

Exploring the Boundaries of Virtual Fence



Webinar 3

VF Economics

January 23, 2025

Exploring the Boundaries of Virtual Fence



Dari Duval, University of Arizona Cooperative Extension

Does VF make sense for me economically?



Ryan Reuter, Oklahoma State University

Analyzing the cost of VF



Question & Answer Session



Does VF make sense for me economically?

January 23, 2025

Dari Duval

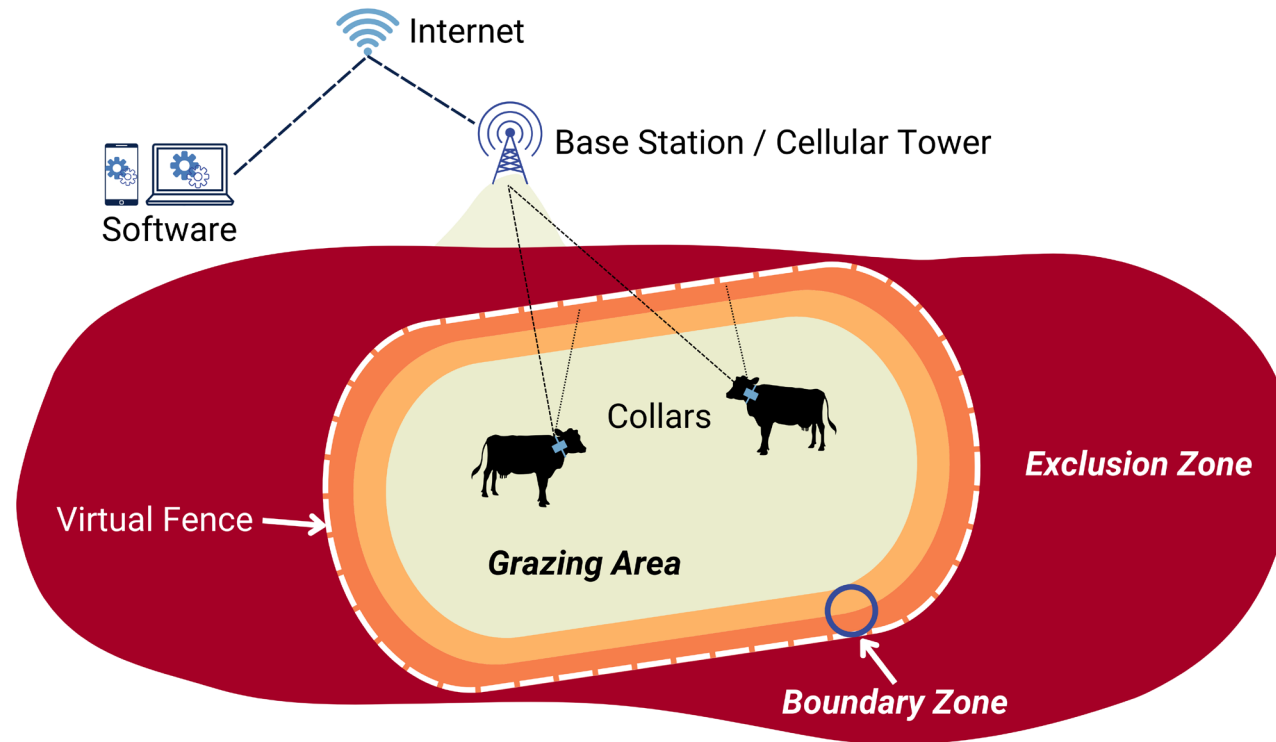
Department of Agricultural & Resource Economics,
University of Arizona Cooperative Extension



Outline

- What is virtual fencing (VF)?
- Does VF make sense economically?
- Does VF make sense for me?
- Key takeaways

What is virtual fencing (VF)?



Source: Antaya et al. (2024)

Does VF make sense economically?

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VF System Costs & Requirements, January 2025

Vendor	System Type	Herd Size	Pasture Size	Up-Front Costs		Annual Costs		Collar Life*
				Collars	Base Station	Per Collar	Other	
eShepherd (Gallagher)	Cellular	> 4	Over 45ft x 45ft	\$250 each for >60 animals	N/A	\$24 each	N/A	7 to 10 years
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Halter	Base Station	> 50	No max	2 or 3 year lease	\$4,500 each	\$66 each	N/A	5 years
Nofence	Cellular	5 to 200	0.5 acres to 10,000 acres	\$289 each	N/A	Herd <50: \$56 each year 1, \$36 each after; Herd >50: \$42 each year 1, \$36 each after	\$6 collar extender; \$25 shelter beacon; \$85 charger; \$80 battery	5 to 10 years
Vence (Merck Animal Health)	Base Station	N/A	Over 200 acres	N/A	\$10,000 each self-install; \$12,500 each installed by company	\$40 each	\$20 per collar for batteries**	6 to 9 months (battery)

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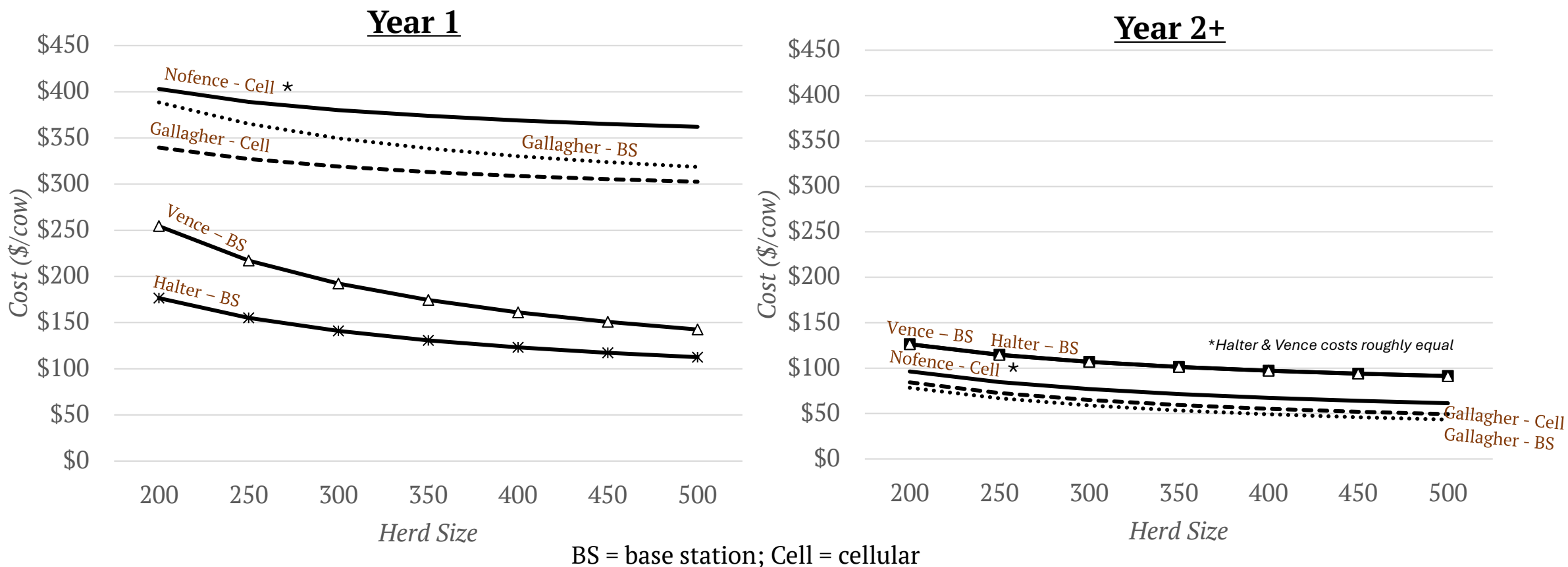
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What was done in the analysis?

Estimate total costs and costs per cow of VF for different sized operations, different vendors, and year 1 (upfront) costs and year 2 onward (ongoing) costs under following assumptions:

- 2 base stations required for BS systems (needs may vary by company)
- 20 hours of labor for rancher to learn system
- 1 hour per day for rancher operating system
- 95% effectiveness rate
- No financing of purchase
- Rancher continues to have and maintain perimeter fence
- Rancher already has computer & internet access

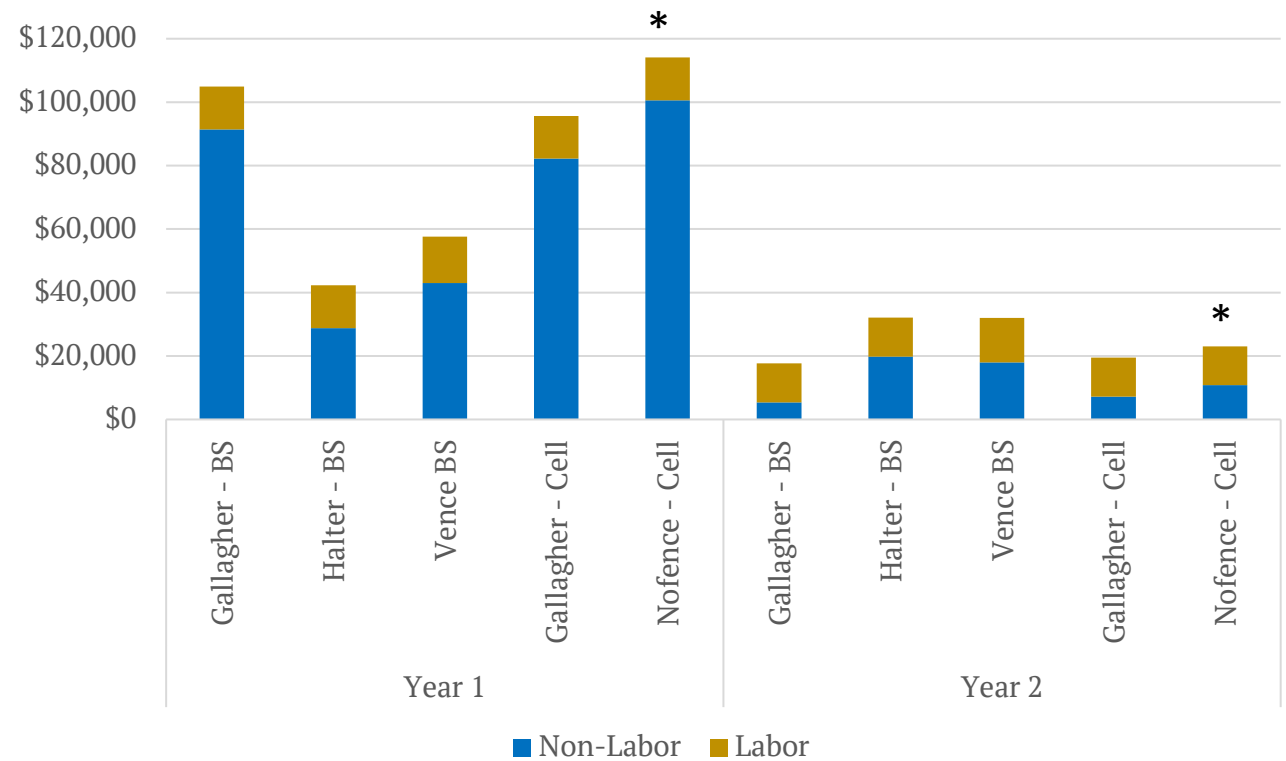
Does VF make sense economically?



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Labor vs. non-labor costs per cow for 300-head herd →

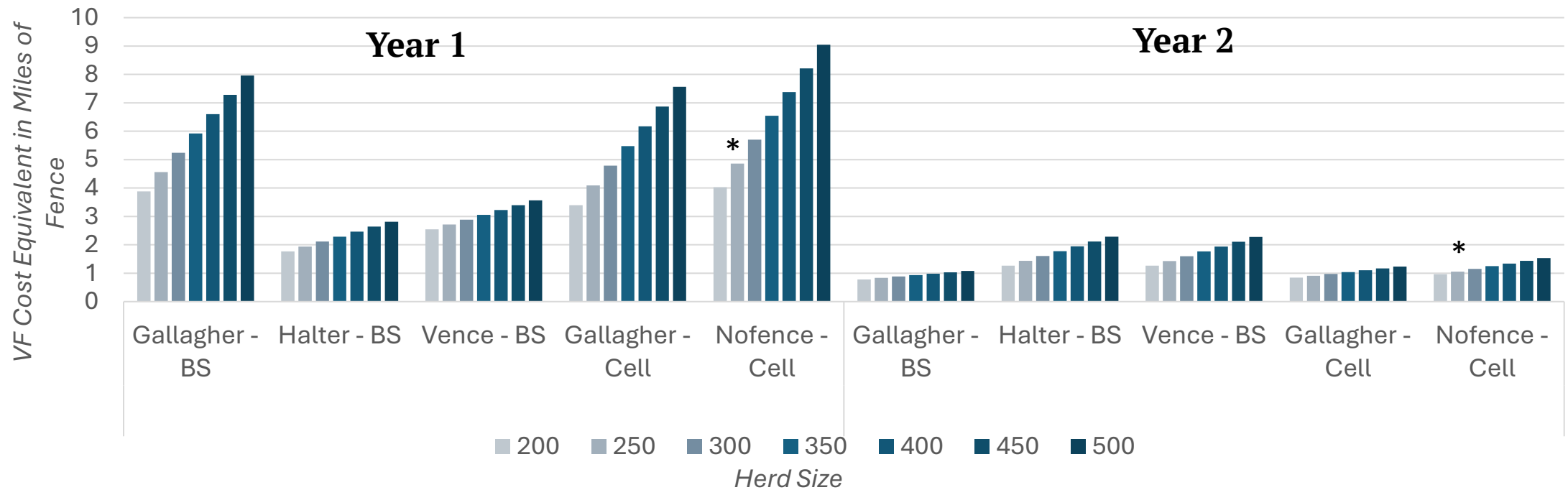
Labor costs make up 10-15% of costs in Year 1, 50-75% in Year 2+



* Nofence available for herd size <=200

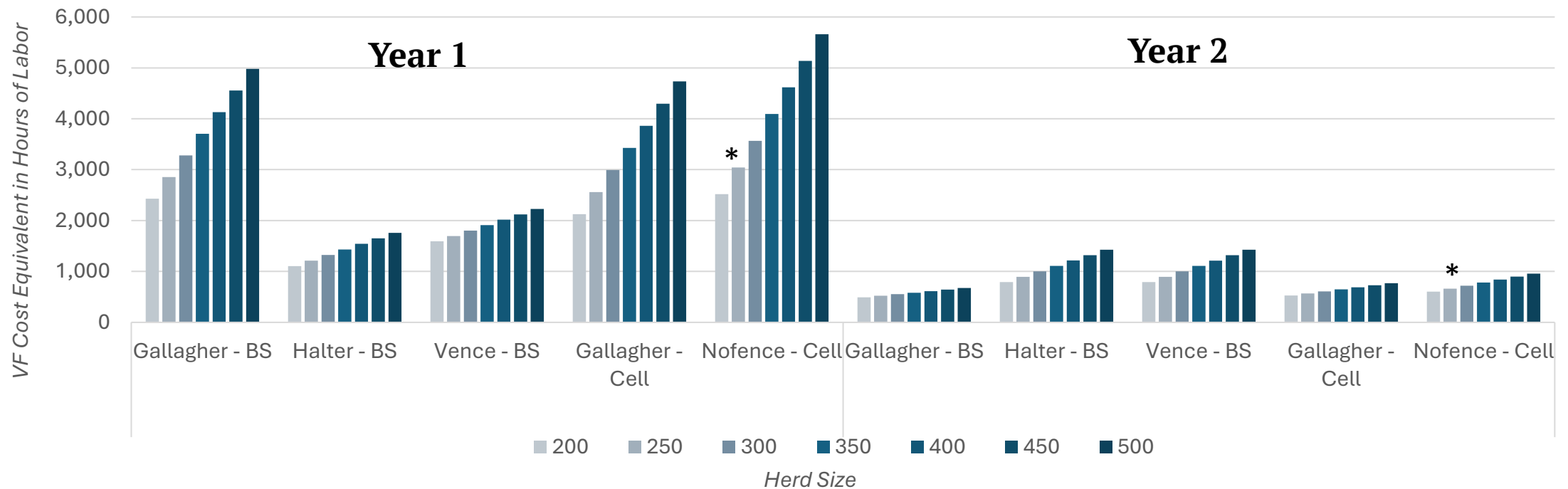
Does VF make sense economically?

Avoided fencing to immediately offset system costs



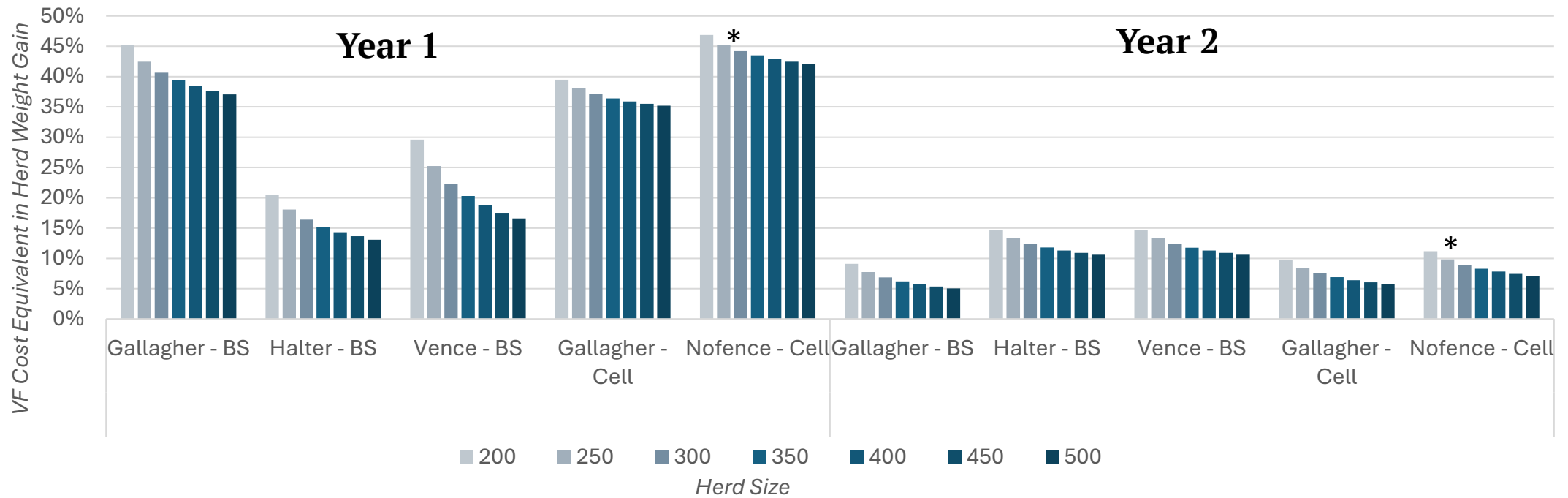
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Time savings (avoided labor) to immediately offset costs



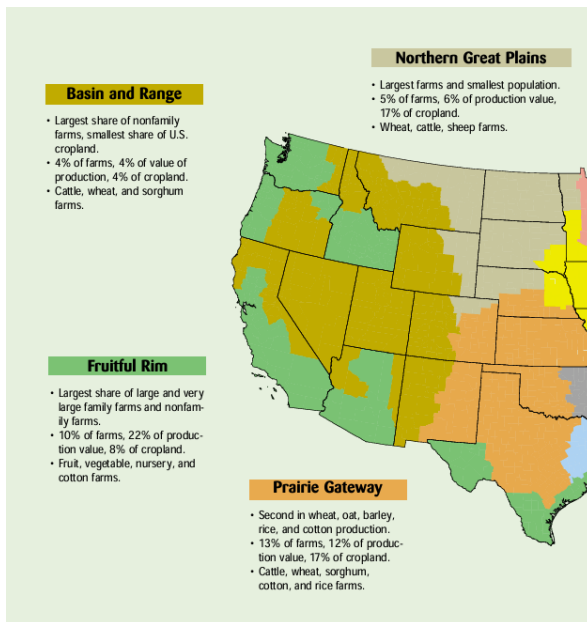
Does VF make sense economically?

Weight gain needed to immediately offset costs



Does VF make sense economically?

USDA Farm Resource Regions



USDA Economic Research Service Costs & Returns for Cow-Calf Operations by Region, 2023



Does VF make sense for me?

Does VF make sense for me?

... IT DEPENDS!

Does VF make sense for me?

Does VF make sense for me?

- How to you plan to use VF?
 - Finding animals?
 - Managing grazing?
 - Avoiding cross fencing?
 - Other?
 - All of the above?

Does VF make sense for me?

- How do you plan to use VF?
 - Finding animals?
 - Managing grazing?
 - Avoiding fencing?
 - Other?
 - All of the above?
- Will VF help you offset physical fencing costs?

Does VF make sense for me?

- How do you plan to use VF?
 - Finding animals?
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 - Avoiding fencing?
 - Other?
 - All of the above?
- Will VF help you offset physical fencing costs?
- Do you work with a land management agency that offers cost-share or other incentives?

Does VF make sense for me?

- How do you plan to use VF?
 - Finding animals?
 - Managing grazing?
 - Avoiding fencing?
 - Other?
 - All of the above?
- Will VF help you offset physical fencing costs?
- Do you work with a land management agency that offers cost-share or other incentives?
- Which systems work for you based on ranch's size, location, topography, etc.?

Key takeaways

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- Under conservative assumptions about benefits of VF & current prices, systems generally do not quickly pay for themselves – possibly 7 years and beyond with no financing or cost-share, etc.

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- VF quickly pays for itself if used to avoid large investments in physical fencing

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- High upfront costs of VF systems may be prohibitive
- VF quickly pays for itself if used to avoid large investments in physical fencing
- Even if VF systems pay for themselves, cattle prices & ranch returns will influence producer willingness to incur new costs
- Benefits & needs will vary by individual producer

The University of Arizona Virtual Fence Program



THE UNIVERSITY OF ARIZONA
Arizona
Experiment Station



Cooperative Extension



COLLEGE OF AGRICULTURE, LIFE & ENVIRONMENTAL SCIENCES
**Natural Resources
& the Environment**

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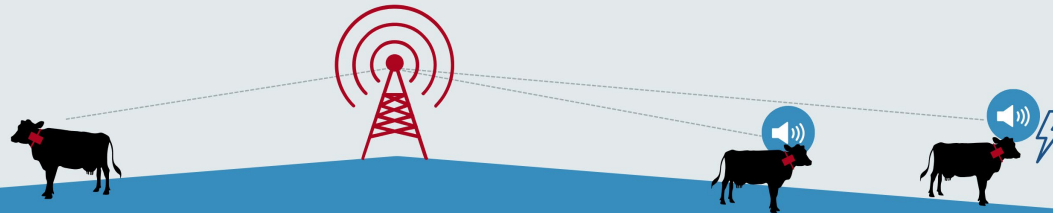


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rangelandsgateway.org/vf

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