/](http://www.agrabilityproject.org/assistivetech/)**

NOTE: Mention or display of a trademark, proprietary product, or firm in text or figures does not constitute an endorsement by the U.S. Department of Agriculture, Easter Seals, the University of Wisconsin, or the AgrAbility Project, and does not imply approval to the exclusion of other suitable products or firms.

Connecting with MAP

The Minnesota AgrAbility Project has been going strong since 1991. It began with the director of the Rural Rehab Technology, Inc. (RRT), a private, non-profit organization, receiving a grant from the Minnesota STAR program to increase assistive technology awareness among rural and farm families in 29 Minnesota counties. RRT joined the Goodwill/Easter Seals and AgrAbility families in 1992.

Today, the Minnesota AgrAbility Project (MAP) serves all 87 Minnesota counties through the collaborative efforts of Goodwill/Easter Seals Minnesota and the University of Minnesota Extension Service (UMES). Rural Rehab Technology (RRT) is now a program of Goodwill/Easter Seals Minnesota providing assistive technology assessment and training services to rural Minnesotans.

Project Staff

Beth Zabel, O.T.R., is program manager and is assisted by Wayne Onken, M.S., C.R.C. RRT's primary focus is the MAP activities. The Farm Health and Safety Program, part of the University of Minnesota Department of Biosystems and Agricultural Engineering and staffed by John Shutske, Ph.D., Michele Schermann, R.N., M.S., and Ruth Rasmussen, R.N., M.S., M.P.H., provides technical and programming support to MAP.

MAP provides information and referral, on-site visits, individualized assessment, education and support services for Minnesotans with disabilities whose goal to gain or maintain farming and/or farm-related occupations. MAP reaches out to farmers, farm family members, agricultural workers, rural health care providers, and agri-business leaders through award programs, educational presentations, regular mailings, collaborative service agreements, the Fenceline (peer support network), and most importantly, on-site visits.

Improving Services

MAP continues to improve its services through a number of new initiatives. One goal is expansion of partnering opportunities with agricultural and health care organizations. Farmers place a high value on interpersonal networks for securing information. Expanding the number of opportunities to meet with farmers one-on-one or in small groups will increase the effectiveness of efforts to prevent secondary injury and disability accommodation training. Using opportunities to make presentations at meetings/events of pre-established groups (e.g., traumatic brain injury and arthritis support groups, Farm Bureau, seed dealers) and within pre-existing health care systems (e.g., cardiac care programs, diabetes regional centers) will increase the credibility and accessibility of AgrAbility resources to farmers and agricultural workers.

Efficient and effective assessment is the goal of a partnership with Lifease, Inc. MAP is collaborating on a feasibility study on the conversion of a PC version of assessment software to a hand-held PDA format. The second stage of the collaboration will focus on integrating assessment results with assistive technology databases.

How farmers view safety messages and intervention methods is the focus of a study begun this year. Information from this study will be used to improve education and intervention methods.

The AgrAbility Project is going strong in Minnesota. MAP staff believes that farming in Minnesota is a meaningful way of life reflected in the huge grins and satisfied smiles of our AgrAbility participants. We are proud to be part of those moments in Minnesotans' lives.

Minnesota AgrAbility Project Staff



John Shutske is the University of Minnesota's Extension Agricultural Safety and Health Specialist, and is an Associate Professor in the Department of Biosystems and Agricultural Engineering. John has been the project director for the Minnesota AgrAbility Project for ten years. Shutske has worked in a range of areas since arriving in Minnesota in late 1990. His work has included research and educational program development in areas related to children's injury prevention, development of sensor technologies to prevent machinery entanglements, and fire prevention on grain combines and tractors. John is a 1988 PhD graduate of Purdue University's Agricultural and Biological Engineering Department. To help pay his way through graduate school, John worked with Purdue's Breaking New Ground program and wrote several sections of the original BNG "gold" manual dealing with tractor lifts, hand controls, and other assistive technology features. John and his wife Kate have two sons, Michael (age 9) and Jack (age 6). He enjoys fishing and exploring in the woods near his home and in northeastern Minnesota.



Beth Zabel comes to AgrAbility with diverse experiences. She grew up on a farm in Southern Minnesota and has experience plowing, baling hay, walking beans, picking rocks and worrying about the rain. Beth has 18 years experience and training as an Occupational Therapist in a variety of settings including hospital-based in- and out-patient services and 10 years as a school-based therapist. Beth lives in New Ulm with her family.



Ruth Rasmussen is a Research Fellow, University of Minnesota, Biosystems and Agricultural Engineering. Her research activities include the planning, development, implementation and evaluation of farm safety programming. She also conducts extensive literature searches, resource investigations, needs assessments, interviews and evaluations of the conditions and services of rural Minnesota population. Ruth assists with the marketing and promotion of programs and materials.



Michele Schermann doesn't have a traditional, mainstream farm background, but she does have a degree in horticulture and worked in cotton fields in Texas, pollinated squash in Arkansas, and sold tropical plants to businesses and homeowners. Eventually she decided to return to Minnesota and get a Bachelors degree and a Masters degree in nursing. Michele's academic interests are in caring for persons with chronic illnesses (her research interests are people with fibromyalgia). She has been with the University of Minnesota Farm Safety and Health Program and Minnesota AgrAbility Program since 1996. When she's not busy working with AgrAbility staff, Hmong farmers, mainstream farmers, and students, Michele enjoys kayaking the Great Lakes, fly-fishing, cold weather camping, and eating.

The **AgrAbility Project** promotes success in agriculture for individuals with disabilities and their families through on-site assistance and educational resources. For additional information on the **National AgrAbility Project** or for a current list of state project sites, addresses and telephone numbers contact:

University of Wisconsin - Cooperative Extension
460 Henry Mall
Madison, WI 53706
866-259-6280 or 608-262-5166

Easter Seals
700 Thirteenth St., NW-Suite 200
Washington, DC 20005
800-914-4424 or 202-347-3066

<http://www.agrabilityproject.org>

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