



PROJECT NEWS SPRING 2023



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PROJECT DIRECTOR'S MESSAGE

AgrAbility is a project of the United States Department of Agriculture, designed to enhance quality of life for farmers, ranchers, and other agricultural workers who have been impacted by a disability, chronic health issue, or aging issue that is limiting their participation or success in production agriculture.

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CONTACT INFORMATION

After a hiatus of a few months, the New Mexico AgrAbility Project newsletter is back. Not that the AgrAbility team has taken any time off, but simply because we were in a time of transition from the first 4 yr. funding cycle to now, our second funding cycle. Our project director Dr. Sonja Koukel was successful in writing and submitting the renewal grant, and in August 2022 it was announced that New Mexico received a 2nd round of funding for AgrAbility in New Mexico through USDA-National Institute of Food and Agriculture (NIFA.) As the incoming project director, I want to take this opportunity to officially thank Dr. Koukel for her leadership throughout this transition phase and the successful submission of the grant renewal. I think it is important to point out that under the National AgrAbility Project (NAP) there are only 21 states that are funded for a State or Regional AgrAbility Project (SRAP). To be funded again reflects the quality of the work which was developed during the previous funding cycle as well as the continuation of these efforts proposed in the renewal process.

Our partners are Mandy's Farm, the New Mexico Technology Assistance Program (NMTAP,) and the University of New Mexico-Occupational Therapy Program (UNM.) Mandy's Farm, the non-profit in the NMAP project closed the AgrAbility Apprenticeship 2022 Program providing agricultural training and hands on field experience to three apprentices in Summer and Fall 2022, with an additional 10 individuals with disabilities receiving an 8-week intensive on-the-job training experience at the Lakeview AgriLearning Site. During Fall 2022 the Mandy's Farm AgrAbility Apprenticeship Program continued developing a funding partnership with the NM Division of Vocational Rehabilitation to provide apprenticeship training to an increased number of individuals starting in Spring 2023. Our partners at UNM presented several AgrAbility related posters at the 2022 and 2023 American Occupational Therapy Association Conference and the New Mexico Occupational Therapy Conference. In collaboration with Mandy's Farm, UNM graduate students gained practical farming experience while supporting apprentice farmers. And finally, NMTAP and NMSU spent many hours researching and acquiring Assistive Technology tools for agricultural workers that are now available in the NMTAP device loan library.

Lastly, NMAP has a new toll-free phone number: 1-855-AGRABLE (247-2263) We can now directly respond to calls from the field and determine the specific needs of farmers, ranchers, loggers, and food growers. Our project email is nmagrability@gmail.com, which is an option for those seeking information, brainstorming solutions, or requesting services.

Our website at <https://agrability.nmsu.edu> is regularly updated with the most current information. In other words, the NM AgrAbility Project is set for the new cycle to serve current and potential farmers with chronic health issues, aging challenges, or disabilities. One of our partners will answer any questions you may have!

Occupational Therapy & 3D Printing

By Robin Gibbs, MOTS and Barrett Harding, COTA/L, MOTS

What is Occupational Therapy?

Occupational therapy (OT) is a science-driven healthcare profession that focuses on the activities that occupy one's time (occupations). For example, dressing oneself, driving a car, or gardening is considered an occupation. Using creative interventions to support people in reaching their goals, OT personalizes a therapy plan to assist people in their occupations.

OT and Farming

OT is a perfect fit for farming-specific activities, as it is a holistic approach (considering many different aspects of the whole person) and brings distinct value in its activity analysis. For example, someone with difficulty watering every plant effectively due to impaired sequencing of steps may benefit from an OT creating a series of visually presented tasks arranged as a schedule.

OT student role at AgrAbility

The occupational therapy students from UNM's OT Graduate Program are completing their clinical rotations, or "fieldwork," at Mandy's Farm AgrAbility Apprenticeship Site. The role of the OT students is to support farming apprentices through problem-solving to allow safe and satisfactory completion of farm-related work. Additionally, their main goal is to promote independence in the apprentices daily farming activities which can include watering, weeding, planting, and more!

What is 3D printing?

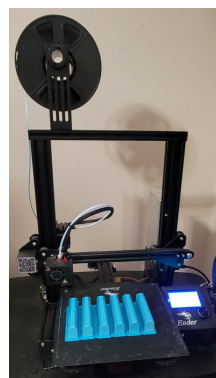
Three-dimensional (3D) printing is the creation of a solid object from a digital model through an additive process. An additive process involves the application of thin layers of material to form a shape. In other words, it allows an individual to manipulate an object in a digital format and create unique shapes in a physical form. (Strikwerda en Dehue, 2022)

3D printing was created more than 40 years ago, however, in recent years it has become more popular and accessible due to the low costs of personal-use printers and easy-to-use programs for designing 3D objects. (Turney, 2021) There are many different types of printers all of which have a unique use. Printers can print in different materials and can include, plastic, powders, resin, metal, carbon fiber, graphite and graphene, nitinol, paper, and building materials (eg. clay.) (SPC Surface Treatment Experts, 2018)

How can 3D printing benefit farmers?

3D printing has the potential to transform agriculture as we know it! There are many ways that this can make an impact, the first is that 3D printing can make farm operations more efficient. It can do this by locally printing customized parts, one can simply scan the broken part and duplicate it. 3D printing can also reduce the carbon footprint by integrating itself into primary and secondary industries. This will shorten the supply chain, create a more efficient production of goods, and ultimately lower the transportation costs. Lastly, this will open up a new market for agriculture products! With access to open-sourced 3D models and plans and affordable 3D printing it is highly likely that there will be a development of new products.

Some ways that 3D printing is currently being used in agriculture include personalized 3D printed horseshoes for horses suffering from laminitis to support recovery, creating parts for farm machinery and infrastructure, and even for studying landscapes and waterways. (Rural Industries Research & Development Corporation & Australian Government Rural Industries Research and Development Corporation, 2016) Although, the possibilities are endless with 3D printing!



Ender 3 Pro 3D Printer showcasing the 6 bumper handles created for the compost-collection buckets.

Built-up handles for functional use on vermicomposting tools.



Vermiculture Composting at NM AgrAbility Program

By Robin Gibbs, MOTS and Barrett Harding, COTA/L, MOTS

What is vermicomposting?

Vermicomposting is the use of worms to convert organic waste into fertilizer. It can be done by feeding worms waste materials to be eaten and processed into nutrient-rich soil. Vermicomposting significantly affects plant growth (Blouin et al., 2019). This practice increases plant volume and quality. Farmers benefit from vermicomposting as plant yield, root volume, and shoot (vertical growth) increases. Food scraps, cattle or pig manure, paper, or green wastes can be placed on top of the soil of the worm bin. Worms will eat the waste and leave behind composted remains for a nutrient-rich soil.



Eisenia foetida

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So why vermicompost?

Vermicomposting has many benefits! It produces nutrient-rich, organic soil that can be used in gardens and promote plant growth. It also diverts organic waste from landfills toward valuable resources such as food-producer gardens and healthy plants (Carr, 2019). Lastly, vermicomposting is a fun and meaningful activity!

The science of vermicomposting

Vermicomposters come in a variety of shapes, sizes, and styles, but they all tend to have the core essentials to support worm life. These essentials typically include a draining mechanism, a lid to prevent escape, and room to add wastes for composting. Many individuals build their own worm farms or purchase a kit.

There are many different materials that can be added and used in vermicomposting. Some of which include green wastes (weeds, grass), cattle manure, pig manure, paper wastes, and food scraps. These materials are eaten by worms and pass through them, leaving behind nutrient-rich soil.

Additionally, there are a few types of worms that can be used for vermicomposting and fish bait. However, the two most popular types of earthworms used include, *Eisenia foetida* and *Lumbricus rubella*. These two types of worms can be difficult to tell apart, typically raised together, and are not believed to be interbred (State of California, 2022).

Caring for your worms can be a simple process, however, there are a few basic things one needs to know. First, it is important not to overfeed since worms only eat roughly half their body weight daily. Excess scraps can increase the heat of the bin through fermentation and increase the acidity of your soil's pH levels. This will cause the worm bin to smell and attract pests. Additionally, it is important to be conscious about the food being added to the bin. For example, too many citrus foods can increase acidity levels and meat, or dairy will make the compost bin smell. Lastly, it is important to regulate the temperature of the bin and maintain a moist environment (Powney, 2020). There is a lot to know about worm farming, so do some research before starting.

Vermicomposting at New Mexico AgrAbility Project Partner Organization Apprentice

Location - Mandy's Farm

This summer, three students (Celia Giallanella, Robin Gibbs, and Barrett Harding) from University of New Mexico's (UNM) Occupational Therapy Graduate Program, along with the help of Mandy's Farm AgrAbility Program Coordinator Paul Ross, created a custom-built table with drop-in vermicomposting bins. The table was built for the accessibility and ease-of-use for a prospective farmer who experiences mobility limitations.

Previously, the farm had obtained more than fifteen small vermicomposting bins. The bins were small and required a high level of control of fine and gross motor movement of lids and drains. Application of food scraps and drain cleaning became repetitive quickly. Also, the bins were lightweight, and could be easily knocked over by the prospective farmer, who uses a wheelchair for mobility. A solution of three large bins that held roughly the same amount of vermicompost set within a solid wooden table helped improve conserving energy by reducing repetitive tasks and increased stability by securely holding the bins in place.

3D Printing was also utilized within this build by creating customized handles for ease of opening one-handed on both the custom buckets to hold food scraps and on the lids for the vermicomposters. Also, 3D printed built-up tools were printed for scraping food scraps out of the bucket.

DISABILITY RIGHTS AWARENESS DAY (DRAD) AT THE ROUNDHOUSE



Mandy's Farm staff and students at the Santa Fe Roundhouse standing behind a "Disability Rights Awareness Day" banner

On February 8, 2023, the New Mexico Technology Assistance Program attended the DRAD at the Roundhouse in Santa Fe, NM as part of the 2023 Legislative Session. Many food growers and government representatives of food growers from around the state are in the Capital during the session. NMTAP hosted a table where AT Specialists Maurice Alvarez and Julie LaJeunesse spoke with many of the hundreds of attendees about AgrAbility services as well as the NMTAP services. Visitors were drawn to the NMAP trade show banner and asked wonderful questions about NMAP's services for people with disabilities as well as tools for adaptive farming and gardening. The AT Specialists passed out almost all their NMAP business cards and brochures, and informed legislators and civilians of some of the new NMAP-funded agricultural AT available for short-term loan through the NMTAP loan library. New AT includes satellite communicators, a garden seeder, a tiller, and even solar GPS smartwatches!

For Disability Rights Awareness Day NMAP partner Mandy's Farm organized a trip to the Capitol with over 60 of our individuals served across programs including apprentices from our AgrAbility Apprenticeship Program to learn about current legislation supporting disability rights and share their thoughts about needed legislation with Representative Meredith Dixon. Mandy's Farm is grateful to have received sponsorship for this event from Weems Hazen Law Firm.

AGRABILITY REGIONAL WORKSHOP FALL 2022

As a member of the New Mexico AgrAbility Project, or NMAP, New Mexico State University Cooperative Extension Service along with the New Mexico Technology Assistance Program, Mandy's Farm and the University of New Mexico Occupational Therapy graduate program are supporting efforts to promote accessible agriculture.

NMAP was created to support success in agriculture for people with disabilities and improve quality of life through participation in agriculture production. NMAP collaborated with the National AgrAbility Project and the 1994 land-grant institution, Southwestern Indian Polytechnic Institute, to host a regional AgrAbility workshop at SIPI's campus in Albuquerque. Chuck Baldwin, with the National AgrAbility Project, collaborated with NMAP to hold the informative and networking event.

"I am personally excited about the outcomes of the workshop, the networking that was done, and the relationships that were built. Kudos to all of you who helped with the planning and execution of this important – even groundbreaking – event," said Baldwin, who is the National AgrAbility Project Underserved Populations Outreach coordinator at Purdue University.

The free two-day event provided presentations on how existing, new and prospective tribal farmers and ranchers and others with disabilities and other functional limitations can remain or become successful in small-scale farming and gardening.



New Mexico farmer Tiffany Sanchez (seated,) a NMAP client, participated in the farmer panel during the SIPI workshop in late September. Sanchez' husband, JJ (left), also attended the event.

With 69 workshop participants representing five states, including New Mexico, Indiana, Texas, Colorado and Washington, attendees had the chance to join presentations from 16 individuals from at least 29 different agencies.

Workshop topics included physical rehabilitation issues of farmers and ranchers; microscale farming; adaptive tools and technology; and worksite assessment.

ASSISTIVE TECHNOLOGY CORNER

In this edition of the Assistive Technology Corner, we're going to explore Garmin's dezlCam OTR710 7" GPS Truck Navigator with a Built-in Dash Cam, and the accompanying Garmin BC 50 Night Vision wireless Backup Camera that attaches to a rear license plate mount. When the two pieces of equipment are installed together, drivers get a clear view of the areas in front of and behind their vehicle or equipment.



For folks who spend hours on tractors, skids, balers, and other farming, ranching, and logging equipment, the literal pain in the neck one may experience is not uncommon due to operators needing to continuously turn their necks to view work behind them. For this reason, the New Mexico AgrAbility Project would like to highlight some of the neck-saving and exciting features of Garmin's award-winning backup camera system:

The GPS Truck Navigator touchscreen is 7" and can be purchased with or without a built-in dashcam. Purchasing with a dashcam can be advantageous however, as the 140-degree field of view HD recordings may be useful for agricultural workers who need to show footage of road conditions, accidents, livestock, etc. Other Navigator screen sizes are also available, including 6, 7, 8, 10"

The Navigator comes with Garmin Voice Assist so drivers can stay hands-free while on the road or in the field

If paired with your smartphone and the dezl app, one can make phone calls and see text messages and other notifications on the Navigator screen

The BC 50's backup camera signal range reaches up to 50 feet, allowing users to install the equipment on longer RVs, trucks, and trailers. An additional 50-foot cable can be purchased separately for a maximum of up to 100 feet of range

In addition to offering a 160-degree field of view from behind, the BC 50 with Night Vision also offers NightGlo technology which illuminates up to 20 feet behind the vehicle when reversing in the dark

And finally, drivers can take full advantage of all the smart features of Garmin's GPS mapping, including Informed Routing, Driver Alerts, and even Lane Departure Warnings



Cost:

BC50- \$299.99: Garmin BC™ 50 with Night Vision | Wireless Backup Camera

Garmin's dezlCam OTR710 7" GPS Truck Navigator with a Built-in Dash Cam:
\$599.00: Garmin dezlCam™ OTR710 | Trucking GPS with Dash Cam

For many, the full functionality of the GPS Truck Navigator may be more than enough, but rest assured, Garmin has many solutions for those in agriculture to enjoy. Don't forget, you can borrow the dezlCam OTR710 and BC 50 with Nightvision from New Mexico AgrAbility partner, the New Mexico Technology Assistance Program. Please contact us if you're interested in borrowing our loan equipment for up to six weeks!



The New Mexico AgrAbility Project (NMAP) is a partnership between New Mexico State University, the University of New Mexico, the New Mexico Technology Assistance Program, and Mandy's Farm.

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