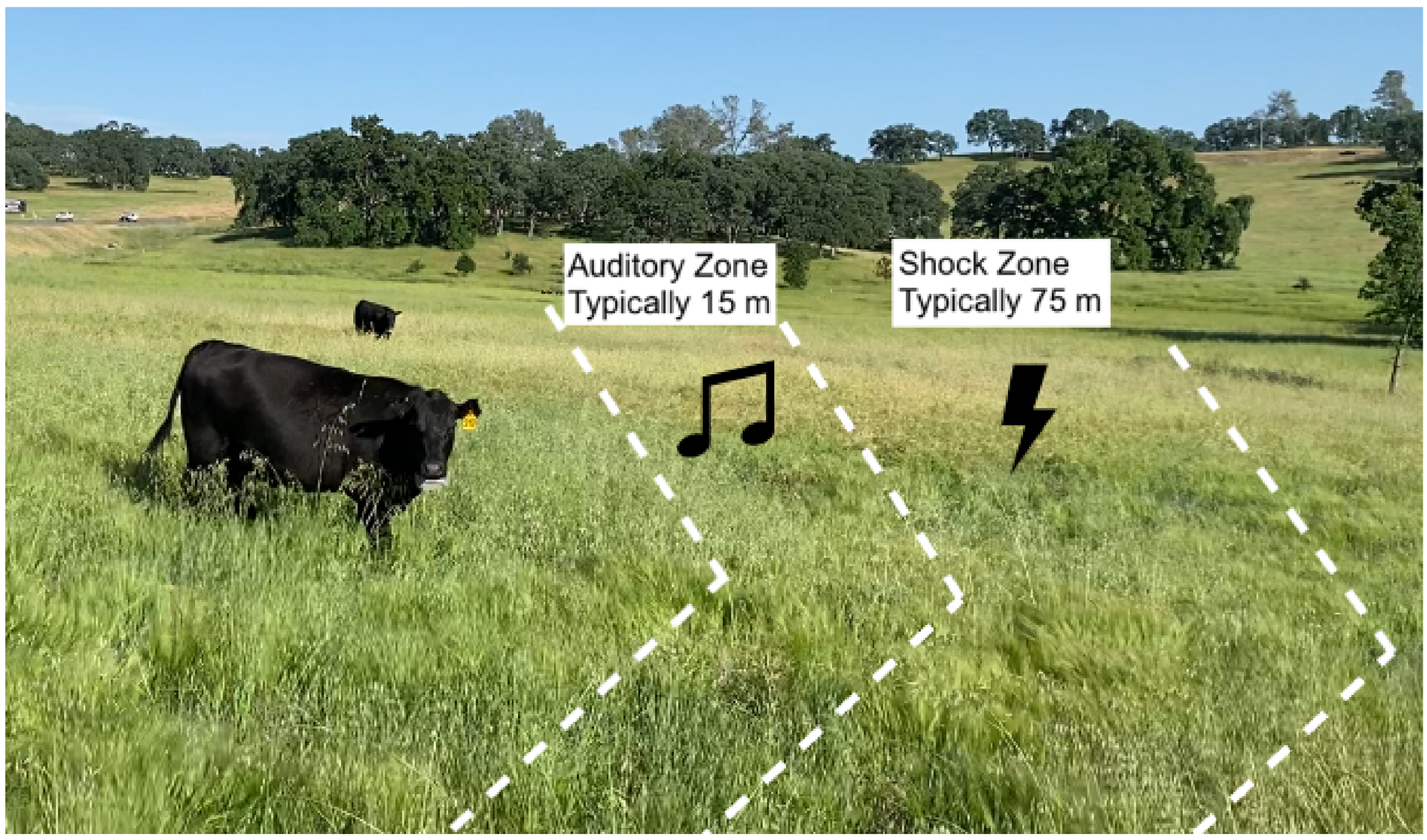
2023 Virtual Fence Workshop

Survey Results

Data by producers for producers

This short survey was conducted by the UC ANR Central Sierrs during the summer 2023 Virtual Fence (VF) Workshop to gather data from a diverse audience of livestock producers, including both VF users and non-users. The survey had three main goals. First, it aimed to characterize the new and growing use of VF across California's diverse livestock production systems. Second, it sought to assist those interested in exploring VF technology make more informed decisions by providing them with evaluations from producers who have already incorporated VF into their operations. Last, the survey results will assist the UC ANR Central Sierra VF team to identify pertinent research priorities. This survey will remain live until 12/31/23 for members of the public to provide information about their use, interest, and thoughts of VF systems.

PLEASE CONSIDER CONTRIBUTING TO THE 2023 VIRTUAL FENCE SURVEY AT: HTTPS://UCANR.EDU/VFSURVEY2023



Please note the following before viewing the survey results:

- **All information that may identify survey participants has been anonymized and will never be publicly available.**
- **Participants could skip questions, so the figures presented are based on the number of responses provided. This is indicated for each figure.**
- **Most of the questions allowed participants to select all the responses that applied to them, so the responses may be greater than the number of participants.**

Please use the following citation to reference this report:
Allen, B., Audoin, F., and Oneto, S. UC ANR 2023 Virtual Fence Survey Results. 2023. https://cecentralsierra.ucanr.edu/Virtual_Fencing/

VF is a newly emerging tool for livestock producers. Currently, there are 3 companies that will operate in the United States:

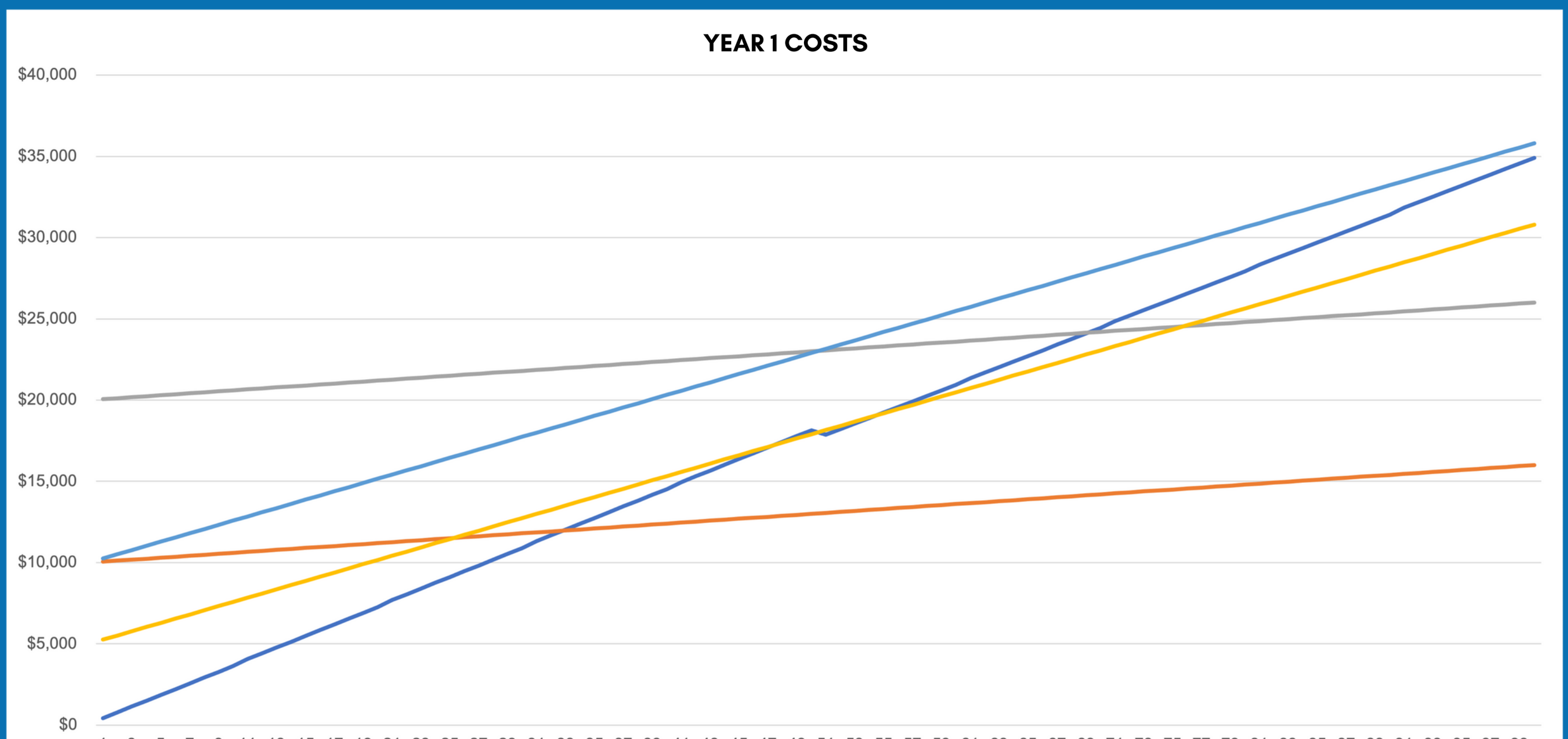
- Vence is a US-manufactured company that was recently purchased by Merck Animal Health and is currently available for purchase. They make VF collars for cattle.
- Nofence is based in the Netherlands and specializes in collars for large and small ruminants. It will be available in the US in 2024.
- Gallagher is based in New Zealand and will be available in the US in 2024. They make VF collars for cattle.

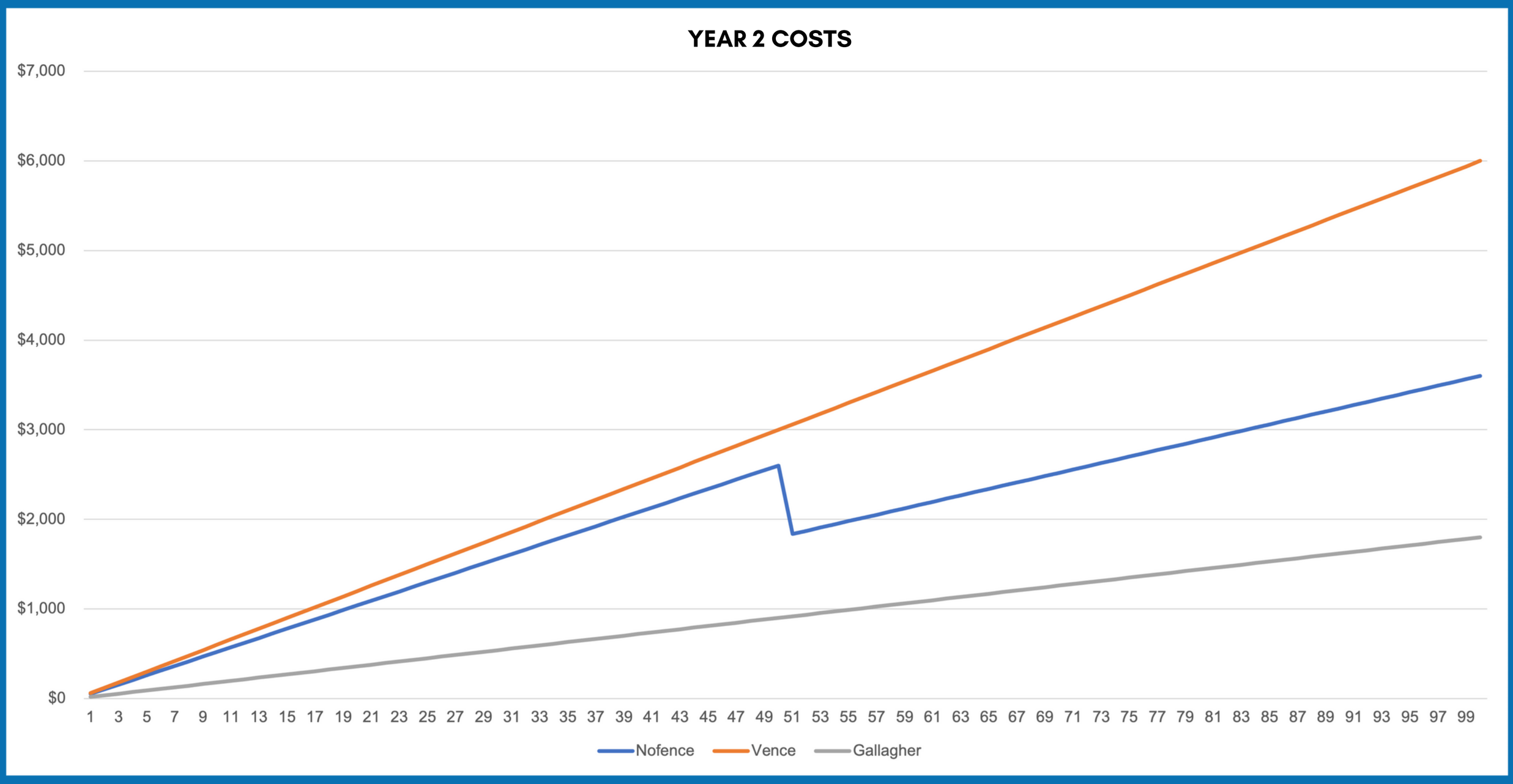
The table below details some of the key features between the VF systems each company produces. We encourage interested individuals to use the company contact information at the bottom of the table to get more information.

	VENCE	Nofence Grazing technology	GALLAGHER
Collar cost	$40 cattle	$299 cattle; $199 Goats & Sheep	$240 Cattle
Lease or purchase collars	Leased	Purchased	Purchased
Subscription cost	N/A	1-49 Collars: $56/collar for year 1, then $52/collar annually ≥50 Collars: $42/collar for year 1, then $36/collar annually	$18/collar for year 1, then $1.50/collar per month with the option to skip months.
GPS tower cost	$10,000	N/A	$5,000
Cost to contain 50 animals Year 1	$23,000 (2 GPS towers)	$18,150 cattle; $12,275 sheep & goats	$22,900 (2 GPS towers)
Annually recurring costs for 50 animals	$3,000	$2,600 cattle; $1,800 sheep & goats	$900
Requires cell reception	Yes	Yes	Yes
Battery life	6 to 9 months	5 to 10 years	7 to 10 years
Solar chargers on collars	No	Yes	Yes
Company contacts	www.vence.io	sales.us@nofence.no	Sarah.Adams@gallagher.com

The costs for a virtual fence system will vary between company, the number of GPS towers necessary to provide good coverage over a particular range (if necessary), and the total number of livestock to be collared.

These graphs display projected start up costs (Year 1 Costs) and annually recurring costs (Year 2 Costs) for 1 to 100 head of livestock for Nofence, Vence and Gallagher. This includes 1 and 2 GPS tower options for Vence and Gallagher.

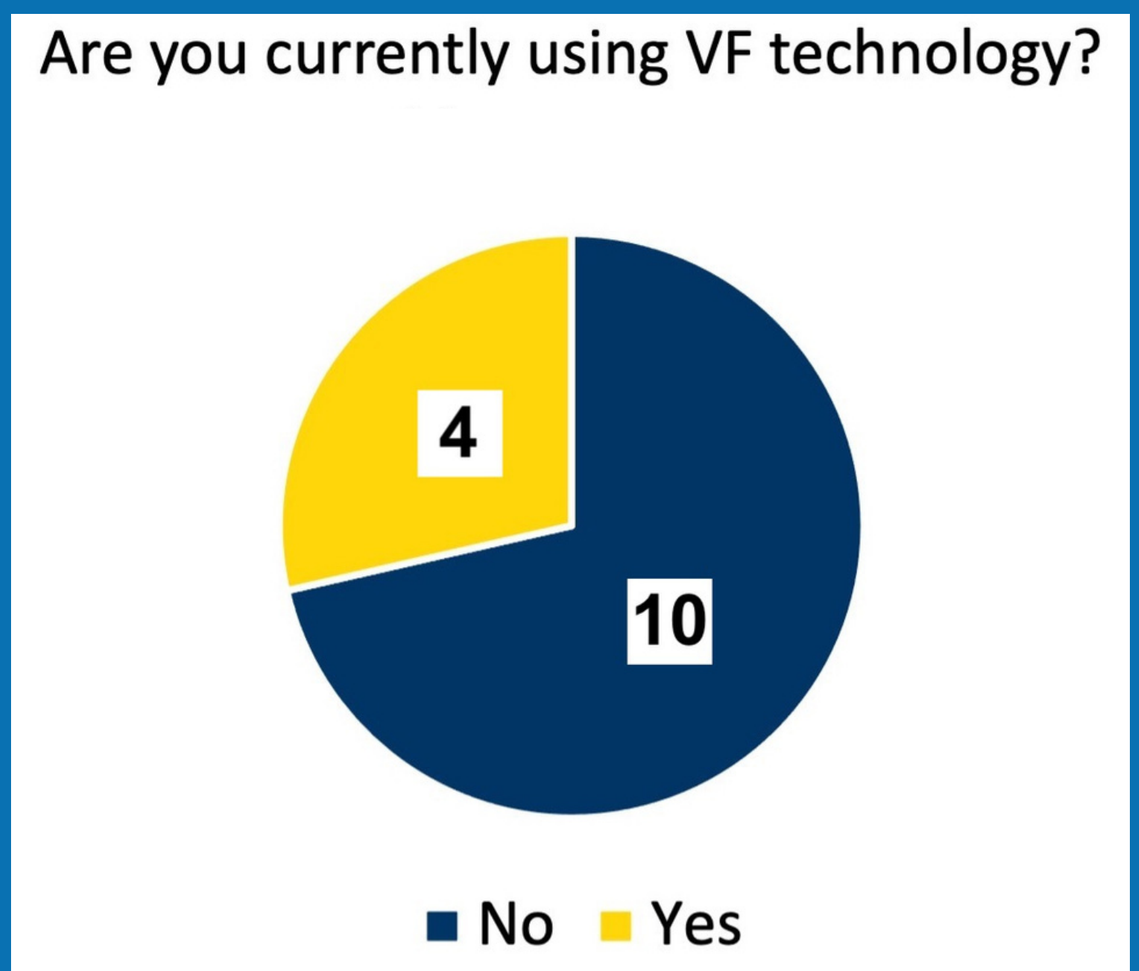




SECTION 1: ALL PARTICIPANTS

1) ARE YOU CURRENTLY USING VF?

TOTAL PARTICIPANTS: 14



2) ARE YOU CURRENTLY PARTICIPATING IN ANY RESEARCH PROJECTS?

TOTAL PARTICIPANTS: 13

The UC ANR Central Sierra is currently partnering with livestock producers to evaluate the effectiveness of VF systems on California rangelands. These research projects are designed to work within the producer's herd management needs. Winter rangelands studies include installing fuel breaks along highway corridors and targeted grazing of palatable weeds. Summer rangeland studies include using virtual fences to exclude livestock from recreational and environmentally sensitive areas, and targeted grazing of brushy fuels in a post-fire landscape.

Are you currently participating in any research projects?

		Yes	No, but interested in research participation	No, and not interested in research participation
Are you currently using VF technology?	Yes	2	2	0
	No	0	6	3

SECTION 2: PRODUCERS USING VF

3) WHICH VF TECHNOLOGY ARE YOU CURRENTLY USING?

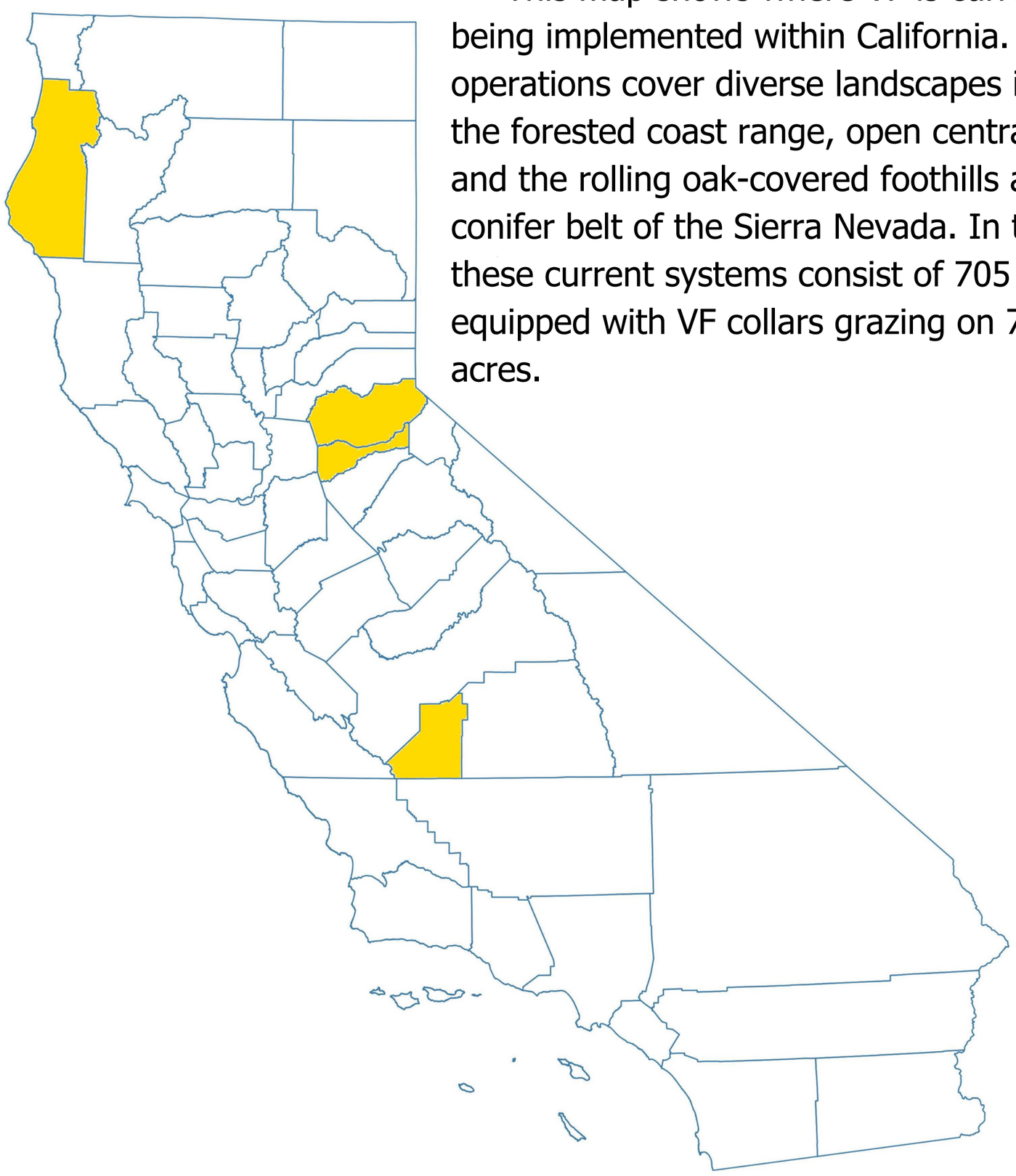
TOTAL PARTICIPANTS: 4

As of 2023, Vence is the only available VF company operating in the United States, but Nofence and Gallagher will become available in 2024 and have already begun partnering with some producers.

	Number of users	When did you begin using VF?	On average, how long does the battery last?
Vence	3	2022 (all Vence users)	7.5 months
Nofence	1	2023	Undetermined. Batteries are still above 90% in the first year.
Gallagher	0	N/A	N/A

4) WHERE IN CALIFORNIA ARE YOU USING VF?

TOTAL PARTICIPANTS: 4



This map shows where VF is currently being implemented within California. These operations cover diverse landscapes including the forested coast range, open central valley, and the rolling oak-covered foothills and mixed conifer belt of the Sierra Nevada. In total, these current systems consist of 705 animals equipped with VF collars grazing on 73,800 acres.

5) WHAT SORT OF PASTURE DO YOU GRAZE WITH VF?

TOTAL PARTICIPANTS: 4

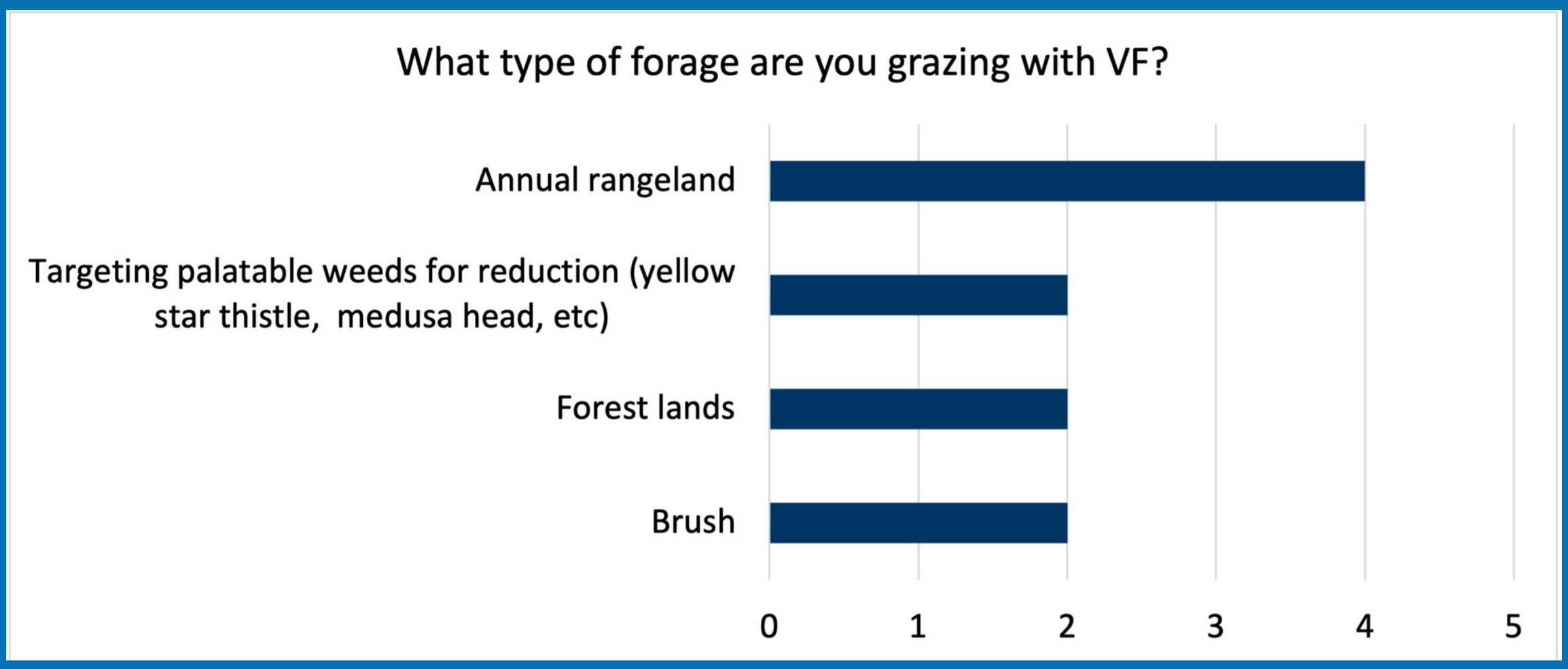
Livestock production systems vary based on land ownership, encompassing private holdings and contract grazing arrangements. These operations often utilize both winter and summer ranges. Winter ranges are usually, though not exclusively, privately owned, while summer ranges can span thousands of acres and operate under lease or grazing right with federal, state, or private ownership groups.

	Winter	Summer
Private land	4	4
Leased land	3	2
Grazing right on private (ex: timberland), state, or federal land	0	1
Contract Grazing	0	0

6) WHAT TYPE OF FORAGE ARE YOU GRAZING WITH VF?

TOTAL PARTICIPANTS: 4

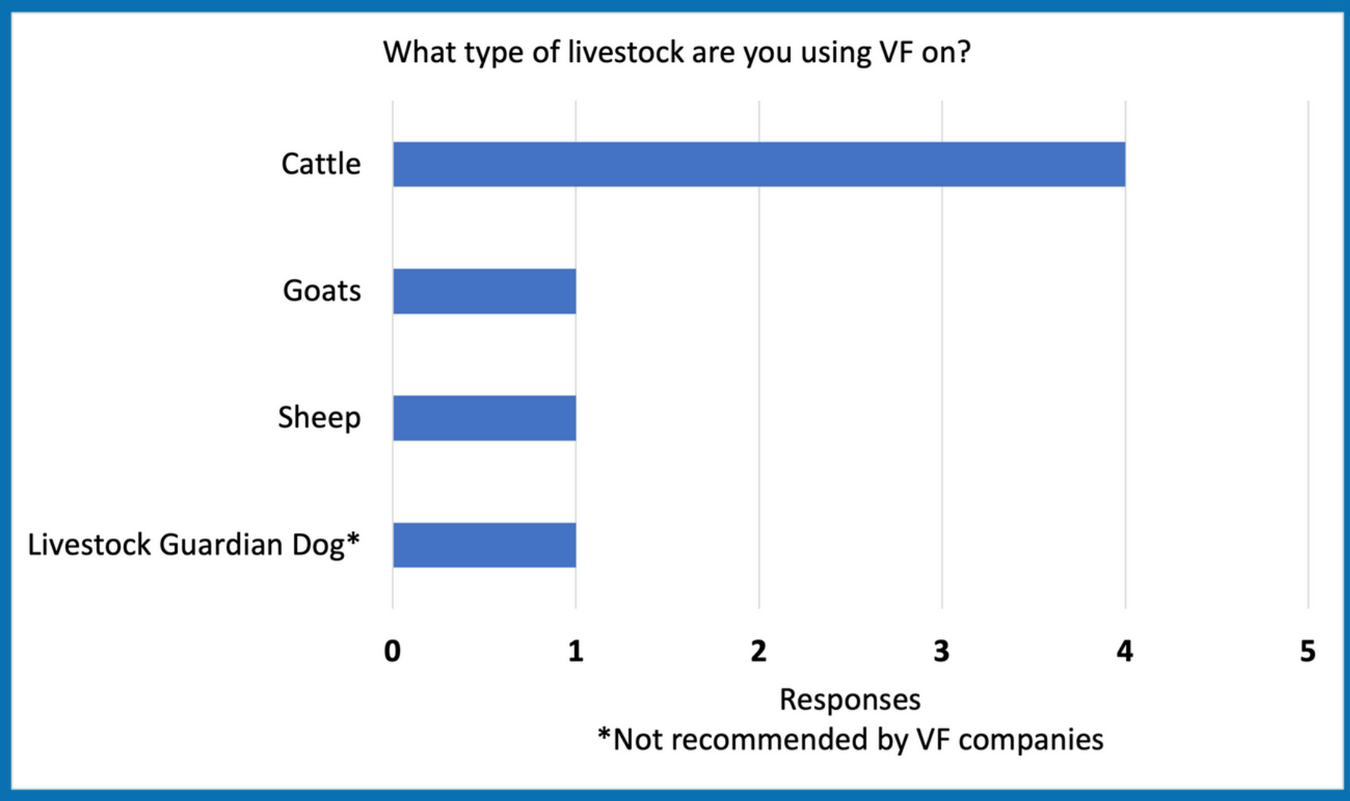
Livestock graze on a variety of native and introduced forages with different preferences. The UC ANR is actively researching the effectiveness of VF systems to target certain types of forage for land and herd management purposes. These include removal of undesirable but palatable weeds like star thistle and medusahead grass if targeted at the right time of the growing season, and targeting areas with high levels of palatable forage to reduce fire potential.

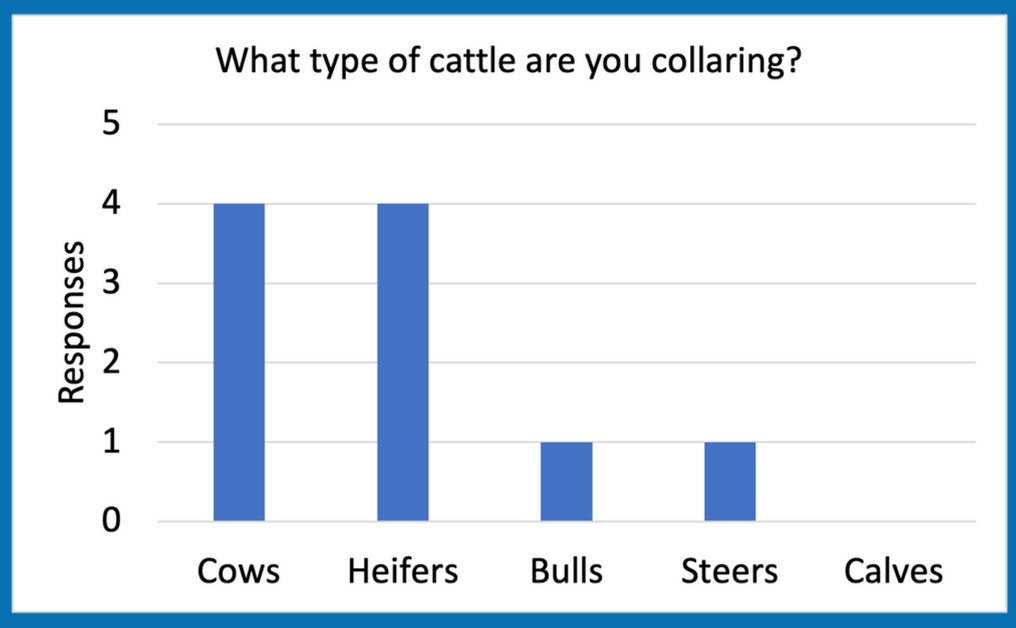


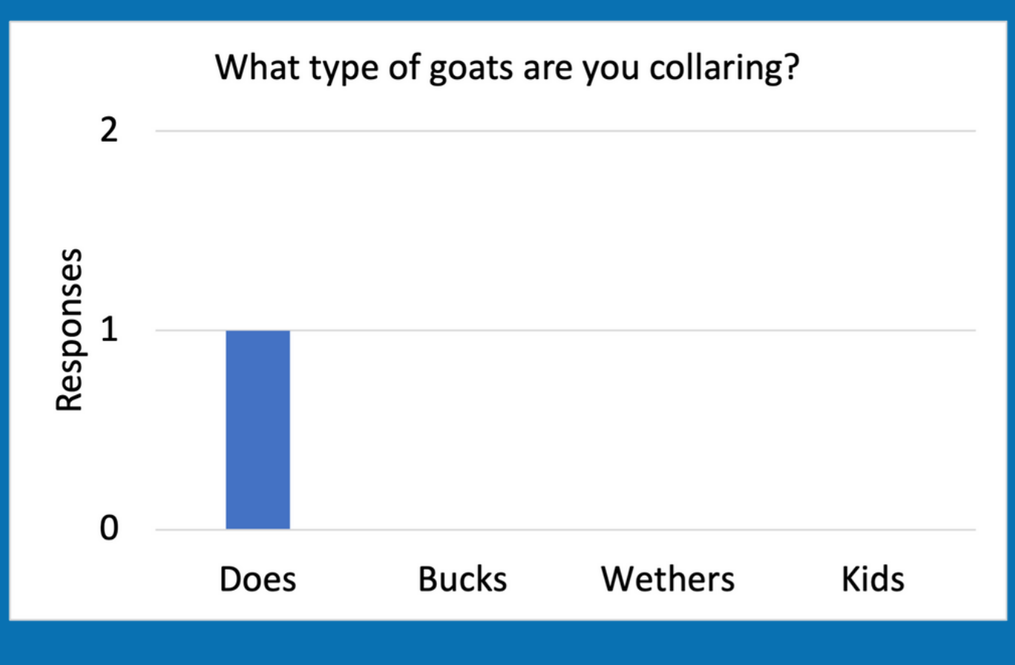
7) WHAT TYPE OF LIVESTOCK ARE YOU USING VF ON?

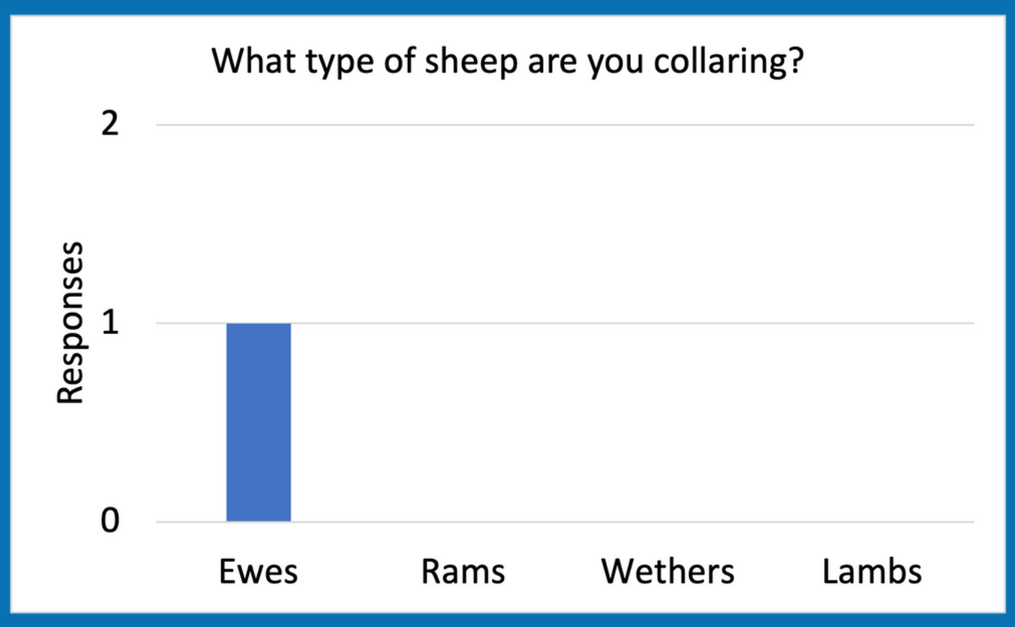
TOTAL PARTICIPANTS: 4

Most VF systems are designed for adult cattle, but Nofence also offers a smaller collar specifically for small ruminants like goats and sheep. While the VF companies do not recommend it, livestock producers have experimented with putting collars on other types of livestock.





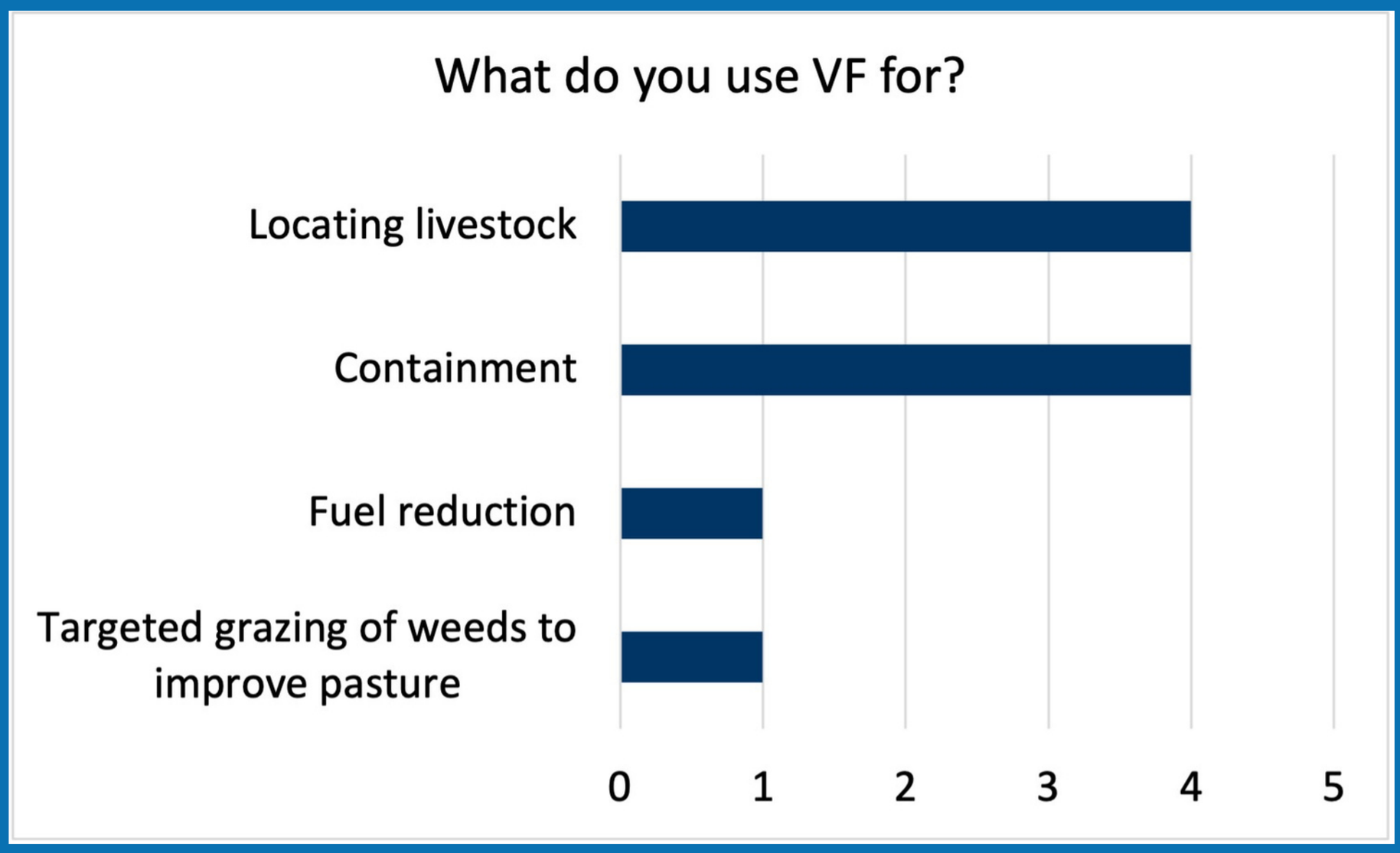




8) WHAT DO YOU USE VF FOR?

TOTAL PARTICIPANTS: 4

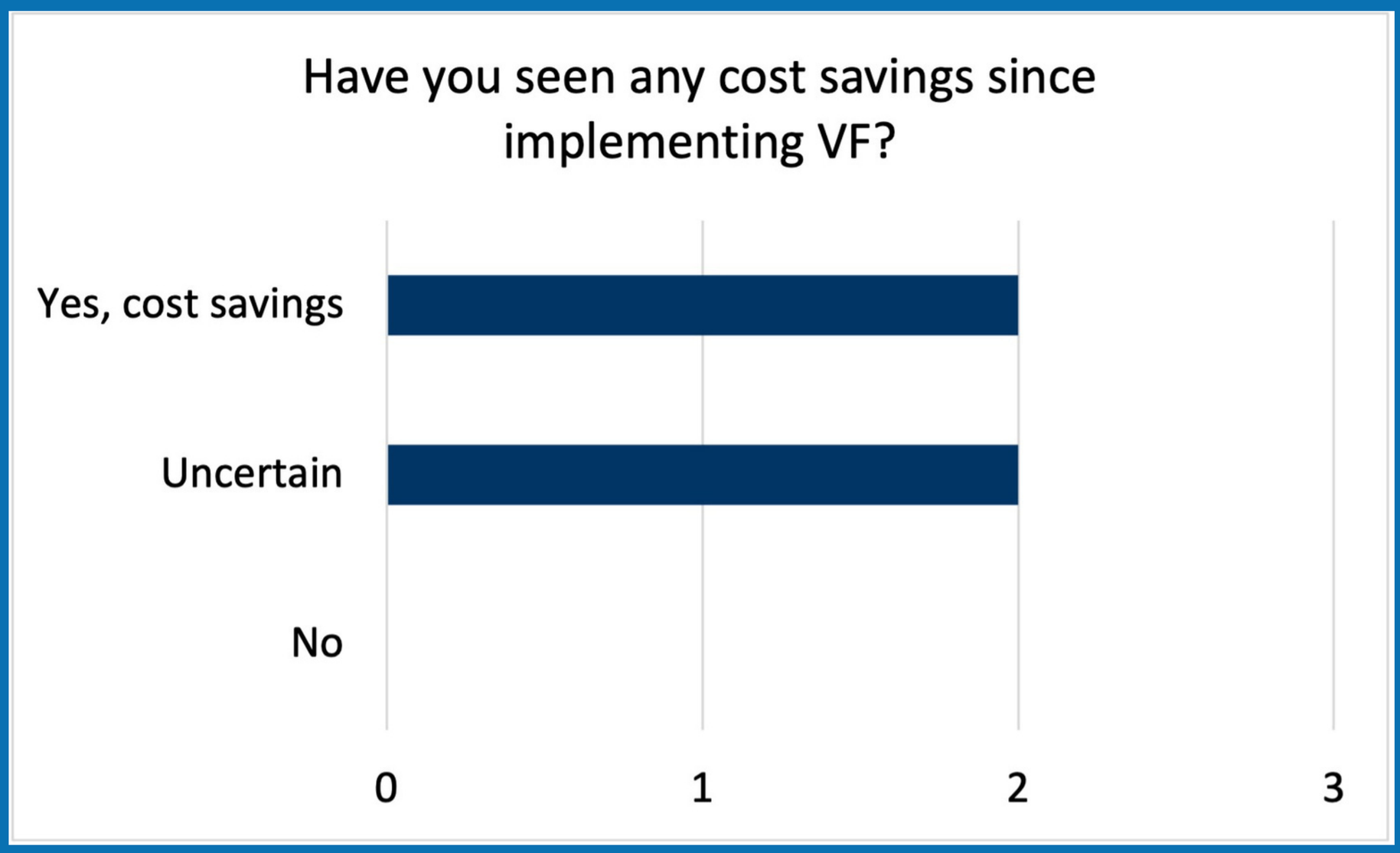
VF systems have many features that livestock producers may find value in including containing and excluding animals from certain areas with greater speed and precision that physical fence, livestock locations in real time, and targeted grazing fo various purposes.



9) HAVE YOU SEEN COST SAVINGS SINCE IMPLEMENTING VF?

TOTAL PARTICIPANTS: 4

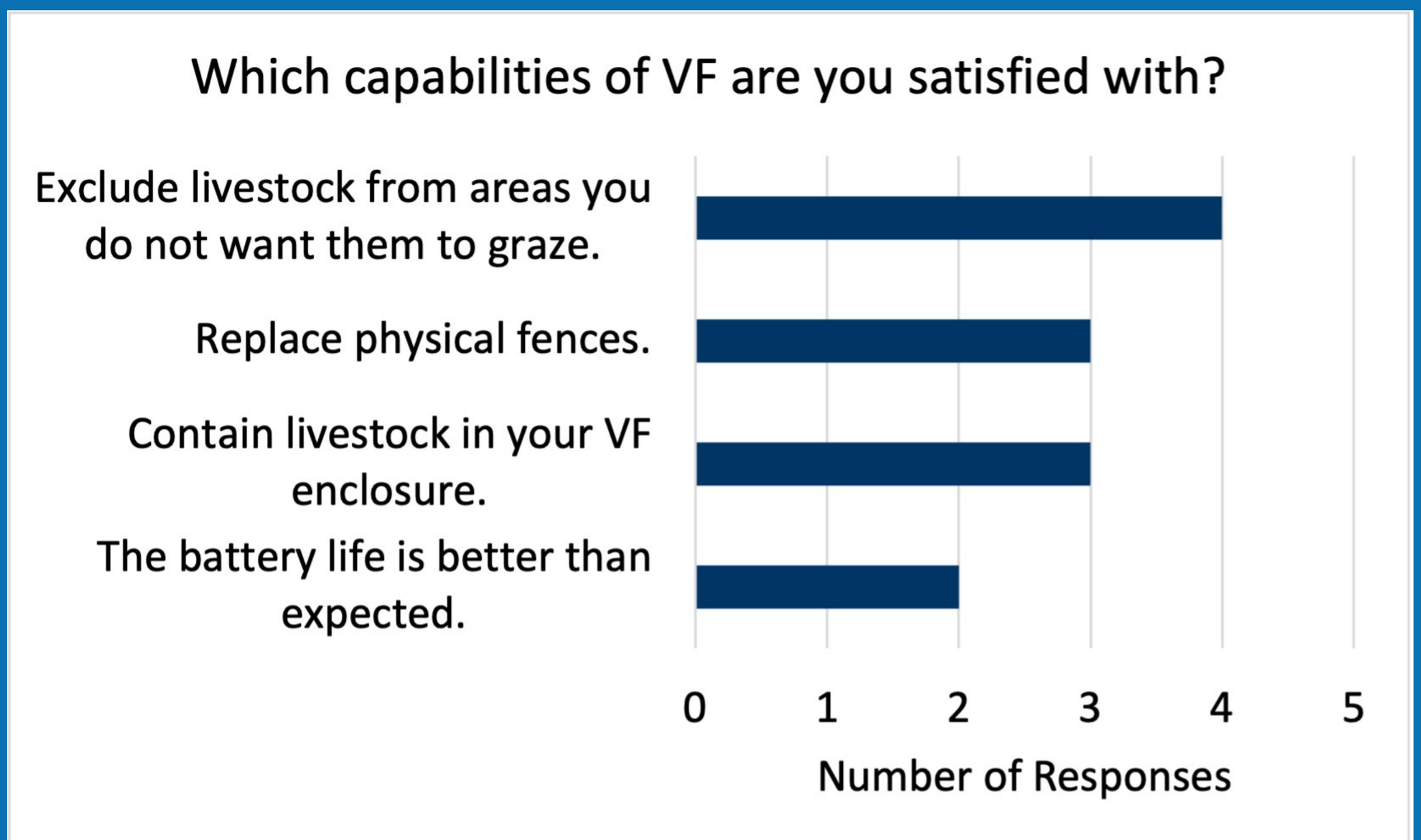
VF systems involve significant upfront costs and ongoing annual fees. Nevertheless, this investment holds the potential to lower overall production costs and save time and labor. For instance, it can reduce the need for building and maintaining physical fences, and enhance gathering efficiency on extensive summer rangelands, resulting in savings in both time and fuel costs. The UC ANR Central Sierra is keen to measure these potential cost savings, as best as they can be estimated.



10) WHICH CAPABILITIES OF VF ARE YOU SATISFIED WITH?

TOTAL PARTICIPANTS: 4

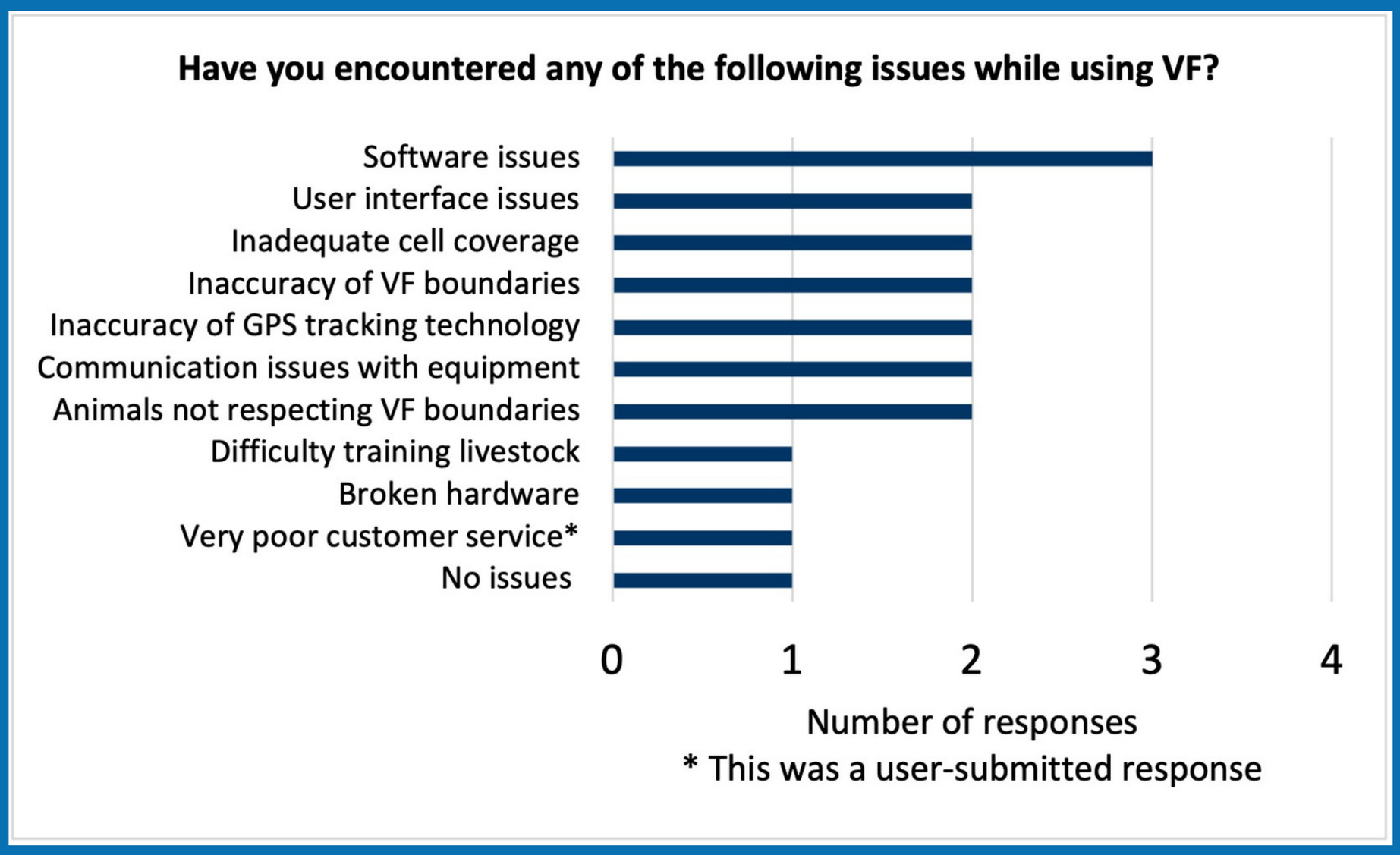
These user responses highlight areas where VF, at its current capacity, is an effective tool for livestock management.



11) WHAT ISSUES HAVE YOU ENCOUNTERED WHILE USING VF?

TOTAL PARTICIPANTS: 4

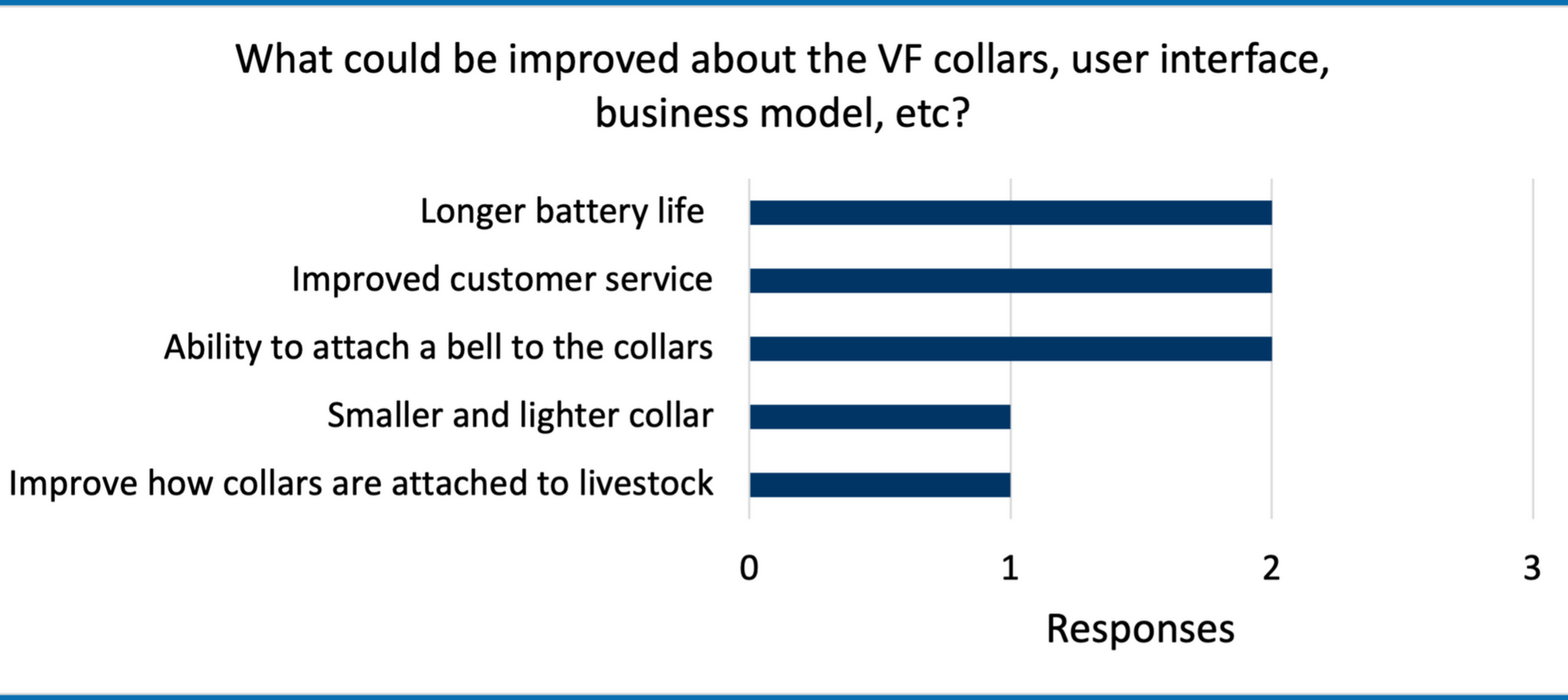
Livestock producers were asked to list any issues they have experienced while using VF. The frequency of the same issues being experienced by different ranchers offers insight into some of the more and less common problems with current VF systems.



12) WHAT COULD BE IMPROVED ABOUT THE VF COLLARS, USER INTERFACE, BUSINESS MODEL, ETC?

TOTAL PARTICIPANTS: 4

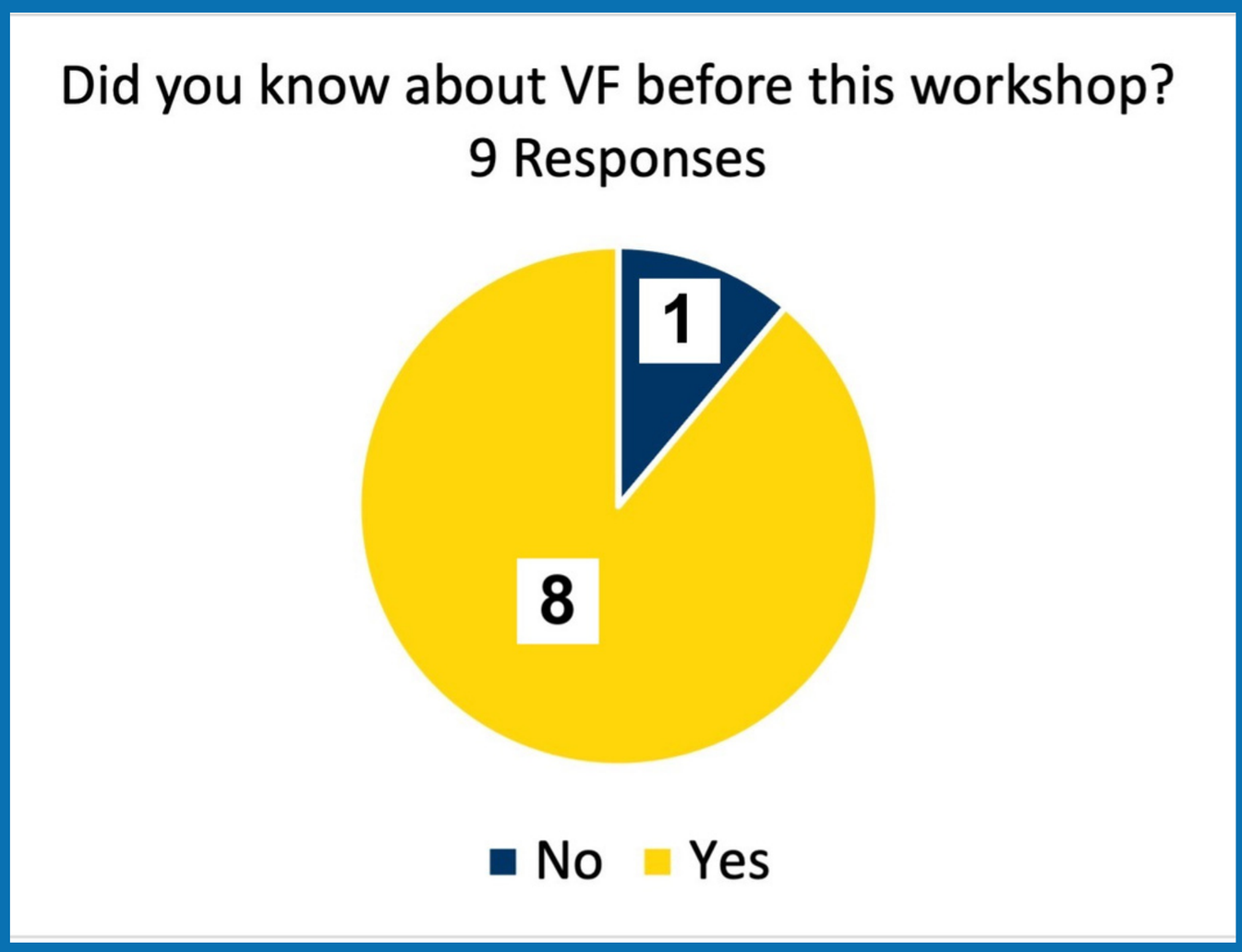
VF technology is still in its infancy. While it has demonstrated significant potential for optimizing herd management, there are areas that need improvement. Livestock producers who are currently applying the technology to real-world scenarios are an important resource for critical feedback into ways the product can be improved.



SECTION 3: NON-VF USERS

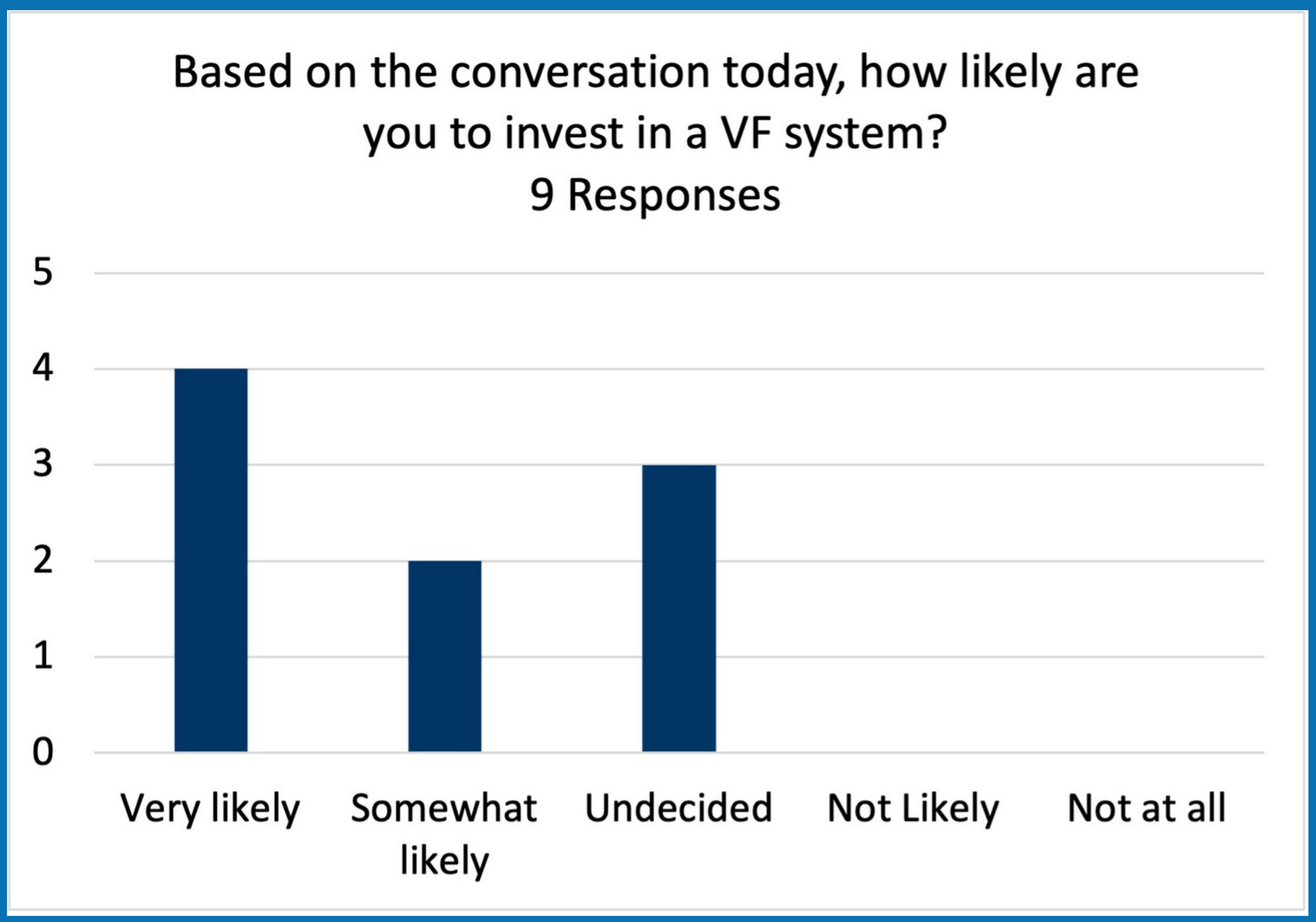
13) DID YOU KNOW ABOUT VF BEFORE THIS WORKSHOP?

TOTAL PARTICIPANTS: 9

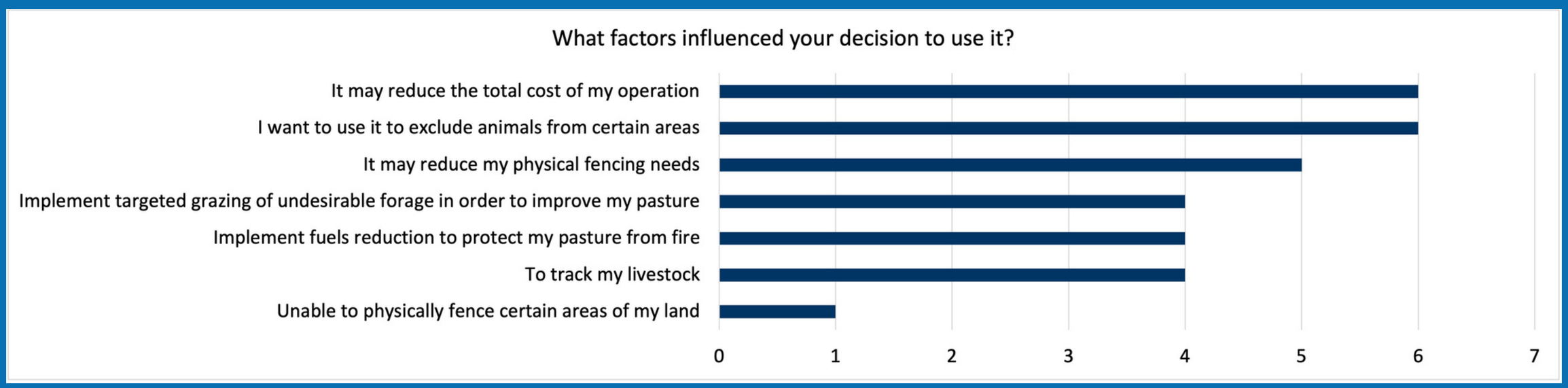


14) BASED ON CONVERSATIONS TODAY, HOW LIKELY ARE YOU TO INVEST IN A VF SYSTEM?

TOTAL PARTICIPANTS: 9



15) WHAT FACTORS INFLUENCED YOUR DECISION TO USE IT?
TOTAL PARTICIPANTS: 6



16) WHAT FACTORS INFLUENCED YOUR DECISION NOT TO USE IT?
TOTAL PARTICIPANTS: 3

VF systems are still in their early stages and have many areas that still need to improve, despite the benefits. Feedback from producers on the issues that they are facing may help improve the technology.