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*The National  
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Easter Seals, Inc.

## True Collaborations

Russell Anderson was self-employed as a semi truck driver when he and Joanne, his wife of 29 years, picked up roots. They moved from Northern Indiana to the Southwest corner of Iowa in 1996 to 200 acres of land they had purchased in

1994. Life drastically changed for them in December 1999 when Russell sustained a head injury after slipping on ice and hitting his head on the running board of his semi. Both of his retinas were detached. His right eye was more severely damaged resulting in temporary total blindness. No longer able to drive, and with the loss of income and no health insurance, Russell and Joanne were forced to sell the semi quickly to pay their bills and purchase necessary medication. Russell needed three separate surgeries to re-attach the retina in his right eye but the left eye appeared to correct itself. Russell feels fortunate to have his vision successfully restored. The loss of vision, states Russell, "was very devastating to me and sent me spinning out of control. I am grateful beyond words for my recovery and for those who were there to help me through this. I now look at things differently". In addition to the visual disability, Russell was not able to lift more than 10 pounds for over two years, but that too has improved. Today the injury to his brain causes only occasional and temporary confusion and dizziness.



*Russell Anderson in his pole shed on his operation in Iowa.*

temporary total blindness. No longer able to drive, and with the loss of income and no health insurance, Russell and Joanne were forced to sell the semi quickly to pay their bills and purchase necessary medication. Russell needed three separate surgeries to re-attach the retina in his right eye but the left eye appeared to correct itself. Russell feels fortunate to have his vision successfully restored. The loss of vision, states Russell, "was very devastating to me and sent me spinning out of control. I am grateful beyond words for my recovery and for those who were there to help me through this. I now look at things differently". In addition to the visual disability, Russell was not able to lift more than 10 pounds for over two years, but that too has improved. Today the injury to his brain causes only occasional and temporary confusion and dizziness.

Joanne had worked in local government and knew about the Iowa Extension's work for people with disabilities. She was able to connect with

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Client Feature

Mary Yearns, Iowa AgrAbility Project Coordinator, who brought Chuck Larson, Rural Rehabilitation Specialist, with her to their first meeting. Chuck began working with Russell in the summer of 2001. Joanne says, “he was totally fantastic and it gave Russ such a mental boost to find a kindred spirit who truly cared.” Chuck was able to draw on Russell’s strengths and help them develop a plan of action. Chuck arranged for Russell to meet another AgrAbility client who had successfully returned to farming. This connection provided Russell with support from a peer as he worked toward his own goals.

Chuck introduced Russell to Dick Grose with Iowa Vocational Rehabilitation. It was helpful that Dick was very familiar with agricultural operations having been raised on a farm. Dick suggested Russell apply for a grant with the Iowa Entrepreneurs with Disabilities Program. The Entrepreneurs program is administered through the Iowa Department of Economic Development and the Department of Education, Division of Vocational Rehabilitation. The program provides both technical and financial assistance for program participants interested in self-employment. Russell applied for and received a grant and began working with Jay Torrey, Business Specialist. Between the grant and the support from VR, the Andersons were able to move forward with the plan that they had developed with AgrAbility.

Russell’s plan was to have a beef cow/calf herd and bottle-calf operation in which he could safely and efficiently work. Iowa AgrAbility, VR and the Entrepreneurs Program assisted Russell with planning and designing the pens and nursery, farm management and accounting software for keeping business records, and a portable cattle handling equipment system. The For-Most cattle handling

equipment includes a crowding tub with a walkway around the outside perimeter, squeeze chute with access door, head gates, squeeze chute, and a tilt table on the calf crate. The equipment provides Russell protection from injuries from the animals and ease and efficiency in handling the animals during various procedures such as castration, vaccination, or working on hooves.



*From left: Russell Anderson; Chuck Larson, Iowa Rural Solutions; Jay Torrey, Iowa Entrepreneurs with Disabilities; Dick Grose, Iowa Vocational Rehabilitation*

Today the Andersons have 57 cows and calves and a grazing management plan for them. Russell handles the farm operation and Joanne keeps the farm records in addition to her off-the-farm job. They hope to eventually increase the size of the herd as well as their acreage so they can run more livestock and hay. “I feel that a real bond has been formed with Chuck, Dick and myself,” states Russell. “If anything was said to be gained through this, it would have to be the new friendships I have made. We still have a long way to go to further stabilize our farming operation but with their help we are well on our way.” ❖

## Traumatic Brain Injury (TBI)

According to the Centers for Disease Control and Prevention, each year 1.5 million Americans experience a traumatic brain injury (TBI). In addition, it is estimated that 5.3 million Americans live with disabilities resulting from a brain injury. Motor vehicle crashes, violence – mostly from firearms – and falls, particularly among the elderly, are the three leading causes of TBI. Twice as many men incur a TBI than women and people ages 15 to 24 years and over age 75 are the two age groups with the highest incidence of traumatic brain injuries. TBI's occur eight times more frequently than breast cancer <sup>1</sup>

Traumatic brain injuries can be from either closed or open head injuries. A closed head injury occurs when the brain bounces against the skull. Closed brain injuries could affect a specific area of the brain or be diffuse and affect many areas of functioning. Depending on where the brain is injured, physical, psychological and/or cognitive limitations may occur. An open head injury occurs when something penetrates the skull and subsequent limitations are usually focused on the location of the penetration. Figure A describes the primary functions of the different areas or lobes of the brain and the brainstem.

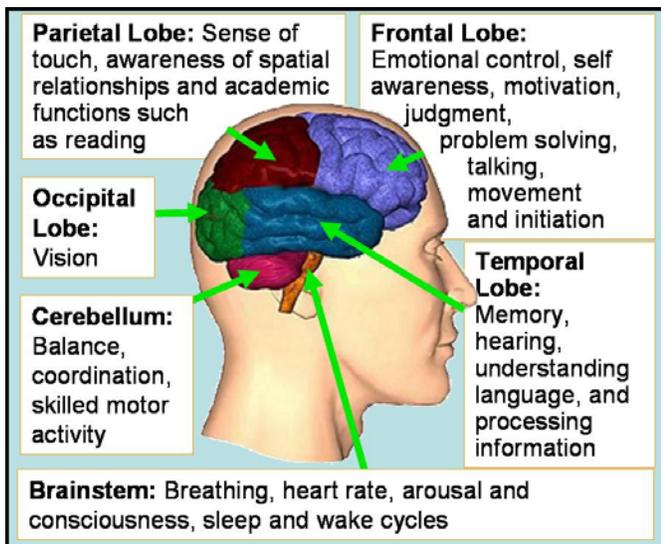


Figure A

Common difficulties manifested by a TBI may affect one or more of the following functional areas:

- ◆ **Cognitive:** thinking, attending, problem-solving, judgment, initiating actions
- ◆ **Memory:** storing or retrieving information
- ◆ **Perceptual:** sensory and spatial relationship limitations
- ◆ **Motor:** weakness, balance and coordination, endurance, flexibility
- ◆ **Speech and Language:** understanding and/or expressing
- ◆ **Emotional:** lack of emotional control, self-awareness, impulsivity, depression <sup>2</sup>

### *Individualized Approach to Providing Assistance*

No two individuals will be affected in the same way by a traumatic brain injury. The actual damage to the brain, the length of time in a coma, the length of time having memory difficulties after the injury, the personality and learning style before the injury, the emotional reaction to the injury, and the social supports will all determine changes in personality, or physical or mental abilities.

Traumatic brain injuries are frequently referred to as a “silent epidemic” because of the invisible nature of this disability. <sup>3</sup> Symptoms not readily apparent, such as loss of memory or initiative, often lead others to misunderstand and misinterpret the injured person’s actions and abilities. The person with the injury may also be grappling with newly acquired difficulties, which often lead to frustration and confusion. The frustration and confusion may cause a loss in self-confidence, feelings of failure, depression, anxiety or a sense of lost control. ❖

## TBI Assistive Technology Solutions

### *Farming with a TBI*

Agriculture ranks as one of the most hazardous industries.<sup>4</sup> By the very nature of production agriculture, there are implied risks of secondary injuries. Assisting the person with a TBI function independently and safely on the farm or in the home will require taking into account the following factors: medical assessments of disability, observations of the farmer with TBI, feedback from his/her support system and assessment of the physical and cognitive demands of the agricultural operation. Assessments from medical professionals will identify the nature and severity of the limitations associated with the farmer or rancher's specific brain injury. Getting to know the person over time through interactions and observations should provide an understanding of how the person perceives his/her limitations and how he/she functions within them. Feedback from significant family members or support people may be useful in understanding the individual's overall functioning level. An assessment of the physical, sensory, and cognitive demands of the agricultural operation, coupled with barriers imposed by the disability, will identify where assistance may be beneficial.

Safety and avoidance of secondary injuries when returning the farmer or rancher with a TBI to production agriculture are the primary objectives of the AgrAbility projects. When suggesting alternative ways of performing farm tasks, and/or modifying equipment or systems, one must consider the farmer's limitations as well as his/her willingness to try new methods or relinquish duties that he/she has done in the past. Many hard issues will need to be addressed. Will the person be able to safely handle operating agricultural equipment, work with livestock and manage seasonal peak workloads? If the farmer can drive a car, can he/she safely operate a tractor or run a combine? Is the farmer's reaction time adequate to handle unpredictable animals? Is endurance or

fatigue an issue that would preclude being able to work the long harvest hours?

Some individuals develop their own compensations or strategies while others may require assistance or more complex accommodations. The following sections will describe a few simple adaptations for cognitive/memory, perceptual/spatial, motor/physical, and emotional limitations caused by a brain injury. More complex accommodations and adaptations for speech and language limitations will be discussed in a tip sheet to be available September 2004 on National AgrAbility website.

### *Cognitive and Memory Accommodations*

Simple farm tasks can suddenly become insurmountable hurdles for farmers with brain injuries affecting cognitive functioning. Short term memory loss, inability to problem solve, difficulty processing information, poor judgment, trouble initiating activities and even reading may vary in severity, frequency and circumstance. Therefore, it is important to observe and work with the individual over a sufficient time period to understand their abilities. A good first step is to assess the cognitive demand of each problematic farm task. This could be accomplished within a work site assessment.

Finding solutions to problematic tasks the farmer must perform will typically find better acceptance if the solutions are unobtrusive or similar to what others in agriculture already use. For example, for a dairy farmer, it would be easy to hang a clipboard on the parlor wall listing all of the routine tasks he/she might encounter each time he/she starts up, runs, and cleans up the parlor. The farmer can then visually or physically check off tasks in the order that they are to be completed. This same clipboard could include the manufacturer's service numbers for the vacuum pumps and the milking equipment, or contact information for on-call hired hands.

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Assistive Technology Notes

Traumatic Brain Injury

This low-tech solution is similar to what any “dairy” farmer might use. Another solution is an ordinary paper wall calendar that could be used to track information about the farmer’s herd. If the farmer has difficulty in initiating a task or remembering to look at the list on the clipboard, memory aids such as a vibrating watch or alarms with auditory information can help to remind him/her that it’s time to do another task on the list. More information on memory aids will be included in the forthcoming tip sheet.

Routine maintenance of farm equipment is a common work task. Using the operator’s manual, or having a picture of a particular piece of farm equipment with all the lubrication points highlighted in an appropriate color, might lessen the possibility of a gear or bearing not getting lubricated. Most farmers/ranchers would use the operator’s manual until they were familiar with the machinery. Color-coded scoops, barrels and pictures may also help when feeding animals that require specific types and amounts of feed. Again, these are common solutions to routine farm tasks using available or adapted materials to meet the particular needs of the farmer with the TBI.

Non-routine tasks occur all the time. Carrying a simple pocket notebook with a “to do” list may be sufficient as a reminder tool. However, non-routine tasks, or tasks which if done improperly have the potential for serious safety issues or other implications, may require different strategies. Farm equipment breakdowns or the weather can alter the best of plans, causing difficulty for all farmers and ranchers. Therefore, it’s impossible to list all the steps required to handle every non-routine farm/ranch task in these situations. Having a co-worker work alongside or in place of the individual with TBI with cognitive issues may be preferred.

**Perceptual/Spatial Accommodations**

For individuals with a brain injury affecting spatial relationships, coupled with other limitations,

the operation of farm machinery becomes a very serious issue. Even in the wide-open western plains, a tractor or combine operator must be able to judge distances and maintain proper machine alignment with the field operation or crop harvesting activity. The simple task of backing a tractor to hitch it to equipment requires the operator to judge close distances with good reaction timing. The use of automated hitches might lessen the chance of injury to the operator or co-workers who attempt to handle a wagon tongue during hitching. Likewise, low technology solutions such as additional end-of-header markers, contrasting color fence posts around the fence gate or contrasting color added to drive-through gates may improve spatial acuity for the equipment operator.

In point of fact, operating a tractor or combine is not the same as an automobile. If there are serious concerns about safety and ability to operate agricultural equipment, discuss them with the farmer with the TBI. Suggest that others handle the equipment operation, if feasible.

**Motor/Physical Accommodations**

Medical professionals may recommend that the farmer with the TBI, who has balance, coordination, and/or motor skills difficulties, not climb ladders, silos, grain bins, or walk on highly uneven surfaces in order to prevent slips and falls. In some of these cases, ladders can economically be replaced with stairs. As an example, stairs could be added to grain bins. Or, the necessity to climb a grain bin can be reduced or lessened by installing a grain bin level indicator. In an upright silo, adding stairs isn’t practical, and in this situation, it may be better to have someone else perform the task. The *January 2003 AgrAbility Quarterly* ([www.agrabilityproject.org/newsletter/january\\_2003/1.cfm](http://www.agrabilityproject.org/newsletter/january_2003/1.cfm)) offers more ideas on prevention of slips and falls in the agricultural setting.

Loss of balance, coordination, slowed reaction time and other motor skills limitations may pose

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## Resources on Traumatic Brain Injury

Brain Injury Association of America  
[www.biausa.org/Pages/home.html](http://www.biausa.org/Pages/home.html)

NPTC Level 2 Certificate of Competence in Tractor Driving and Related Operations,  
[www.nptc.org.uk/Schedules/General\\_Machinery/Tractor%20Driving%20Assessment%20Schedule%20Sep03.pdf](http://www.nptc.org.uk/Schedules/General_Machinery/Tractor%20Driving%20Assessment%20Schedule%20Sep03.pdf)

Thomas Jefferson University Self Study Series: Employability of Persons with Traumatic Brain Injuries  
[www.tbimo.org/library/guides/TJmod1.pdf](http://www.tbimo.org/library/guides/TJmod1.pdf)

## Iowa AgrAbility Project

### Easter Seals Iowa State University

The Easter Seals Iowa FaRM Program was established in 1986 to help farm families affected by physical disabilities meet their needs in the following areas: agricultural worksite modification consultation; independent living and community services coordination; health care services coordination; peer support services and vocational counseling/job placement. The original FaRM Program, now Easter Seals Iowa Rural Solutions, was the primary model for the National AgrAbility Program. In 1991, Easter Seals Iowa partnered with Iowa State University Extension and received one of the first USDA State AgrAbility Project grants. The partners have continued to re-apply for and receive USDA AgrAbility grant funds each year since. Currently Iowa has an AgrAbility client base of approximately 900 farmers who are either active, in follow-up or in a closed status.

### Iowa State University Extension

Iowa State University Extension builds partnerships and provides research-based learning opportunities to improve quality of life in Iowa. We believe in quality, access, diversity, and accountability. We are dedicated to engagement, entrepreneurship, and local presence.

Iowa State University is the state's land-grant institution with the mission of learning, discovery, and engagement. Historically, ISU Extension has led the university in its formal engagement mission to Iowans. With an ISU Extension presence in every county, ISU Extension continues to engage the people of Iowa with education and information through six program areas: Agriculture and Natural Resources, Business and Industry, Communities, Families, 4-H Youth Development, and Continuing Education and Communication Services.

## Iowa AgrAbility Project Staff

### Tracy Keninger

Tracy Keninger holds a B.S. in Education and an M.S. in Rehabilitation Counseling from Minnesota State University in Mankato. Ms. Keninger grew up on a farm in rural Iowa. Currently, she is working on her doctorate in Rehabilitation at Drake University in Des Moines. Ms. Keninger oversees the Easter Seals Rural Solutions Program. She is also responsible for initiating Easter Seals program development activities across the state of Iowa and has worked for Easter Seals for 13 years.

### Chuck Larson

Larson holds a Bachelor of Science degree in Animal Science from Iowa State University, Ames, Iowa, as well as a Guidance and Counseling Master's degree from University of Missouri. In 2002, Larson was awarded the Rolfe Karlson Award for Staff Excellence at Easter Seals Iowa. Larson has been employed as Rural Rehabilitation Specialist with Easter Seals Rural Solutions Program for 15 years.

### Tony Wernimont

Tony Wernimont holds a Bachelor of Technology in Agricultural Business and Agronomy from Northwest Missouri State in Maryville. Wernimont has been employed with Easter Seals Rural Solutions as a Rehabilitation Specialist for nearly two years. Wernimont was a former client of the Easter Seals Rural Solutions Program as result of a farm related incident in November of 1997. Wernimont's love for agricultural grew in college, in addition to his interest in serving other farmers with disabilities.

### Mary Yearns

Mary Yearns, Ph.D., is an Associate Professor and Extension Housing Specialist at Iowa State University. Her subject matter interests focus on the housing needs of an aging population and persons with disabilities. She has designed several interactive exhibits on universal design and home accessibility that have been demonstrated at a wide variety of fairs, agricultural expos, and educational events around the Midwest. She has served as Project Coordinator for the Iowa AgrAbility Project since 1991. She has drawn many remodeling plans for AgrAbility consumers to help them modify their homes for accessibility.

### Erin Haafke

Erin graduated from Iowa State University in May 2003 with a BS in Child and Family Services and a minor in Gerontology. She's been working for Iowa State University Extension for six months as Program Specialist for the AgrAbility program. Erin joins Chuck and Tony in meeting AgrAbility consumers across the state and bringing extension's resources to their front door.



*From left: Mary Yearns, Iowa State University Extension (ISU Ext); Erin Haafke, (ISU Exts); Chuck Larson, Easter Seals Rural Solutions (ES RS); Tony Wernimont, ES RS; Tracy Keninger, ES RS*

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References

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problems working with livestock. Even though the farmer and cattle are familiar with one another, unexpected events such as a simple “tractor-backfire,” an unexpected dog barking, rooster crowing, etc., may startle livestock and place the farmer in a precarious or “trapped” position. To limit or prevent such situations, proper handling techniques for all types and kinds of livestock should be assessed. Even small calves can present a great danger, and the use of head gates or squeeze chutes to properly and safely restrain livestock are good investments. They could help prevent primary injuries for all livestock farmers/ranchers. For more on livestock management, see *Livestock Management, Winter, 2003 Quarterly* (which can be viewed at: [www.agrabilityproject.org/newsletter/winter\\_2003/1.cfm](http://www.agrabilityproject.org/newsletter/winter_2003/1.cfm))

Other physical symptoms experienced by the farmer with the TBI may be similar to someone who has suffered a stroke. The *AgrAbility Quarterly on Strokes, Spring, 2002* ([www.agrabilityproject.org/newsletter/spring\\_2002/1.cfm](http://www.agrabilityproject.org/newsletter/spring_2002/1.cfm)) offers strategies and solutions, which may be beneficial.

**Accommodations for Emotional Limitations**

If a farmer experiences a lack of emotional control, impulsivity, depression, or anger, medication and counseling can be helpful. Regular aerobic exercise and structured activities, such as work or volunteer responsibilities, can help to increase self-esteem and feelings of self worth. Having a structured and well organized home and work environment also increase the predictability and control the person will have in the day-to-day activities of living. ❖

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2. What Everyone Should Know About Traumatic Brain Injury. Missouri Head Injury Guide. March 2001 Missouri Department of Health [www.tbimo.org/library/guides/mohg.pdf](http://www.tbimo.org/library/guides/mohg.pdf)
3. What Everyone Should Know About Traumatic Brain Injury. Missouri Head Injury Guide. March 2001 Missouri Department of Health [www.tbimo.org/library/guides/mohg.pdf](http://www.tbimo.org/library/guides/mohg.pdf)
4. National Institute for Occupational Safety and Health (NIOSH) Traumatic Occupational Injury: Agricultural Safety [www.cdc.gov/niosh/injury/traumaagric.html](http://www.cdc.gov/niosh/injury/traumaagric.html)

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

<http://www.agrabilityproject.org>

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