

## 2024 AgrAbility NTW Poster Descriptions

- **Affordable Flexible Robotics to Aid Farmers with Mobility Limitations: An Interview Approach to Understand Farmers Perspectives of Wearable Assistive Technology** by *Roberto A. Franco and Kim Niewolny- Virginia Tech and AgrAbility Virginia, Brianna Posadas, Satyajit Upasani, and Alexander Leonessa- Virginia Tech, and Divya Srinivasan- Clemson University-*  
Featuring AgrAbility Virginia, this poster will highlight the purpose, aims, findings, and implications of the second phase of the National Science Foundation (NSF) grant titled, “Affordable Flexible Robotics to Aid Farmers with Mobility Limitations.” Through this project, the AgrAbility Virginia team is collaborating with Virginia Tech engineers and physical therapists to create affordable, wearable assistive technology in the form of exoskeletons to help farmers with mobility limitations to continue to work safely and productively. The second phase objective is to understand farmers’ perceptions of the possibilities and challenges of exoskeleton assistive technology to aid mobility limitations on farm.
- **In-Cab Combine Accessibility** by *Jake McAllister- Clemson University & Clemson Extension-* One area that AgrAbility focuses on is the accessibility for cabbed machines. While many manufacturers do not create their machine settings with AgrAbility in mind, there are many additions that can fit into a cab for an individual that has a disability. These physical impairments can deal with issues with their spine and neck, mobility problems such as paralysis, and even dealing with arthritis. Using a Case IH combine cab, the researchers both installed and display different innovations that AgrAbility supports. Using this display, the research’s main goal was to raise awareness about AgrAbility and provide a structure for further innovations to the combine cab.
- **Gender Differences in Health Conditions for Food Growers** by *Mary Thelander Hill, Patricia Siegel, and Marcy Rinaldi- University of New Mexico-* According to the Centers for Disease Control (CDC) agriculture is one of the most hazardous industries in the United States (2021). Farmers and food growers are at high risk for fatal and non-fatal injuries, along with family members who often share in the work and live in on the farm (CDC, 2021). A 2019 study of farm related injuries (Karttunen et. al.) found that injuries are an indicator of different work exposure. Men tend to experience injuries from working with farm machinery (Dimich-Ward et. al., 2004). However, even though women experience fewer total reported injuries, livestock-care related injuries are more frequent for women (Dimich-Ward et. al., 2004). Additionally, female food producers experienced increased risk of ergonomic related musculoskeletal injuries and sleep disturbance (Shin, & Jeong, 2022). This research suggests that agricultural injuries could be different depending on the gender of the worker and the work they do. Given the high likelihood of injury in this population coupled with the specific gender needs, it is imperative that Occupational Therapists be well versed in how to help this population mitigate and treat injuries. This project aims to address that need and bring education and resources to Occupational Therapists and other health professionals working in settings with agricultural workers.

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- **Using Agriculture Education as a Holistic Health Approach: An Innovative Model for Navigating the Transition from Military Service to Civilian Life** by *Robin Tutor Marcom- North Carolina Agromedicine Institute and Robert Elliott- Veteran's Farm of NC*- Military veterans transitioning out of active duty have an elevated risk for mental health problems, including the danger of suicide. The Veteran's Farm of North Carolina partnered with the NC Agromedicine Institute to develop a program that incorporates multifaceted, culturally competent behavioral health interventions into a Veteran agriculture training and education program. Through this process, the team developed a holistic model that has proven to be effective in preventing suicide by addressing four key components: financial/legal concerns, family relations, mental/physical wellbeing and peer support while providing participants with the skills necessary to be successful in small scale production agriculture.
- **Jesup Wagon 2.0 Strengthens Diversity, Equity, and Inclusion for Missouri AgrAbility Client Farmers** by *Karen Funkenbusch- University of Missouri and Mary Boling- Lincoln University Cooperative Extension*- In the tradition of George Washington Carver, the Missouri AgrAbility Program and Lincoln University Cooperative Extension (LUCE) continues the services that this great contribution provides by introducing its newest mobile classroom upgrade: Jesup Wagon 2.0 (JW2). The LUCE ISFOP was created to help the small farmers and ranchers of Missouri, especially those who are socially disadvantaged and underserved, to raise the level of efficiency on their farms while taking proper care of soil, water, and the environment. While the Missouri AgrAbility Program was designed to help farmers with disabilities succeed, it further complements the goals of the ISFOP program. The contents of JW2 include an extensive inventory of agricultural tools designed to bring modern innovations to small farmers in the same manner and spirit as George Washington Carver was able to do over a century ago.
- **Improving the health, safety and well-being for women farmers by adapting farm tools and equipment** by *Karen Funkenbusch, Jianfeng Zhou, and Marcia Shannon- University of Missouri*- Women make up a growing share of principle farm operations, especially on farms engaged in sustainable agriculture. However, almost all farm tools and equipment are designed based on the average size of men farmers. There are limited research efforts investigating the health and safety risks due to a mismatch between the physical capabilities of women farmers and the physical demands of the jobs with regard to farm tools and equipment. Therefore, the goal our project is improve the health and safety for women farmers by identifying essential issues of farm tools and equipment used by women farmers including individuals with disabilities, and providing solutions through presenting education-based programs, providing simple solutions, and providing relevant resources.
- **A Community-based Participatory Approach to Research on Health Equity and Social Vulnerability of Farm Workers and Agricultural Laborers in Virginia** by *David Smilnak, Dr. Kim Niewolny, and Roberto Franco- Virginia Tech*- As a vulnerable population, the health and wellness of farm workers and agricultural laborers (FW&AL) is a rising public health issue as most recently demonstrated during the COVID-19 pandemic. Current literature also illustrates social equity, economic resiliency, and food security concerns related to FW&AL's health, safety, and wellness. Drawing upon the Centers for Disease Control and Prevention's social vulnerability

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index as a systems framework, this poster shares preliminary findings of a community-based participatory research (CBPR) project co-lead by AgrAbility Virginia that seeks to understand the social and environmental vulnerabilities affecting FW&AL in Virginia. This mixed-method research project is a partnership among Virginia's 1862 and 1890 land-grant universities, cooperative extension, and a national labor advocacy organization to provide community-based and culturally appropriate program and policy solutions from a healthy equity and food systems lens.

- **Farmer Focus Project: Supporting Farmer Wellness and Behavioral Health on Guam and Micronesia** by *Kuan-Ju Chen, Tim de La Cruz and Harley Edeluchel, Jr- University of Guam and KristiAnna Whitman- Guam Behavioral Health & Wellness*- The poster will provide an overview of the University of Guam Cooperative Extension Farmer Focus Project and specifically highlight its unique aspects, to include its multi-agency approach and the strategies for promoting behavioral health wellness in supportive environments. Results of the project's two primary goals will be outlined. These goals include: 1). access to behavioral health research-based information and evidence-based workshops to farmers, farm workers and their families; and 2.) utilizing planting/gardening activities as a protective factor in promoting positive behavioral health outcomes among nonfarm families, youth and other populations. Additionally, the poster will highlight key lessons learned from two years of hosting regional conferences on farmer behavioral health, the first of its kind for the region; other community outreach activities and skills building workshops that address farmer stressors.
- **Developing an Accessible Competency-Based Apprenticeship for New and Beginning Veteran Farmers** by *Sara Kidd- North Carolina State University*- Registered apprenticeships are an emerging trend in workforce development with rapidly increasing popularity among non-traditional trade occupations such as healthcare and information technology, but are still relatively new in agriculture. This session will cover the basic components of registered apprenticeships and how we have created registered agricultural apprenticeships in North Carolina. The presentation will focus on our BFRDP-funded pilot, one of the first registered and GI Bill® approved agricultural apprenticeships specifically serving military veterans (Boots on the Ground: NC Veteran Farmer Apprenticeship). During the first two pilot cohorts, we have seen over 40 applications from military veterans with 13 joining the apprenticeship program. The poster will address program development the opportunities and challenges with registered agricultural apprenticeships, and how the project works to make apprenticeship accessible for disabled veterans who wish to pursue farming as a new career.
- **Farmers' Motivation for Learning and Developing New Skills** by *Dr. Suzanna Windon- The Pennsylvania State University*- Previous studies found that the desire to be successful, increase profit, solve work-related problems, remain competitive, and have a better life relate to farmers' motivation to lifelong learning and developing new and safe innovation practices (Ma et al., 2020; Franz et al., 2009; Bhatta et al., 2019). This study explored to what extent self-leadership competencies and job motivation can explain farmers' motivation for learning and developing new skills. Our study showed that farmers' self-leadership competencies were significantly associated with motivation for learning and developing new skills. We found that

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farmers are highly proficient in self-leadership skills: achieving business goals, feeling self-confident, etc. The needs were balancing personal and professional life during the busy season, handling stress, quickly making decisions, and prioritizing tasks on the farm. This study showed that farmers enjoy learning new work-related things and view any changes as an opportunity to grow. Farmers' engagement in extension programs can help them enhance their self-leadership skills, increase job motivation, foster a desire to learn and develop new skills and implement new safe practices in their farm work.

- **Florida AgrAbility: Farmfield to Coastline** by *Lindsey head, Tony Delisle, Serap Gorucu, Molly Lewis and Shelby Thomas- FL AgrAbility-* This poster will provide an overview of Florida AgrAbility's first-year accomplishments in terms of direct assistance, outreach initiatives, and program evaluation, including a summary of insights gleaned from systematic key informant interviews with project staff in other states.
- **Developing an Accessible Competency-Based Apprenticeship for New and Beginning Veteran Farmers** by *Sara Kid- North Carolina State University-* Registered apprenticeships are an emerging trend in workforce development with rapidly increasing popularity among non-traditional trade occupations such as healthcare and information technology, but are still relatively new in agriculture. This session will cover the basic components of registered apprenticeships and how we have created registered agricultural apprenticeships in North Carolina. The presentation will focus on our BFRDP-funded pilot, one of the first registered and GI Bill® approved agricultural apprenticeships specifically serving military veterans (Boots on the Ground: NC Veteran Farmer Apprenticeship). During the first two pilot cohorts, we have seen over 40 applications from military veterans with 13 joining the apprenticeship program. The poster will address program development the opportunities and challenges with registered agricultural apprenticeships, and how the project works to make apprenticeship accessible for disabled veterans who wish to pursue farming as a new career.