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# Disability in Agriculture: AgrAbility and Occupational Therapy

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## Learning Outcomes

- After this course, participants will be able to:
- State the estimated prevalence of disability in agriculture and at least two major causes of disability in agriculture.
- Recognize at least three features of the AgrAbility programs structure, services, or resources.
- Identify at least two ways that OTs can contribute or have contributed to the AgrAbility program.

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## Video Case Study

- Eric Beckman and family
  - Pender, Nebraska

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## Key Points to Remember from Video

- Farming and ranching are not just occupations: they are lifestyles
- Even severe disabilities can be accommodated for agricultural workers
- Support and networking are essential for success



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## Prevalence of disability within the Agricultural Community

- Deboy, et. al. (2008)
  - Between 14% & 19.4% of farm population (owner/operators, hired labor, farm family members) are impacted by disability
  - 1.04 – 2.23 million of the U.S. farm, ranch, and agricultural community impacted by disability
- Miller and Aherin (2018)
  - 12.9% of farm population (19.2% farmers, 9% farmworkers)
  - 634,000 of the U.S. farm, ranch, and agricultural community impacted by disability

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## Causes of Disability within the Agricultural Community

- Traumatic injury. Agriculture is one of the most hazardous occupations (NSC, 2019). Many injuries also come from off-farm incidents.
  - Spinal cord injuries
  - Amputations
  - Musculoskeletal damage
- Diseases and chronic health conditions
  - Arthritis
  - Back problems
  - Multiple sclerosis

(National AgrAbility Project, 2017)

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## Causes of Disability within the Agricultural Community

- Developmental disabilities
  - Cerebral palsy
  - Autism
  - Deafness
  - Blindness



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## Causes of Disability within the Agricultural Community

- Effects of aging. Average age of principal operators in 2012 was 58. (USDA-NASS, 2018)
  - Arthritis
  - Cardiovascular disease
  - Skin diseases from UV radiation
  - Noise-induced hearing loss
  - “Farmers’ lung”
  - Chronic low back pain

(Hildebrand, 2015)

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## Agricultural Risk Factors

- Extreme weather
- Rough terrain
- Farm machinery
- Unpredictable situations (fire)
- Excessive vibration and motion
- Respiratory hazards (chemicals, dust, molds)
- Handling livestock
- Falls
- Untreated impairments (visual/hearing)
- Length of workday with limited breaks
- Repetitive tasks
- High stress

(Clingan, 2018; Gruver et. al., 1997)

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## Barriers to Increased Independence of Persons with Disabilities within Agriculture

- Attitudes: PWD, family, professionals
- Public policy that sometimes fosters dependence rather than independence
- Lack of access to appropriate assistive technology
- Cost of assistive technology and needed modifications
- Potential for secondary injuries

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## AgrAbility Mission

The vision of AgrAbility is to enhance quality of life for farmers, ranchers, and other agricultural workers with disabilities.

Through education and assistance, AgrAbility helps to eliminate (or at least minimize) obstacles that block success in production agriculture or agriculture-related occupations.



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## AgrAbility History

- AgrAbility began in 1991 as part of the USDA Cooperative State Research, Education, and Extension Service (now NIFA).
- In 1991, there were 8 funded state and regional AgrAbility projects (SRAPS); as of 2019, there are 20 SRAPS and several previously-funded affiliate projects.
- One National AgrAbility Project (NAP) supports the SRAPS
- Competitive funding

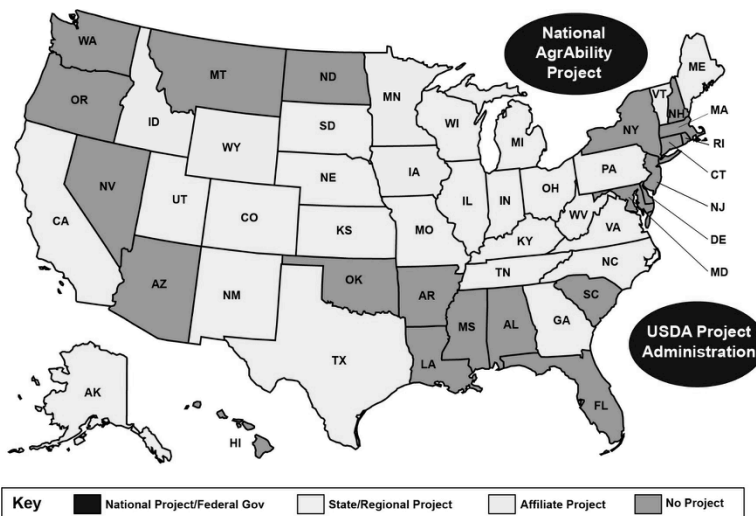


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## AgrAbility Projects 2019



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## Whom Does AgrAbility Serve?

AgrAbility addresses a wide variety of functional limitations in agriculture, including, but not limited to:

- Amputation
- Arthritis
- Back impairment
- Deafness/hearing impairment
- Development disabilities, such as cerebral palsy or autism
- Disabling diseases, such as cancer or heart disease
- Mental/behavioral health problems
- Respiratory diseases
- Spinal cord injuries
- Stroke
- Traumatic brain injury
- Visual impairments

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## Whom Does AgrAbility Serve?

Just as disability is wide continuum, agriculture is also:

- Row crops: corn, soy, wheat, cotton, etc.
- Ranching
- Sheep and goats
- Dairy
- Produce, including organic
- Orchards
- Agritourism
- Niche markets, like llamas, herbs, etc.
- Floriculture
- Aquaculture
- Hydroponics
- Aquaponics

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## AgrAbility Partnerships

- All AgrAbility projects – state projects and the national project – are partnerships between a land-grant university and at least one disability-services program.
- 1862 and 1890 land-grant institutions are eligible to apply for AgrAbility grants.
  - Every state has at least one 1962 land-grant university
  - Some of the southern states also have an 1890 historically black university

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## AgrAbility Services/Priorities

- Education
  - Workshops; resource development; online education
- Networking
  - Leveraging efforts with other groups; peer support
- Direct Assistance
  - Site visits; consultations; business planning
- Marketing
  - Public awareness activities and materials



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## Special Responsibilities of the National AgrAbility Project

- Provide support to the state and regional AgrAbility Projects
  - Training
  - Resources
  - Consultations with NAP specialists
- Provide direct services to customers in states without AgrAbility Projects

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## What Does AgrAbility Not Provide?

- Funding
- Equipment
  - Most funding for assistive technology comes through state vocational rehabilitation systems
  - Other sources of grants and loans are available ([www.agrability.org/funding-assistance/](http://www.agrability.org/funding-assistance/))
  - Some state Assistive Technology Act projects can provide free or low-cost AT + loan programs

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## What is AgrAbility's Impact?

AgrAbility recently conducted a multi-year study to compare the program's impact with a no-treatment comparison group. Using the McGill Quality of Life (QOL) survey and a newly-developed Independent Living and Working (ILW) instrument, AgrAbility gathered data both on AgrAbility clients and on farmers/ranchers with disabilities who had not received services.

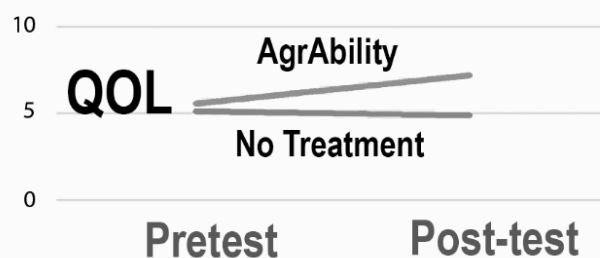
(Fetsch, Jackman, and Collins, 2018; Fetsch and Turk, 2018)

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## Impact: Quality of Life (QOL)

### AgrAbility vs. No Treatment



The 199 AgrAbility client group participants showed increased QOL levels of 28%, while the 97 no-treatment comparison group's QOL level fell by 4%.

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## Impact: Independent Living and Working (ILW)

### AgrAbility vs. No Treatment



The AgrAbility client group participants showed increased ILW levels of 30%, while the no-treatment control group increased only 8%.

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## Educational Resources: [www.agrability.org](http://www.agrability.org)

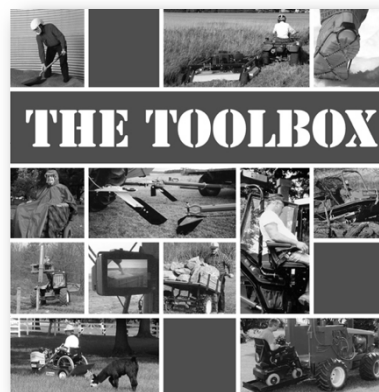
- Project information and contacts
- Downloadable resources
- Online training
- Mobile friendly



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## The Toolbox Assistive Technology Database

- [www.agrability.org/Toolbox](http://www.agrability.org/Toolbox)
- 1503 products to help farmers, ranchers, gardeners, other outdoor workers
- Most are not specifically designed for people with disabilities



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## Occupational Therapy's Interface with AgrAbility

- “One of the things he told me the first time I met him was that the people in rehab were teaching him how to get dressed and be mobile, and he was thankful for that, but at night he'd lay awake, thinking about how he was going to get back to farming.”

- Carla Wilhite, OTD, OTR/L

(Waite, 2015)

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## Applying Occupational Therapy to Agriculture

- Recommending safety and functional modifications
- Discussions of health and wellness strategies
- Adjustments to work practices + energy conservation
- Finding assistive technology
- Connecting with peer farmer with disability
- Addressing mental/behavioral health

(Waite, 2015)

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## Essential Skills for OTs Working in Agriculture

- Transfer fundamental frameworks from occupational therapy to agriculture
- Draw on relevant knowledge from other disciplines
  - Occupational health
  - Ergonomics
  - Agricultural safety
  - Assistive technology

(Wilhite and Jaco, 2014)

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## Important Knowledge Areas

- Activity analysis
- Ergonomics
- Agricultural safety
- Farm technologies
- Farm work environment
- Physical demands
- Seasonal demands
- Impact of disability on tasks

(Wilhite and Jaco, 2014)

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## What if You Don't Have a Farm Background?

- Might encounter farmers in an acute care (urban) setting
- Apply principles of AT and adaptive design
- Ask them to show how they complete a task
- Establish rapport in their home setting

(Waite, 2015)

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## Farm Culture (yes, there really is a farm culture)

- Cultural competency
  - Knowledge, training, skills
- Cultural humility
  - Lifelong learning, co-learning with clients
- Client-centered philosophy
  - Avoid disconnect between farmer's goals and what medical community wants to discuss
- Assuming that farming with disability is feasible

[https://en.wikipedia.org/wiki/Cultural\\_humility](https://en.wikipedia.org/wiki/Cultural_humility)

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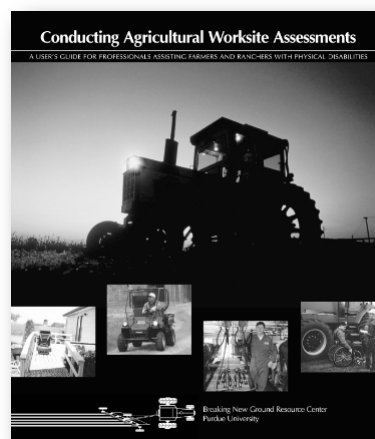
## Resources for Gaining Greater Competence

- Pilot curriculum from AgrAbility for OTs working in agriculture
- Consultations with AgrAbility staff members
- AgrAbility webinars
  - Occupational Therapy's Role in Agriculture & Rural Communities
  - Improving Farm Home Accessibility, Safety, and Use of Space
- Internships

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## Conducting Agricultural Worksite Assessments

- Step-by-step guide for evaluating farms and ranches
- Reproducible assessment form
- Revised version coming soon

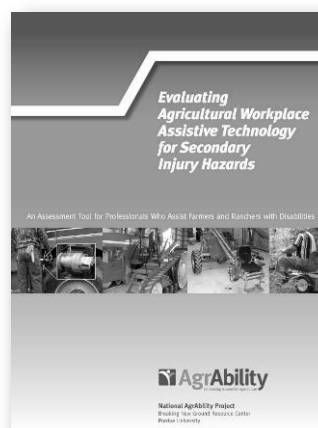


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## AT Secondary Injury Evaluation

- Step-by-step guide for evaluating AT for secondary injury hazards
- Issues of homemade AT
- Reproducible assessment forms



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## Plowshares

- 30 technical reports on specific topics, such as farming with an amputation or machinery access lifts
- [www.tinyurl.com/agrability-plowshares](http://www.tinyurl.com/agrability-plowshares)

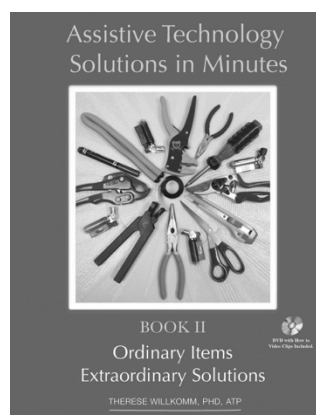


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## *Assistive Technology Solutions in Minutes*

- “MacGyver” solutions from ordinary items
- Switches, tactile graphics, holders
- Common tools = utility knife, pliers, scissors, a wire stripper, and a mini blowtorch



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## OTs & Agriculture: Research Example

- “Comparisons of Agricultural Seating for Paraplegia”
  - Use of pressure mapping to help determine better machinery seating for farmers with paraplegia
  - Farmers sometimes spend 12-14 hours in tractor or combine
  - Issues of pressure ulcers

(Wilhite, et. al., 2017)

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## Contact

[www.agrability.org](http://www.agrability.org)

[agrability@agrability.org](mailto:agrability@agrability.org)

800-825-4264

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## Questions?

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