

# DAIRY & LIVESTOCK

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Photo/Brian Allen

Cattle are outfitted with GPS-enabled collars that allow ranchers to set virtual boundaries using digital software. When livestock approach the virtual fence, the collars emit a warning sound or mild electrical cue that prompts them to turn around. The relatively new technology allows ranchers to control livestock distribution in rangeland without physical fences.

## Virtual fencing can improve livestock management

By Dorsey Kindler

Amador County rancher Leisel Finley and her family lost 7 miles of fencing after the 2021 Caldor Fire swept through her summer rangeland in the El Dorado National Forest. When she asked for a bid on the cost to replace the fencing, she was shocked by the \$300,000 price tag and that construction would take about a year. In addition, the U.S. Forest Service mandates that grazing be withheld for two years in postfire landscapes.

As luck would have it, the sixth-generation rancher, who operates Mount Echo Ranch, a cow-calf operation that relies on land leased from the U.S. Forest Service, had heard about virtual fencing, a relatively new digital technology for managing livestock.

Virtual fencing technology varies from company to company, but all of it involves outfitting livestock with GPS-enabled collars that keep the animals within a designated location, just like a dog might wear a collar that keeps it in the yard. The collars emit a warning sound or mild static pulses if the animal attempts to leave the location. The GPS-enabled collars can be used in cattle, sheep or goats.

Unlike a dog's invisible fence collar, virtual fencing doesn't require ranchers to bury any wire. Sometimes a base station is required, but the technology runs on a cellular signal. This allows ranchers to see the position of livestock using a smartphone or computer.

University of California Cooperative Extension farm adviser Scott Oneto and Brian Allen, a UCCE Central Sierra assistant specialist, took advantage of a federal grant from the U.S. Department of Agriculture Natural Resources Conservation Service to study virtual

fencing in collaboration with other UC researchers and several ranchers, including Finley.

"Building and maintaining physical fence is challenging, and it's cost prohibitive," Allen said. "I grew up raising cattle, and I would spend a lot of my summer weekends walking fence lines out in the forest."

Allen pointed out that physical fences need repairing. Once posts and wires are in place, they are pretty much permanent. But with virtual fencing, he said, ranchers can spend five minutes drawing a specific boundary with all the proper angles that can be changed at any time.

As for virtual fencing's effectiveness in containing livestock, Allen said it depends on a rancher's need and comfort level.

"If your need is 100% containment, you're not going to achieve that with virtual fencing," he said. "You can achieve 90% or 95%. But if you're hoping to contain animals next to a busy highway with virtual fence, I would not recommend that."

UCCE farm advisers describe virtual fencing technology as a tool for more effective rangeland management. For now, a better use for virtual fencing is to replace cross fencing within a physically fenced-in rangeland. In addition, the system shows promise as a means of mitigating fire risk by the reduction of fuel loads in targeted areas, researchers added.

To access the technology, Finley said she worked with the virtual fence company Vence

See FENCING, Page 11

# Fencing

Continued from Page 10

two years ago to acquire the GPS collars. Other businesses offering virtual fencing include Nofence, Halter and Gallagher.

Finley's cattle are used to wearing cowbells, so she placed the GPS-enabled collars on with little trouble. She said the cattle were trained in the technology fairly quickly.

Kristina Horback, professor at the UC Davis Department of Animal Science, is involved in the extension research. She is interested in the behavior of livestock related to the use of virtual fencing.

"We have a few individuals that test the boundaries more than others," Horback said. "These outliers are either slow to learn or are looking for holes in the virtual fence."

Age seems to have little impact on learning ability, she said, adding that heifers may need more audio and pulse warning than steers.

One behavior-related suggestion that the Vence representative told Finley is not to run a virtual fence line across a trail that cattle like to use because they will pass it before they feel or hear the cues.

Finley said her experience with virtual fencing has been great so far. Part of her chores used to include checking 26 gates on summer rangeland on a weekly basis. Virtual fencing technology is a huge timesaver, she said, adding that she sees



Photo/Courtesy of Laisel Finley

By using special collars with GPS tracking on cattle, ranchers can replace traditional barbed-wire fencing in open range landscapes.

promise in its use.

As for the cost of digital fencing systems, Allen said it's highly variable depending on a rancher's individual circumstances, but it is most likely in the tens of thousands of dollars. A U.S. representative from the

Norway-based Nofence said her company's collars are \$359 each, and the required subscription service is \$4 per collar per month. The cost of sheep and goat collars is about \$100 less.

"It's not going to replace everything,

but virtual fencing has the potential to be a tool in the toolbox for different types of land management purposes," Allen said. "Right now, we're in a period where there's all this interest and we're trying to figure out what it can and cannot be used for here in California."

Finley said she realized how much she'd come to rely on virtual fencing when her parents reported a few head of cattle missing during a routine feeding at the home ranch. All she had to do was look at her screen to see that they were just over the hill and likely didn't hear the tractor.

"Knowing where your cows are is a crazy powerful tool," she said.

Producers interested in financial assistance for virtual fencing technology are encouraged to contact their local USDA service office for more information.

(Dorsey Kindler is a reporter in Butte County. He may be contacted at [dorseykindler@gmail.com](mailto:dorseykindler@gmail.com).)

## University to hold cattle health webinars

Join University of California veterinary experts on Jan. 21 and 28 from 5:30 to 7 p.m. for free webinars on cattle health. The live sessions are designed for producers of all sizes.

The Jan. 21 webinar with UC Cooperative Extension assistant specialist Gaby Maier


is on biosecurity at the ranch, including for foot-and-mouth disease, avian influenza and more. The Jan. 28 webinar with UC veterinary professor Meera Heller is on common cattle foot issues.

To register, go to <https://ucanr.edu/sites/Rangelands/CattleHealth/>. For

questions, contact Tracy Schohr at [tkchohr@ucanr.edu](mailto:tkchohr@ucanr.edu) or 916-716-2643.

Video recordings and additional resources from previous webinars are available at <https://ucanr.edu/sites/Rangelands/CattleHealth/>.

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