

AGRABILITY QUARTERLY



Promoting Success in Agriculture for People with Disabilities and Their Families

**Winter 2006
Vol. 6, No. 2**

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The National Grant Program
of the AgrAbility Project
is a joint effort of

The USDA Cooperative
State Research, Education
and Extension Service

University of Wisconsin-
Cooperative Extension

Easter Seals, Inc.

AgrAbility Keeps a Missouri Farmer's Passion Alive

For thirty one years, David Hofstetter has been a farmer in central Missouri. He grew up in a farming family and started raising hogs as a 4-H project. His 4-H experiences influenced his decision to start a hog operation of his own. In 1978 he and his wife, Cheri, bought a 432-acre farm to begin their hog operation.

David started out as an independent farrow-to-finish hog farmer. In 1992 he changed to a farrow-to-wean operation in order to remain competitive within the hog market. Today, the diverse, family-run business has 500 sows, fifty cattle, and sixty acres of cropland. David manages the operation with the help of his wife and sons - Jeremy, Seth, and Scott.

In 1998, David noticed stiffness in his legs. Initially he thought it was arthritis, but then he began to stumble more often walking over rocks and through tall grass. David also had difficulty mounting and dismounting his tractors, which caused him to fatigue easily.

During the fall of 2000, David's doctor referred him to a neurologist where he was initially diagnosed

with Amyotrophic Lateral Sclerosis (ALS). Four years later and after several additional consultations, David's diagnosis changed to Primary Lateral Sclerosis (PLS). Similar to ALS, PLS is a rare, neuromuscular disorder that affects the motor neurons in voluntary muscles. While PLS is painless, it results in progressive weakness and stiffness of muscles, typically in the legs, hands, and face. Unlike ALS, PLS is not life threatening and usually affects only the limbs and speech.



**David Hofstetter mowing his lawn at his
Florence, Missouri farm.**

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Case Study

David Hofstetter

David experienced muscle stiffness and tension to the point where it was difficult to walk without assistance, significantly affecting his farm work. “The most challenging part of PLS is dealing with not being able to perform tasks like before... and having to ask for help,” David said. While David looked for assistance to continue farming, Jeremy returned home from college to help by farming full-time. In the spring of 2005, Seth moved from Kansas City where he was a stonemason to work on the farm full-time.

While David served on his county-level Extension Council, he met the county farm management specialist who worked with the Missouri AgrAbility Project (MAP). The specialist recommended he contact MAP for assistance. By late 2001, David met with Brad Marsh, the AgrAbility coordinator at Services for Independent Living.

David was still walking when Brad first visited him. Given his prognosis, mobility was going to be the primary and evolving issue for David. Onsite assessments were performed at his farm and home. Through the Assistive Technology loan closet from Services for Independent Living, Brad provided David with a folding walker, a rolling walker for the barn, and a powered wheelchair as the disease progressed. MAP also referred David to the Missouri Vocational Rehabilitation (MVR) program. MVR provided home modifications that included relocating a door and installing a short ramp for bathroom accessibility.

As time passed, David’s symptoms worsened, so additional modifications were required to help compensate for his limited mobility. David considered platform lifts to access his tractors, but due to the progressive nature of PLS decided on the seated style. A utility vehicle, equipped with hand controls, enabled him to

move from house to barns to fields more efficiently. A gravity flow cube feeder mounted on the utility vehicle eliminated the need for David to carry feed. MVR funded the tractor lifts, utility vehicle, cube feeder, and a scooter.

Access within the gestation barn provided some additional mobility challenges when David began using powered mobility assistance. The barn alleys were only twenty four inches wide. This width is common for a gestation barn but was a barrier for his power scooter. The alleys were widened and a custom scooter was built to allow him access through these narrow alleys. In addition, the customized scooter has an elevating chair that can be raised to a height of six feet. This feature allows David to access higher shelves in his office or to record hog information above the pens.

Other modifications included tractor hand controls for clutch and brake applications, a pickup-mounted wheelchair lift, hand-held walkie-talkies, and a wheelchair lift equipped van with hand controls. These modifications help David both on and off the farm.



David Hofstetter demonstrating his custom scooter with elevating chair.

David has transitioned over the years to more of a management role, overseeing the hog operation and bookkeeping. A track ball added to his computer has improved access and reduced hand fatigue when working on his computer.

Once a farmer—always a farmer. David still goes out on the farm in the morning, but has reduced his work days from twelve to six hours. David professes that AgrAbility helped coordinate the services that gave him back his independence. “As my condition progresses, I can still get out and check on my hogs where without the modifications, it would be impossible.” ♦

Hog Operation and Industry Changes

Pork production has changed in this country during the past two decades. Pork continues to be the most widely consumed meat in the world.¹ The changes David Hofstetter made in 1992 to his Missouri operation mirror the evolving U.S. pork industry.

Historical Changes to U.S. Pork Industry

In the 1980s, plummeting hog prices and the consolidation of meat packers with larger hog producers drove out many smaller independent hog producers. If the pork industry were to survive and to preserve the high quality of meat demanded by the U.S. consumer, the industry had to find a method to control both the price and supply of pork.² One method led to an increase in the number of hog producers who entered into contracts with feed suppliers. This created a “contract-based,” vertically integrated hog production system, similar to that created by the poultry industry more than a decade earlier.³

Large-scale industrial changes like this used to take decades before a significant impact could be appreciated. The industrial changes made in hog production accelerated that impact. To illustrate, in 1990, 50% of Missouri’s swine industry was involved in hog operations with less than 500 head. Today, that number has fallen to less than 10%.²

In addition to production contracts, hog producers have increased litter sizes, rates of animal growth, and switched to raising larger animals, all to satisfy industrial demands. These industry changes have led to three basic production systems: farrow-to-finish, farrow-to-feeder (sometimes called farrow-to-wean), and feeder-to-finish.⁵

Types of Production Systems

Farrow-to-finish operators handle the pigs from birth to market, including breeding and farrowing the sows, as well as raising the pigs to a market weight of approximately 240 pounds.⁵ The entire cycle of breeding, gestation, and raising piglets to market weight generally averages around ten to eleven months. Thus, the farrow-to-finish operator can be more susceptible to price fluctuations in the hog market.⁵ Farrow-to-finish farms require the largest capital investment.

A farrow-to-feeder (farrow-to-wean) farm raises the piglets to a weaning age, usually fifteen to seventeen days of age. The piglets are sold to a feeder-to-finish operation. This production system requires facilities for breeding, gestation, farrowing and, commonly, raising replacement gilts.

Feeder-to-finish operations get the piglets at weaning age and raise them until the pigs reach market weight. This production system has the least varied types of facilities. Considering the feed consumption needed to finish hogs, feeding systems, and waste management require greater consideration.⁵

Each of these production systems has different requirements for facilities based on the animal’s age for feeding, waste removal and health requirements. Facilities are a major investment so space needs to be well planned for optimum use. The MidWest Plan Service (e.g., Swine Breeding and Gestation Facilities Handbook, Swine Housing and Equipment Handbook, etc.) is a useful resource for farmers making these types of changes.⁶

Hog Farming Statistics⁴

- U.S. inventory of hogs: 60.5 million
- Number of U.S. hog operations: 694,000
- Average number of hogs per operation: 871 head
- Largest states for production: Iowa and North Carolina

Focus

Hog Operation and Industry Changes

Facility Design and Barriers

For producers who can make the capital investment to modernize their facilities, both careful thought and long-term planning are critical. Production factors and business goals must be considered. Facilities design can present numerous barriers to individuals with limited mobility or other disabling conditions.

Animal behavior also influences the design of hog facilities. Because hogs are not easy animals to move, alleys are commonly twenty four inches in width to restrict or direct movement.⁶ This is a narrow space to move through with a walker or a power scooter. Floor surfaces can affect mobility as well. Types of floor surfaces depend on factors such as animal waste, sanitizing requirements, water consumption, and feeding systems. For the individual working in

these facilities, this means the floor surfaces could be slippery, bedded or grated, potentially creating additional mobility barriers. Height of the feeder or waterer will depend on the animal’s size. If mobility or endurance is a concern, automated systems for feed and water would be options to reduce the labor needed to accomplish these tasks.

Regardless of the type of production system, facilities can present numerous barriers for personal mobility and require different types of accommodations. Exploring other structural layouts or equipment to reduce labor for feeding, watering, and waste management should be looked at for long-term needs. Such changes may require a team of experts to consider both the animal and personal requirements. ❖

AT Notes

Basic Mobility

Basic Mobility - Canes, Walkers, and Scooters

Gradual loss in mobility function, whether attributed to a degenerative disease like PLS or the aging process, may require that a person use a variety of different mobility devices as the disability changes. A large and growing market exists for commercially available mobility products exist which can be used in the home or in different work environments.

Canes and Walkers

A cane or walker may meet the needs of individuals requiring minimal assistance. Canes and cane tips come in a variety of styles and functions. By reviewing the farmer/rancher’s daily working requirements and the physical environment of the farm/ranch, the individual, the physician, and the AgrAbility professional should be able to choose the type of cane and cane tip that will work best. If snow and ice create problems, for example, using a cane with interchangeable tips can be helpful.

Sometimes the simple act of navigating stairs can present an obstacle for people using canes. Some may not have the leg range-of-motion to traverse the stair step depth whether going up or down the stairs.

An inexpensive product known as a “quad-step” cane (see Figure 1) can enhance mobility on stairs, since it reduces stair steps to about half their normal travel height.



Figure 1. Quad cane

If someone requires slightly more assistance or help with balance and mobility, a “walker” may be prescribed (see Figure 2). Most walkers are manually pushed along by the user. They are usually a foldable four-post design and come in all shapes, styles, and sizes. Some walkers are plain and force the user to lift or slide them along as they walk, while others have features such as hand brakes, large wheels, and a carrying bag or basket.

If a farmer tires easily while walking, using a powered mobility scooter (see Figure 3) may help him or her conserve energy for work tasks. Companies that manufacture and design scooters are almost as numerous as car companies. Some powered scooters are designed to be lightweight, for temporary or indoor use only, while other scooters are made to operate in the outdoor, recreational or agricultural environment. A review of electric powered scooters published by the American Association of Retired Persons (AARP) in 1995 provides information on various styles



Figure 3. Scooter

of scooters as well as handling ability, features, riding comfort, and other factors to consider in selecting a scooter.⁷ In some cases, it may make sense to have both a lightweight scooter for home or off the farm use and a second, more rugged model for use around the farm. One example of a scooter designed for outdoor use is the Journeyman from Life Essentials (see Figure 4). Scooter features to consider for outdoor use are power, battery life, tires and seating. The terrain around and within buildings is also a consideration. An outdoor scooter should have enough power to get through snow, mud, grasses, or other rough terrain.



Figure 2. Four wheeled walker with basket

A custom-built scooter may be an option when standard scooter features do not meet the user's needs.

Selecting the Right Mobility Aid

Farm yards can change quickly from easily-traversed packed soil/gravel-covered areas to a muddy, deeply rutted obstacle course caused by changing weather. When evaluating the current mobility needs of the farmer, the cane, walker or scooter chosen should be designed to traverse a majority of the pathways around the farm.

If mobility aids are not available for the farmer's type of terrain or pathways, changes may be necessary to enable him/her to travel around the farm. Today, walks or pathways are not limited to concrete or crushed/tightly packed stone. Several alternative materials currently used to improve the accessibility of park trails, campsites or playgrounds might also be applied to frequently traveled farm yards and pathways.⁸



Figure 4. Journeyman scooter

Properly designed pathways may reduce the possibility for slips and falls, increase access during a time when mobility needs are changing, and ultimately allow the farmer to continue to perform daily chores. ❖

For more on new canes and walkers read "What's New and Unique in Walkers, Crutches and Cane?" inMotion Magazine, November/December 2005, Amputee Coalition of America.⁷

Missouri AgrAbility Project

The Missouri AgrAbility Project (MAP) has received continuous USDA funding since 1994. Missouri is ranked second in the nation for number of farms. MAP strives to provide services to farmers with disabilities and their families throughout the state despite the large number of farms. The three main partners that form MAP are the University of Missouri Extension, Services for Independent Living (SIL), and Midland Empire Resources for Independent Living (MERIL). Through this partnership, MAP is able to provide services that include farmhouse accessibility surveys, agricultural worksite assessments, assistive technology resources including equipment modification, educational programs, independent living resources, and technical support.

A new outreach effort has been launched to provide assistance to migrant/seasonal farmworkers and their families. This effort also includes training for health care providers, educators, extension specialists, and others providing resources to the migrant/seasonal farm worker population.

Partnerships provide valuable resources in helping to accomplish goals. MAP draws upon the resources of the University of Missouri Health Sciences Center; School of Health Professions; Missouri Alternative Center; National Center for Farmworker Health;

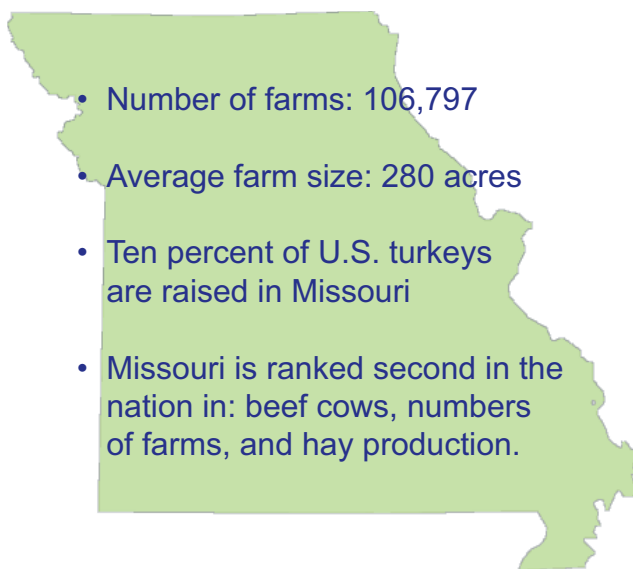
Rehabilitation Services for the Blind; Missouri Assistive Technology Centers; Missouri Arthritis, Rehabilitation, Research and Training Center; and Regional Arthritis Centers. Collaborative efforts with these various organizations have allowed MAP to successfully develop and deliver a variety of resources.

MAP leveraged funding from the National Institute on Disability and Rehabilitation Research (NIDRR) to develop resources related to arthritis and farming. Recently,

MAP was involved in producing an educational DVD on "Farming with Arthritis." The DVD features farmers in real-life scenarios performing a variety of daily work tasks that demonstrate body movements required in farming. This type of information educates physicians and other health care providers about the specific challenges of farming with arthritis.

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MO in a Minute: Fast Facts⁹



Missouri AgrAbility Project Contact Information

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“Gardens for Everybody” is a program that MAP has developed through another partnership. The program provides basic information on how to create an accessible garden. It also provides information on how to select and safely use ergonomic, enabling or modified garden tools designed for people with limitations. This NIDRR funded project was a unique partnership between MAP, Lowes, Home Depot, and Wal-Mart. ❖

Missouri AgrAbility Staff



Willard Downs, PhD, has been the primary investigator for MAP for eleven years and has worked for the University of Missouri Extension for fourteen years. Willard is an extension agricultural engineer who

specializes in agriculture safety, health, and wellness issues and he oversees the Missouri AgrAbility Project.



Brad Marsh has been the Missouri AgrAbility Project coordinator for the Services for Independent Living (SIL) for eleven years. His responsibilities include farm and home site assessments and referral to appropriate community, state,

and federal programs that support the farmer’s ability to continue working in agriculture.



Karen Funkenbusch has been program director for the MAP during the past ten years. Her responsibilities include increasing awareness of AgrAbility, developing educational programs, and

establishing partnerships that leverage public and private funds in support of the AgrAbility mission.



Jackie Allenbrand has been the rural outreach specialist for Midland Empire Resources for Independent Living (MERIL) since September 2005. Some of her duties include conducting farm visits, teaching disability

awareness to youth, and building relationships with various organizations such as hospitals, Vocational Rehabilitation, Farm Service Agency, farm dealerships, and extension councils.

Additional support is provided by **KB Paul**, program director of the Small Farm Family Program, Lincoln University; **Russell Ramsey**, farm management specialist and southeast region AgrAbility coordinator, University of Missouri Extension; **Sandra Zaring**, administrative assistant, University of Missouri; **Angela Fletcher**, human development specialist and south central region AgrAbility co-coordinator, University of Missouri Extension; **James Thompson**, farm management specialist and south central region AgrAbility co-coordinator, University of Missouri Extension; **Robert Schultheis**, natural resource engineer and southwest region AgrAbility coordinator, University of Missouri Extension; **Craig Smith**, natural resource engineer and northwest region AgrAbility coordinator, University of Missouri Extension; **Beverly Ann Maltsberger**, community development specialist, University of Missouri Extension; **John Tharp**, volunteer coordinator, University of Missouri Extension; **Niharika Garud**, web master, University of Missouri Extension; **Kristi Perry**, administrative assistant, University of Missouri; **David Davis**, human and environmental design specialist and northwest region AgrAbility coordinator, University of Missouri Extension; and **James Crawford**, natural resource engineer and northwest region AgrAbility coordinator, University of Missouri Extension.

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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:

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The AgrAbility Project is administered by the U.S. Department of Agriculture CSREES. Funding for this document was provided under project number 2004-41590-01880.