



EXTENSION



# PRODUCER ATTITUDES TOWARDS VIRTUAL FENCING TECHNOLOGY IN LIVESTOCK SYSTEMS IN NEW MEXICO AND OKLAHOMA

AUTHORS

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## INTRODUCTION

Rising fencing material and labor costs are increasing interest in virtual fencing (VF), a GPS-collar system that creates digital boundaries and can support herd tracking and rotational grazing (Abizaid & Campbell, 2024; Schillings et al., 2024). Using *Diffusion of Innovations* (Rogers, 2003), we framed adoption of VF technology as a function of perceived innovation attributes (relative advantage, compatibility, complexity, trialability/observability of the technology). This study documents the strongest perceived barriers and benefits of VF for New Mexico and Oklahoma producers to guide the development of future Extension educational programs, demonstrations, and decision tools.

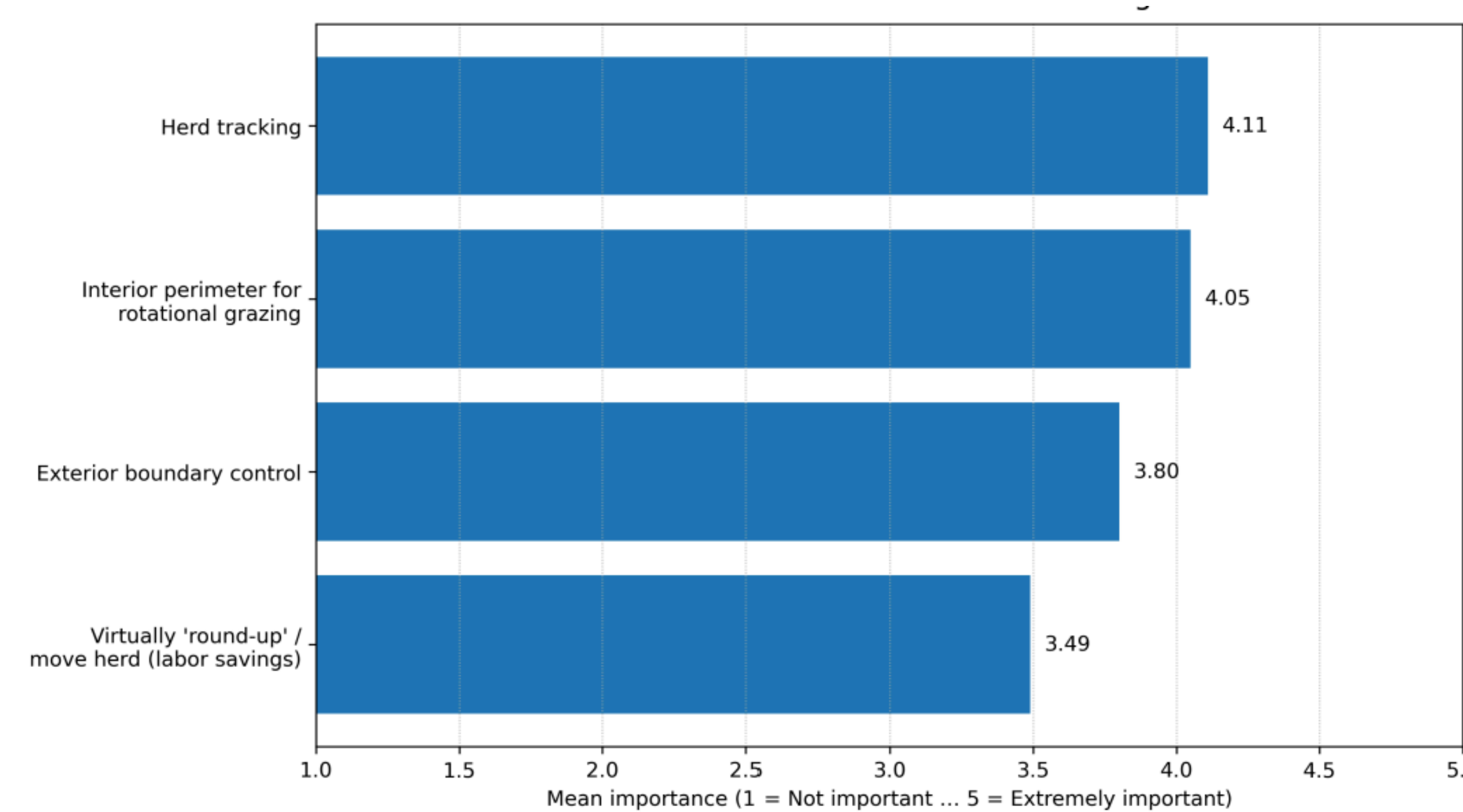
## OBJECTIVE

Identify the perceived barriers and the most valued use-cases for VF among New Mexico and Oklahoma livestock producers to guide Extension programming/activities.

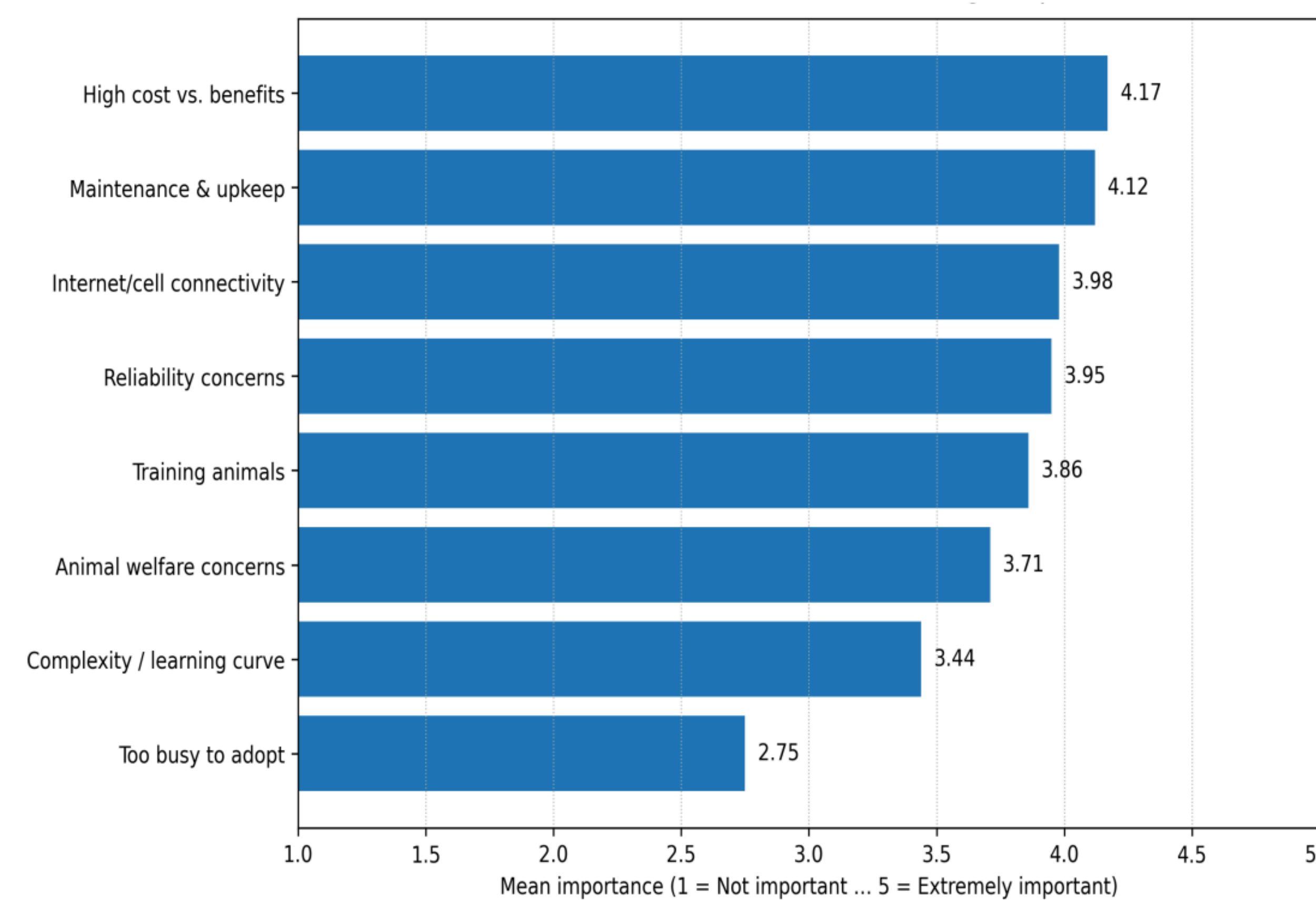
## METHODOLOGY

- Mixed-mode survey (paper + Qualtrics)
- 5-point importance ratings (1=Not important ... 5=Extremely important).
- Items: VF barriers + VF benefits
- Descriptive statistics (means; SD; varying N by item).

## Percieved Benefits



## Percieved Barriers



## KEY FINDINGS

Participants rated the most significant barriers to virtual fencing adoption as **high cost** relative to benefits, **maintenance and upkeep, cell/internet connectivity, and reliability concerns**. The most valued benefits were herd tracking and using virtual boundaries to create interior perimeters for rotational grazing, with more cautious support for replacing exterior fencing and only moderate confidence in using VF to virtually move cattle to reduce labor.

## ANALYSIS

Findings align with Diffusion of Innovations theory (Rogers, 2003), as producers see clear advantages to virtual fencing in herd tracking and establishing interior boundaries for rotational grazing, but adoption is constrained by perceived drawbacks—especially cost (relative advantage), connectivity and fit with ranch infrastructure (compatibility), ongoing maintenance/reliability (risk and performance uncertainty), and animal training demands (complexity). These barriers reduce confidence that VF will work under real-world conditions for each producer (Ajzens, 1991).

## CONCLUSIONS

Virtual fencing is viewed by New Mexico and Oklahoma producers as a promising tool for improving herd monitoring and enabling more flexible adoption of rotational grazing practices, but adoption potential is tempered by concerns about *cost, connectivity, maintenance, and system reliability*. These results suggest that producers are not resistant to the concept of VF; rather, they are cautious about its practical performance and economic fit within the real-world dynamics of their operations. As the technology continues to develop, broader adoption will likely depend on a producers' ability to observe successful applications and evaluate the technology under real-world ranch conditions. Extension efforts should focus on increasing trialability and observability of the technology through local demonstrations and producer-to-producer learning opportunities, while also improving decision support via economic analysis, cost calculators, and programming that address animal training, and system maintenance.

