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## Michigan AgrAbility News

2020 Year in Review

### Capstone Project Gives Brown Peace of Mind

"It is so amazing I can't even believe I have it," says Caleb Brown of his remote-controlled gate opener that keeps his cattle securely contained in his yard.

The 37-year-old father of two is from Fowlerville. Besides his small herd of beef cattle, Brown was a garbage truck driver for thirteen years when he was hit by a truck while working in 2013. The impact caused a brain injury, mobility issues, blurred vision, and audio impairments.

His small herd of cattle kept him motivated, giving him something positive to focus on and look forward to. But wear and tear took its toll on the fence, and his limitations kept him from making real headway on repairs. His cattle got out regularly and it was causing tension with neighbors. His personal stress was high not knowing if or when his cattle would be roaming the neighborhood or roads. Ready to give up and sell his beloved herd, he stumbled upon Michigan AgrAbility, who was able to step in with resources.

Because Caleb's herd was viewed as more hobby than income producing, he didn't qualify for state funded services. But because of strong partnerships with Michigan State University's ag bio-research program, funding partners like Alpha Gamma Rho and Sigma Alpha at MSU, and volunteers like the Alto Achievers 4H Club, Caleb can let go of the anxiety, knowing his herd is securely fenced in.

First, the Alto Achievers 4H Club along with a volunteer from Alpha Gamma Rho repaired and put up new perimeter fencing using materials Caleb already had, a few donated and borrowed items, and some elbow grease by a young and inexperienced group of 4H'ers. Their lack of experience did not cloud their enthusiasm; by day's end they had finished refencing ten acres and were proficient in their newly acquired fence building skills.

MSU's Mechanical Engineering 481 Capstone class designed a system to use a garage door opener so Caleb can automatically open and close the gate without leaving his house or vehicle. The horizontally mounted garage door opener swings the sixteen-foot gate open and closed across the drive, where it remains automatically secured. The entire system cost less than \$300 through box store purchases. Other costs were covered by USDA grant funds and Easterseals Michigan donations from fundraising projects like Alpha Gamma Rho's winter beef preview show and Sigma Alpha's 5K spring race.

The project design was simply so good, the team earned the Thomas Alva Edison Best Technical Design Award for the semester. The project is being produced into plans that will be available for anyone to use through MSU Extension.

"It is so amazing; I can't even believe I have it!" Caleb said. "The engineering students were so nice; they came to my house---a farmer who got hit by a truck---it just amazes me. One guy was from India, one from Venezuela and the other two were city guys. This whole project just gives me hope!"

It's not only the project that has given Caleb hope through help, but the people behind it that have touched Caleb's heart. His gratefulness has spilled over into paying it forward to others in need in ways that he can offer, donating some of the beef they harvest each year to a family in need.

Brown calls all the volunteers amazing. "They really touched my heart."



Caleb Brown and his wife Diana with their daughter Alaina and son Luke at their farm in Fowlerville.

"You can choose to sit around on the couch, or you can choose to be active."

- Caleb Brown



Easterseals Michigan is honored to continue to provide services to farmers through our AgrAbility program in collaboration with the Michigan State University Extension and the United States Department of Agriculture. Our staff partner with Michigan farming communities to provide essential and vital services to farmers in need, including those with injuries, illnesses, or aging conditions, so they can continue the occupation and lifestyle they love. This past year alone, we served 169 farmers, a 22% increase from last year!

In addition to the positive outcomes the farmers receive through AgrAbility, there is a significant impact on Easterseals as well. We serve many more individuals in need and strengthen our team by adding culturally competent staff who best serve the farming community as they themselves are farmers. They develop real relationships and quickly gain trust within the farming community. These services also have a much broader impact beyond the farmers; they are providing food that feeds our nation!

Last fall, our AgrAbility program was the recipient of the Champion Award from Michigan Rehabilitation Services (MRS) at their 11th Annual Champion Awards ceremony. This award speaks volumes of the work we do, and will continue to do, for the farmers of Michigan.

In the spring of 2020, Michigan AgrAbility was awarded a continuation grant through the National Institute of Food and Agriculture (NIFA) from the United States Department of Agriculture (USDA). The grant funds allow us to serve this community and provide needed equipment to farmers through 2021.

Easterseals is privileged to continue this effort on behalf of Michigan farmers.



*Brent Wirth*

Brent Wirth  
President/CEO

## Partners in AgrAbility

Thank you to the many organizations and individuals who partner with and support Michigan AgrAbility.



800-956-4106 | [www.michiganagrability.org](http://www.michiganagrability.org)

Michigan AgrAbility is a joint project of Easterseals Michigan, Michigan State University Extension and Michigan Farm Bureau. Funding provided by USDA.

### Help Another Farmer

Donations from folks like you help us help more farmers keep working. Do you have assistive technology you no longer use and would like to donate? We will pick it up for you. Call 800-956-4106.

Financial contributions can be made online or by mail. Designate AgrAbility online at <http://bit.ly/donateAgrability>

or by mail to:

Easterseals Michigan – Development Dept.  
2399 E. Walton Blvd.  
Auburn Hills, MI 48326

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# Tree Work Can Be Deadly



Tree work is a common but non-routine task on farms. Using machines designed for farming or property maintenance rather than machines designed for working in the woods increases the risk for farmers when clearing land and fence rows and hauling felled trees. Chainsaw use when cutting down trees and limbing/bucking a felled tree is often performed by untrained or inexperienced individuals. **Working with trees is not a “common sense” activity and requires a full understanding of the task before it is undertaken** so as to minimize the risk of injury or death.

From 2001-2018, thirty (30) farmers, farm workers, and farm property owners have been killed in a tree-related fatality. Twenty-two of the 30 deaths (73.3%) occurred while the individual directly worked with a tree: eight were using a chainsaw to fell the tree and three to trim a felled tree and 11 died while moving a downed tree with a piece of equipment, six by pulling/hauling and five by pushing the tree. Four (13.3%) individuals died when the tractor they

were operating ran over a hidden stump (3 deaths) or a branch (1 death). Other tree-related deaths included: unloading a tree stump from a flatbed using a tractor (causing the tractor to tip over), a tractor hitting trees while turning in a field, a farmer operating a skidder was struck by a falling tree, and an electrocution while preparing trees for market.

A common thread in Michigan agricultural tree-related fatalities is the irregular nature of the work task being done and the equipment being used. **An enclosed rollover protective structure (ROPS) with a hard roof or a falling object protective structure (FOPS) with protective rear, side and front grills, is recommended** to protect equipment operators. Additional farm tractor protection modifications when used for tree work should include (but not be limited to):

- radiator shield
- front end weights
- steel skid plate to protect the tractor’s underside and allow it to “slide” over stumps or rocks
- spark arrestor for the muffler
- fire extinguisher
- tire chains
- shield for tire valve stems

To perform tree-related tasks safely requires a review of the equipment to be used, the physical nature of the tree in relation to the intended activity, “escape” and/or other planning, hazard recognition and abatement strategies, necessary safety practices, and proper personal protective equipment (PPE). Every tree activity has a different set of hazards. Although farmer owner/ operators are not required to meet the MIOSHA Part 51 Logging Standard, the standard along with your equipment operator’s manual, and industry training guidance provide useful information to minimize the risk. Michigan State University Occupational and Environmental Medicine Division (oem.msu.edu/) has developed a hazard alert “Farmers and Trees: Tasks that Can Kill” highlighting prevention recommendations for the tasks involved in the 30 highlighted deaths.

# Supporting Michigan Farmers

Alpha Gamma Rho fraternity has made a serious commitment to Michigan farmers by hosting a beef preview show in February for several years. The show has become a premier exhibition of prospect beef steers from Michigan, Indiana, and Ohio. This year, the members of AGR presented Michigan AgrAbility with a check for \$22,000, all of which will be used to help finance small projects that make a big difference to a farmer with a disability.

Joining them in 2020 fundraising efforts were the sisters of Sigma Alpha sorority, the premier sorority in Michigan for women in agriculture. The women dedicated their annual 5K Duck Race fun and raffle to AgrAbility. Even though a pandemic foiled plans for the 5K, the women of SA raised \$3000 through their raffle and donations.

AgrAbility staff and the clients we serve are overwhelmed with the generosity and hours of planning and organization it takes to make these events happen. We are blessed to be able to put those dollars directly into financing assistive equipment for farmers.

The ongoing pandemic finds these fundraising activities in uncertain territory for 2021. Would you consider a contribution in support of Michigan farmers? Donations can be made at [www.michiganagrability.org/donate](http://www.michiganagrability.org/donate).



Nate Scovill and James Parker of AGR present a check to Ned Stoller from AgrAbility for \$22,000 this summer.

# The Capstone

Designing assistive technology for AgrAbility has been the capstone experience for many engineering students at Michigan State University. The capstone is a stone placed at the top of a wall or building signifying its completion and culmination of success. For 16 years the building blocks in the wall of education have been carefully laid by these students. From kindergarten to college and then finally, one last class before their engineering degree. The capstone class for these students is designing assistive technology for AgrAbility farmers so they can keep working productively. A common goal of the capstone projects is to develop design drawings so that other farmers can copy them. Three important design projects that student have done are fold-up tractor steps, skidsteer grab bars, and a log trough.



Image 1

Several capstone groups worked on the problem of making a fold-up step (Image 1) so farmers can climb on to tractors more easily, but still maintain high ground clearance. The bottom steps on farm tractors are typically 22-inches above the ground. While these tall steps are necessary to maintain high ground clearance when driving tractors on rough terrain, it is nearly impossible for a farmer with leg injuries, arthritis, or other disabilities to climb. The final result shown is a simple design that folds up and down with a rope and clamps onto existing steps without any drilling or welding.

Another important capstone design project is a grab bar for skidsteer loaders (Image 2). Farmers with physical limitations to their legs have a very difficult time climbing into skid steers. A skid steer is especially important for farmers with mobility impairments to operate because they can use it to replace many other manual labor tasks around the farm that they could not do otherwise. The goal for the capstone project was to design a retractable handrail for skid steer cabs. The result shown is a clamp-on grab bar that extends when climbing into the cab and retracts when the machine is operating.



Image 2

The most complex capstone project was a log trough (Image 3) completed during the viral fear of COVID in May 2020. Farmers with physical limitations to their arms, back, legs, and balance need to be able to cut and split firewood. They have a very difficult time holding their chainsaws and lifting wood onto their log splitters. They use a hand-held chainsaw to cut wood and then lift it by hand onto a standard hydraulic log splitter to break it down into smaller sizes. Commercial log processors cost over \$8000. Farmers do not need the splitter and saw features of these processors, but they do need a way to hold their saw and move the logs while cutting. This log trough designed by the capstone students will have the farmer’s chainsaw mounted on a pivot. It is powered by the farmer’s log splitter hydraulic pump to move logs so the cut pieces of wood fall directly onto that splitter.

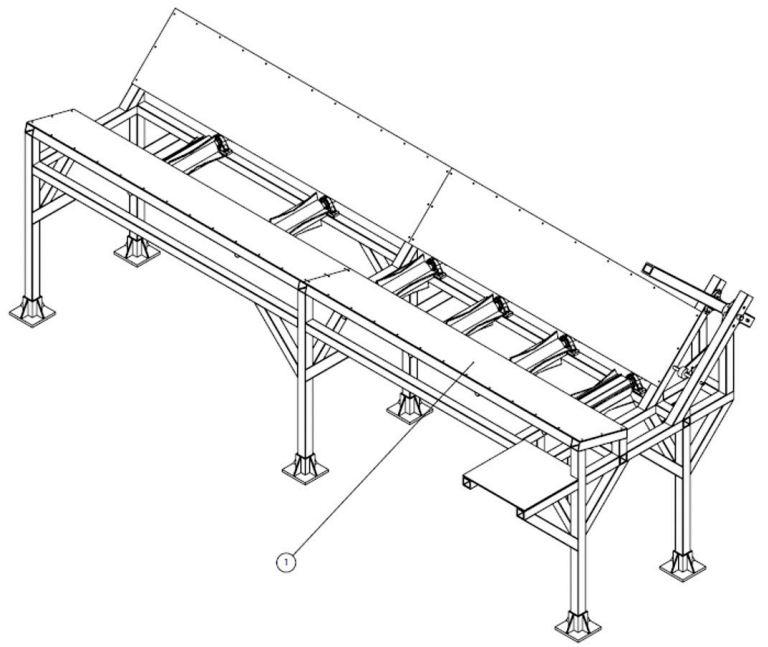


Image 3

There have been fourteen capstone design projects since 2015 to assist farmers with disabilities in Michigan. The folding step and skidsteer grab bars are easily reproduceable in a farmer’s workshop and apply broadly to common needs of farmer’s with disabilities. A powered gate opener design is described in the story about Caleb Brown earlier in this newsletter. If you would like to learn more about these items, or if you have another idea for a capstone design project that could help on your farm, please call our agricultural engineer, Ned Stoller at 800-956-4106.


## 2019 Year In Review Highlights:

1. **169 farmers** served statewide.
2. The MSU Mechanical Engineering 481 Capstone senior class completed **three projects**:
  - Retractable Tractor Step (April 2019)
  - Shop Door Opener (December 2019)
  - Powered Gated Opener (December 2019)
3. Since January 2019 to date, in order to inform more injured farmers about the AgrAbility services, a letter about AgrAbility and the AgrAbility brochure have been mailed to **fifty-one individuals** with farm-related work-related injuries and to **two individuals** with farm-related (but not work-related) injury.
4. Michigan AgrAbility program staff mailed an evaluation survey to **96 clients**, who were served in 2019, in January 2020; **64 (66.7%) farm clients** responded to date. **Seventy-eight percent of the clients** rated their overall level of satisfaction with AgrAbility as excellent.

5. From January to May 2020, we have responded to **24 calls** on the Michigan AgrAbility toll-free line.
6. Michigan AgrAbility made **eight presentations**, had **four display booths** and attended **fifteen conferences/trade shows/meetings**.
7. Michigan AgrAbility’s social media presence:

 **1,183 likes**  
**1,251 following**

 **386 following**  
**318 followers**

 **140 followers**  
**123 following**  
**18 boards/categories**  
**1,455 pins**

 **51,463 views**  
**63 videos**