



Practical Experiences in Evaluation and Tool Selection

**TAFS Workshop: “Right Tools, Real Impact: Evaluation and Use of
FMD Vaccines and Diagnostics in the Field”**

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November 2025, Bangkok

Galon TAFS Bangkok 2025



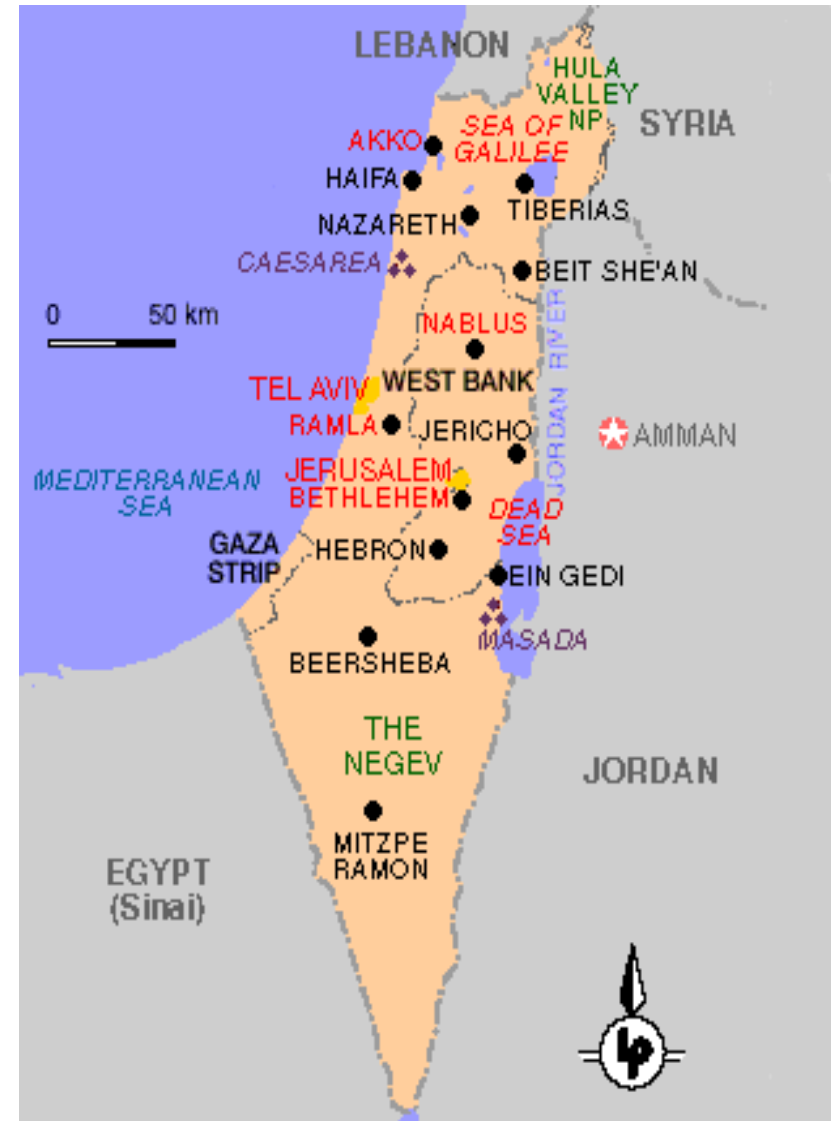
Outline

- Where does it come from
- Diagnosis difficulties
- How to prevent / control
- Effective vaccination



ISRAEL

22,145 km²



FMD - still “surprising”

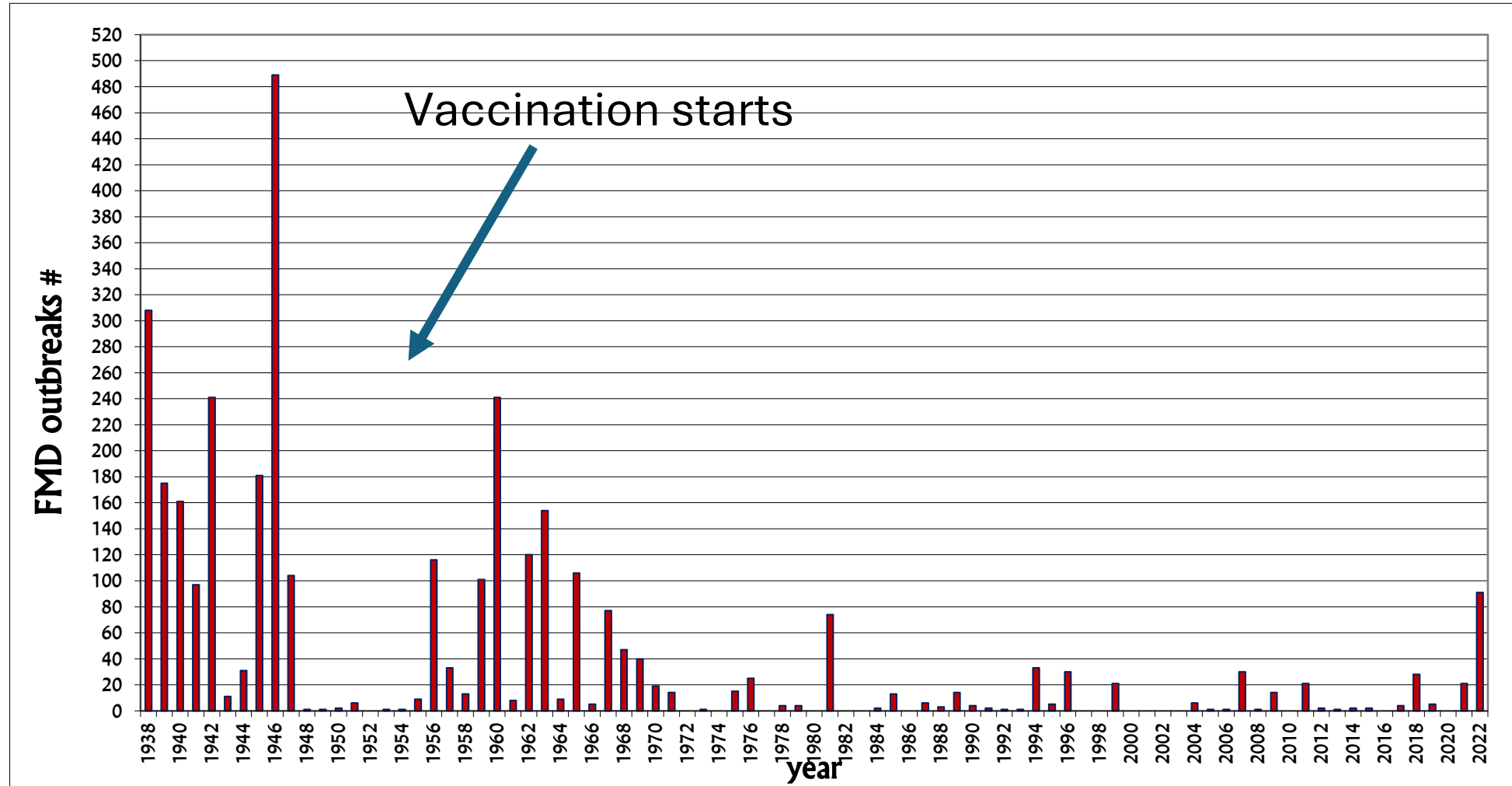


The right weather



The right tools and approach

FMD outbreaks in Israel 1938-2022



FMD
index cases
since 2006

2017 Aramsha, cattle

2021 Zareet, goats O

2007 Netua, Goats, O

2019 Tamra, cattle, O

2015 Fasuta, Pigs, O
Nablus, PA, sheep,

2022 Kfar Yehoshua Cattle O

2009 Kfar Yehoshua Goats A

2017 O- EA cattle Nir
Yitzhak

2012 Rafah PA SAT2

1:975,000

בקר וצאן במרחק 10 ק"מ מהגבול



2011/2014/2018 Snir Cattle,

2018 Megar, Shaal Cattle, O

2019 Yonantan, Cattle, O

2007 Mevo Hama, Cattle, O

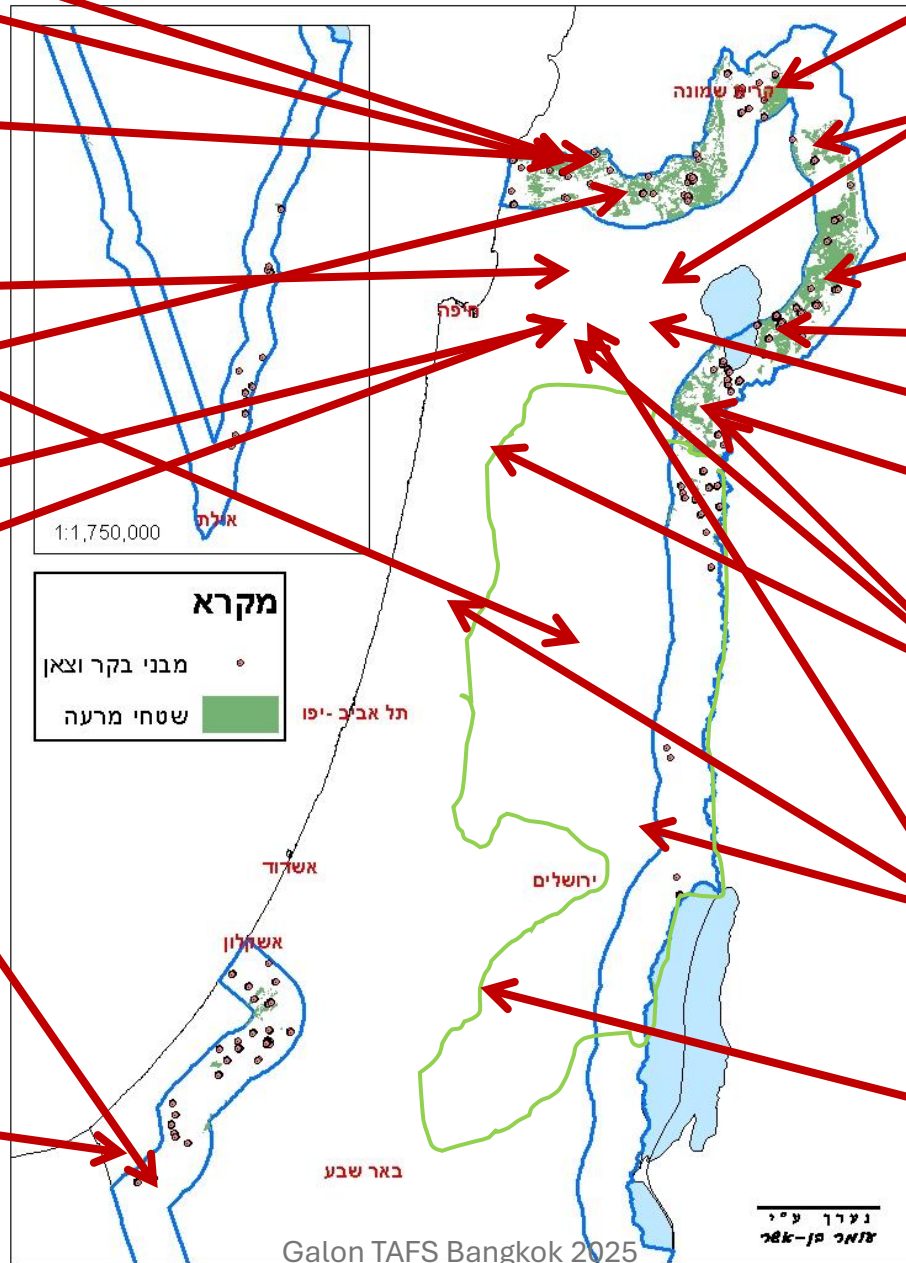
2025 Gazit Cattle O

2011 Beit Zera, Cattle O

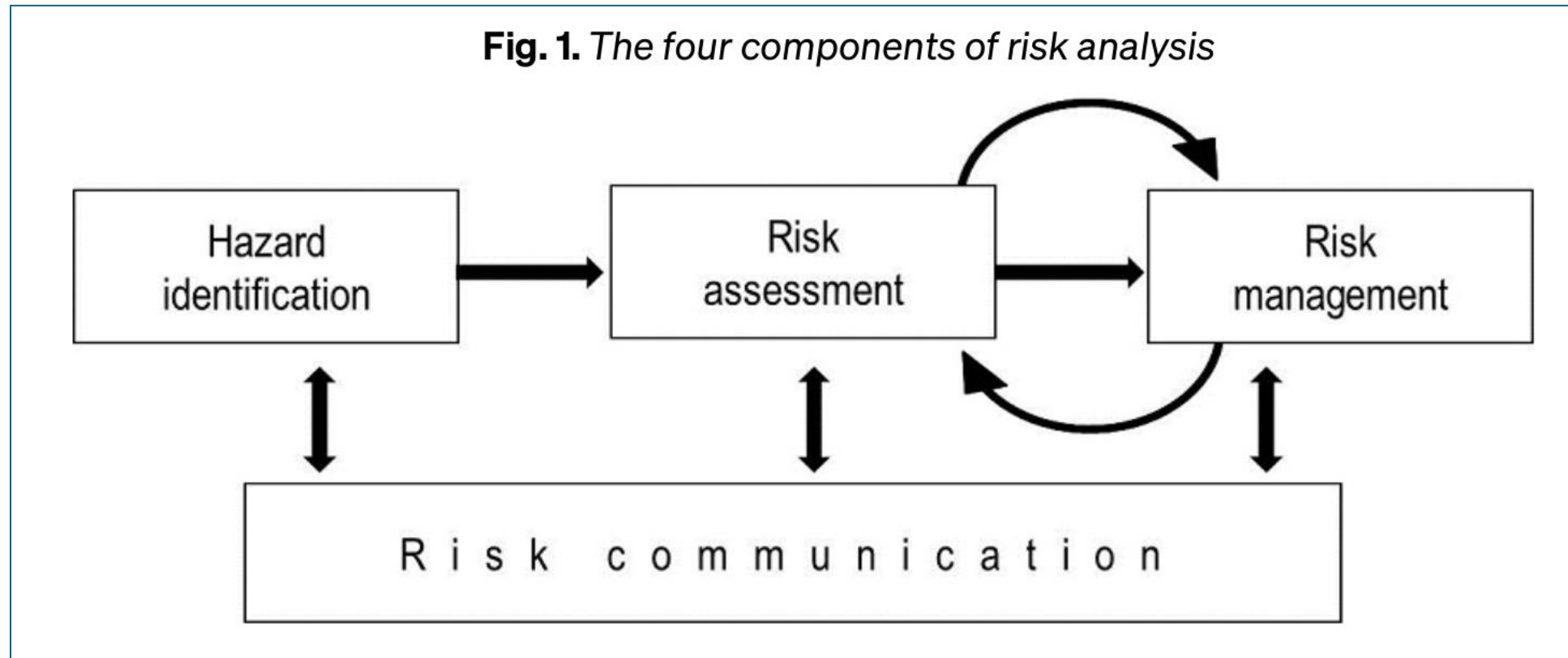
2007/ 2018 Neve Ur/ Gazit/Baka el
garbia Cattle O

2014 Uga PA , Tira, Ixal, Sheep O

2006 Der Samet PA Cattle O

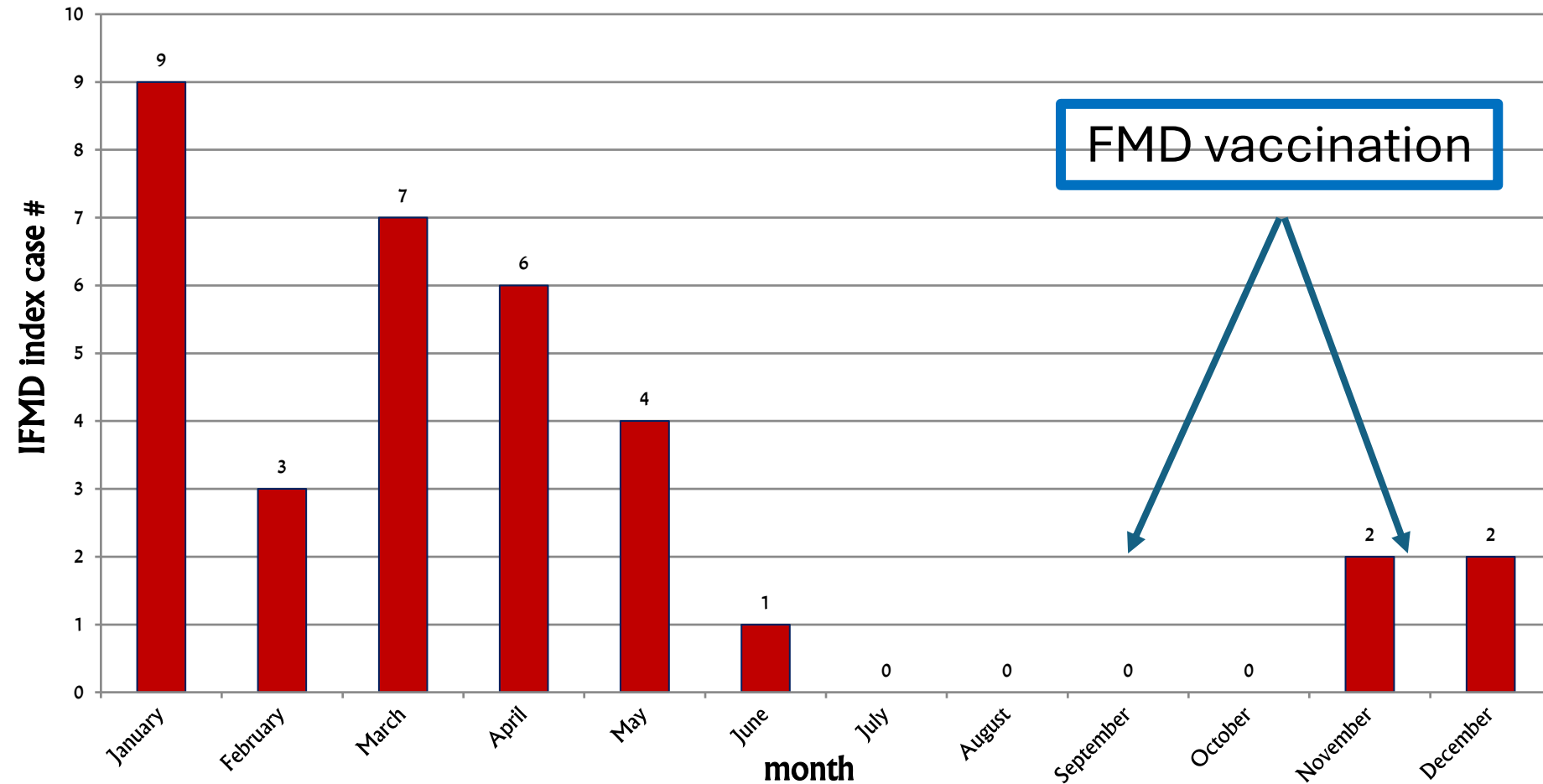


Risk Analysis

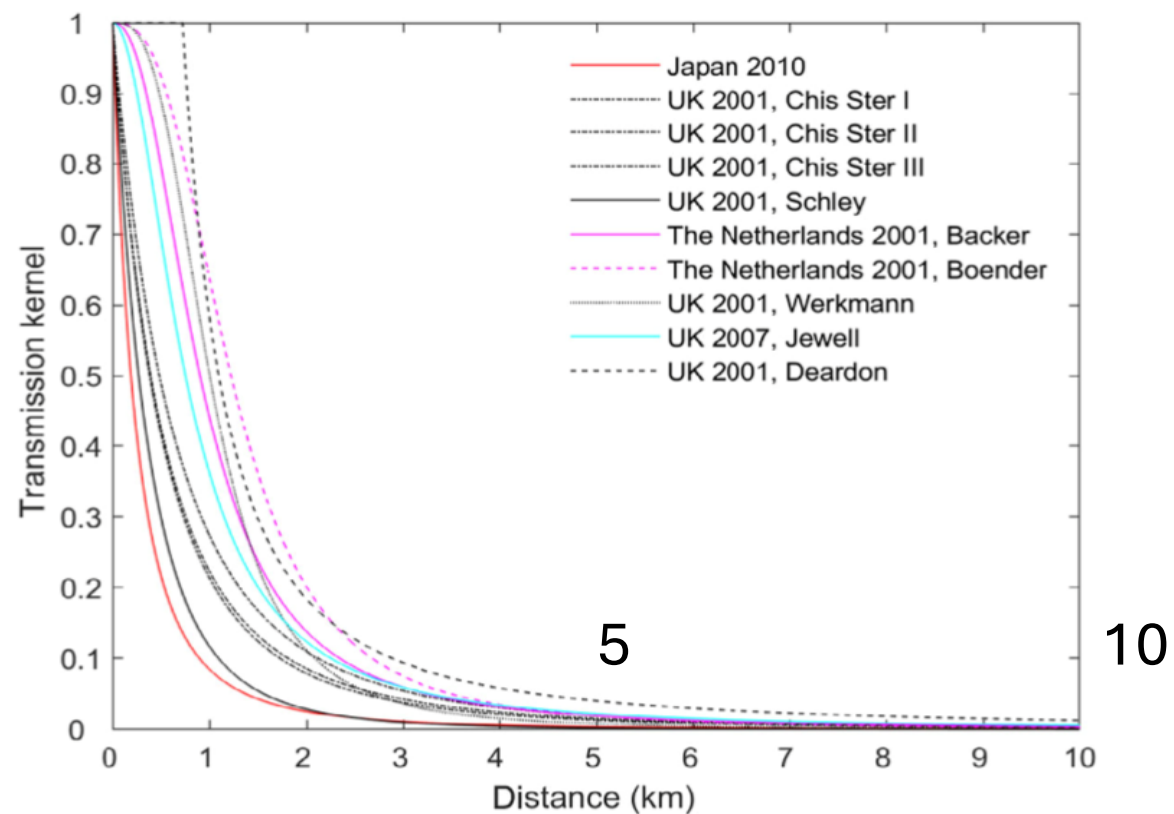


source:www.woah.org/fileadmin/Home/eng/Health_standards

Seasonality- FMD outbreak by index-case month



Probability of transmission over distances



J.efsa.2021.6632. Opinion on the assessment of FMD control measures

Biosecurity – reduces spread / limited

Professional



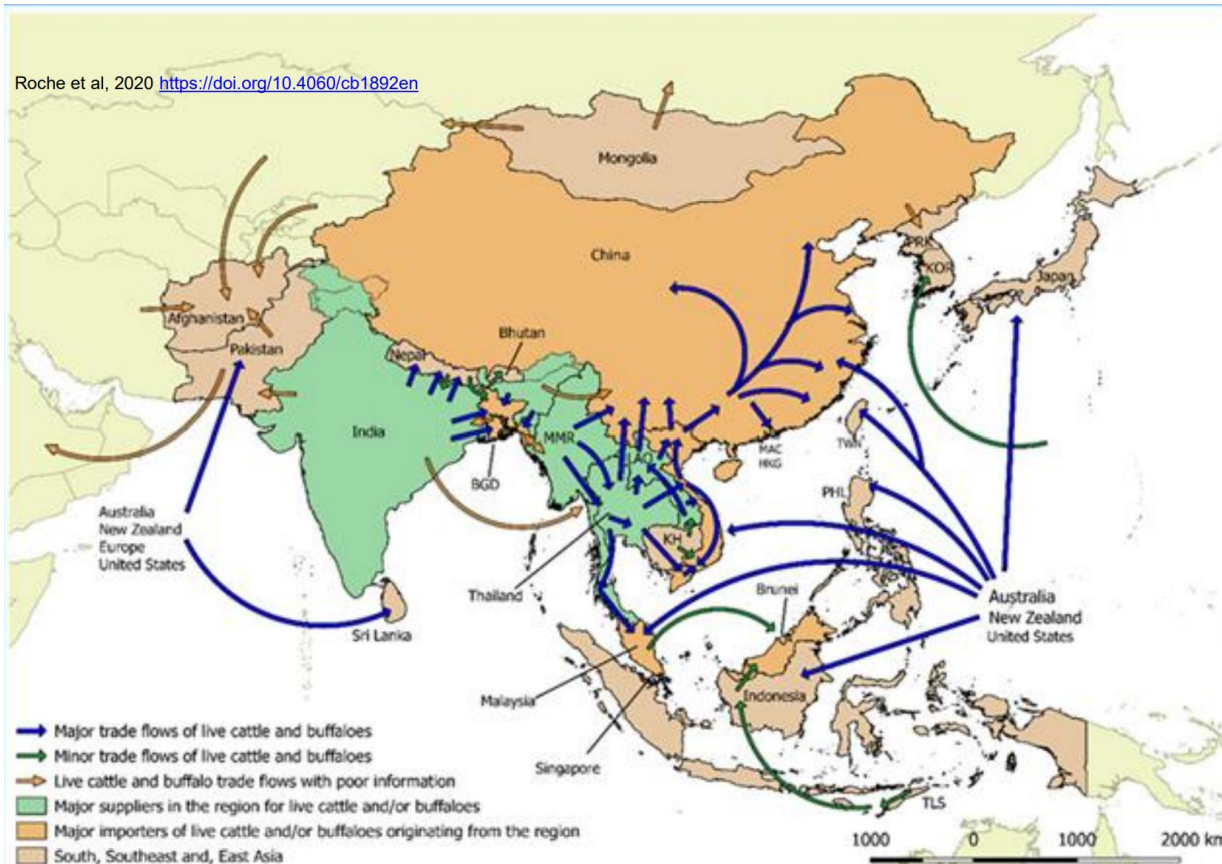
Department of Agriculture and Fisheries Biosecurity Queensland, Australia

Public



Movement control – limited impact

Large Ruminant Movement Pathways in Asia & the Pacific



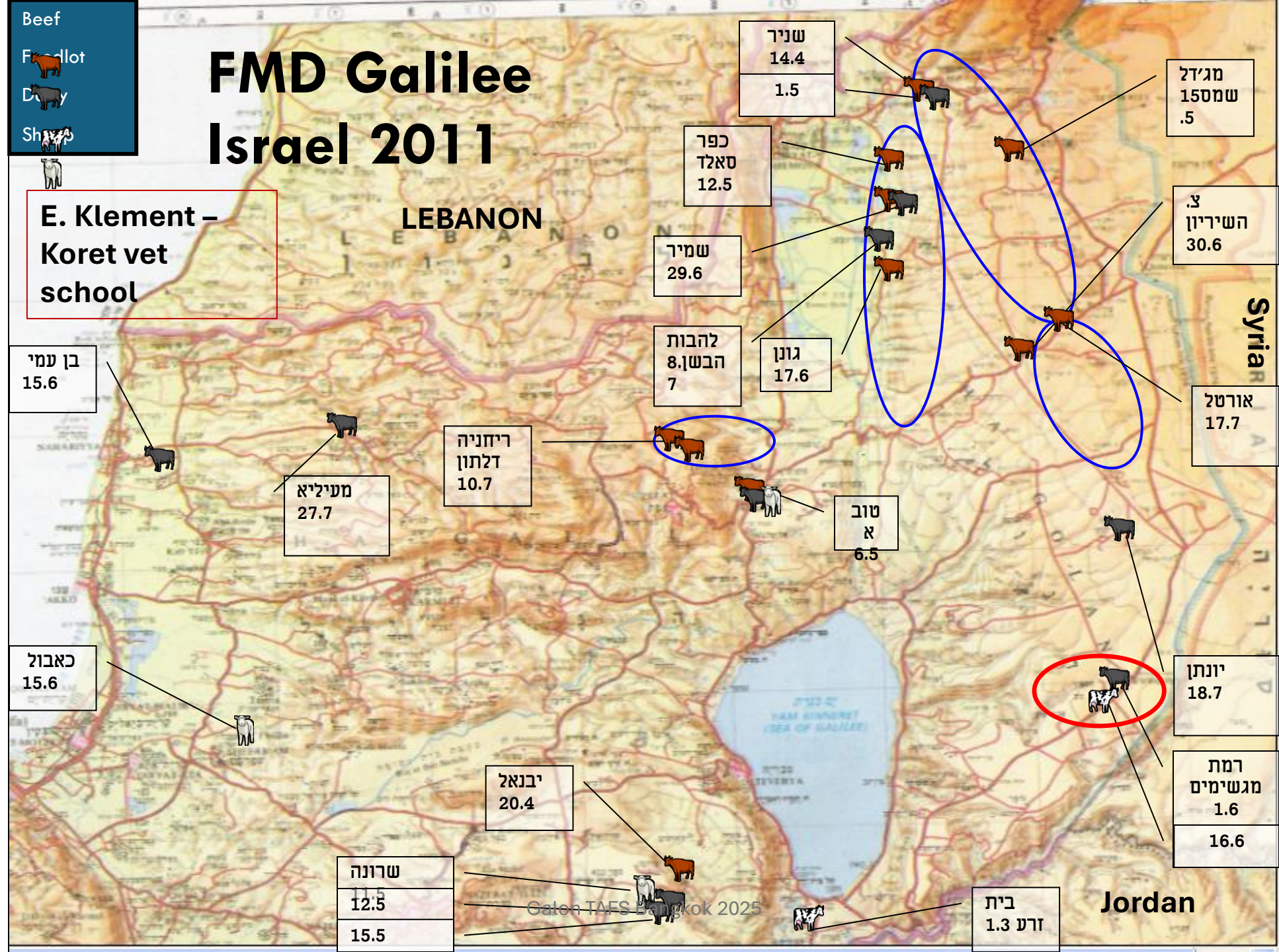
Live cattle markets



Beef
 Foodlot
 Dairy
 Sheep

FMD Galilee Israel 2011

E. Klement –
 Koret vet
 school



Vaccinated / Non-vaccinated herds

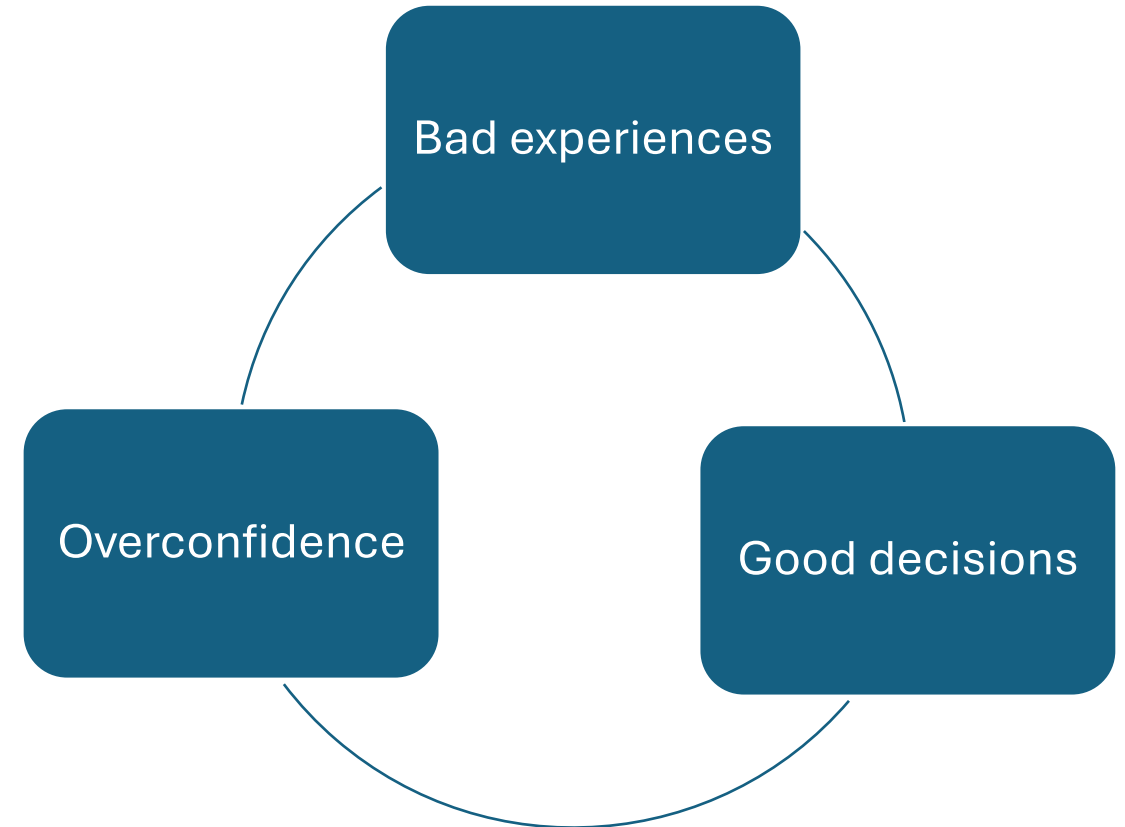
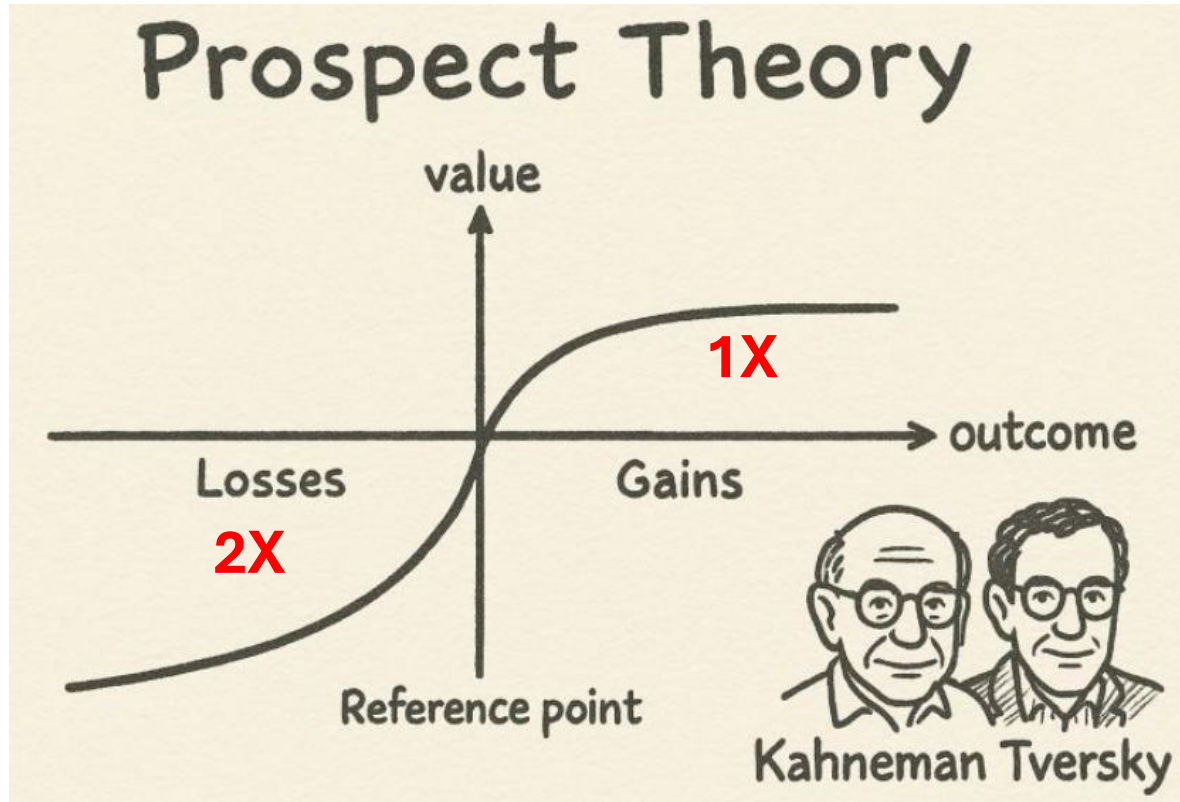
- Vaccination scenarios:
- Vaccinated once
- 6-8-10 months ago
- “Full protocol”
- Young / adult
- Twice a year ?



Vaccinated \neq 100% Protected

why don't we like changes...

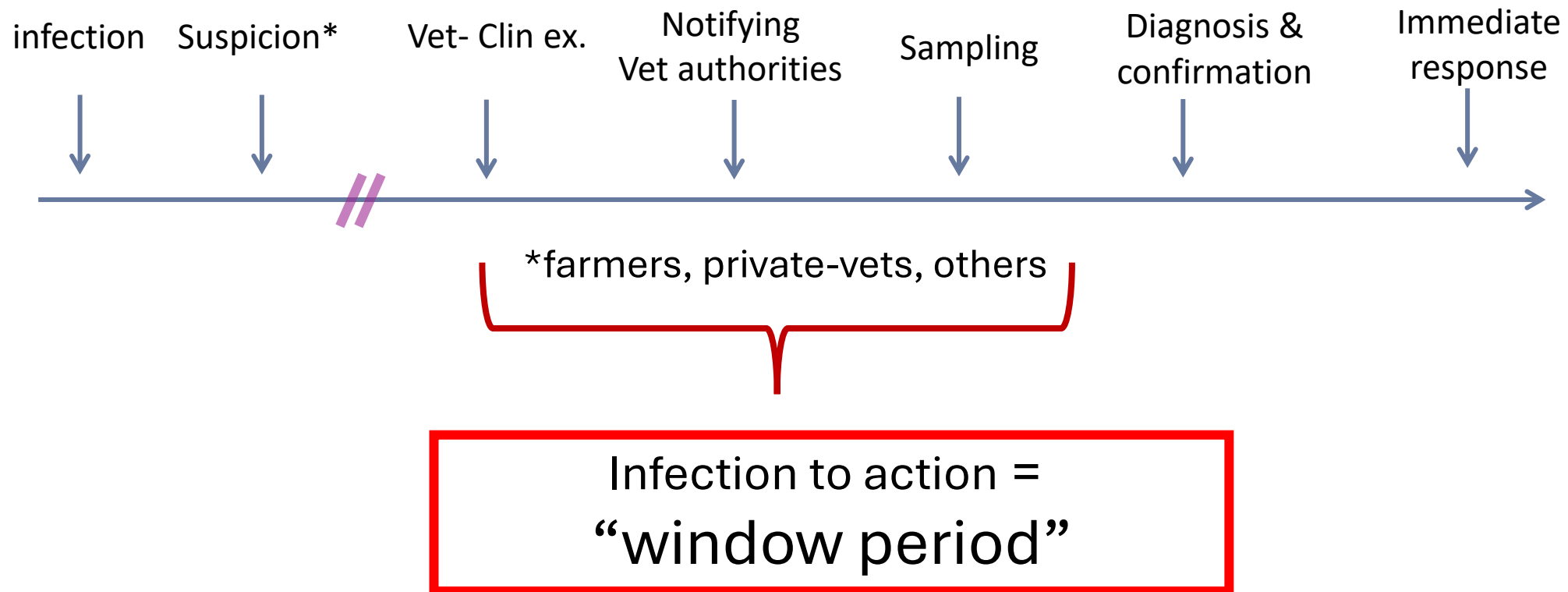
and the benefit of mistakes



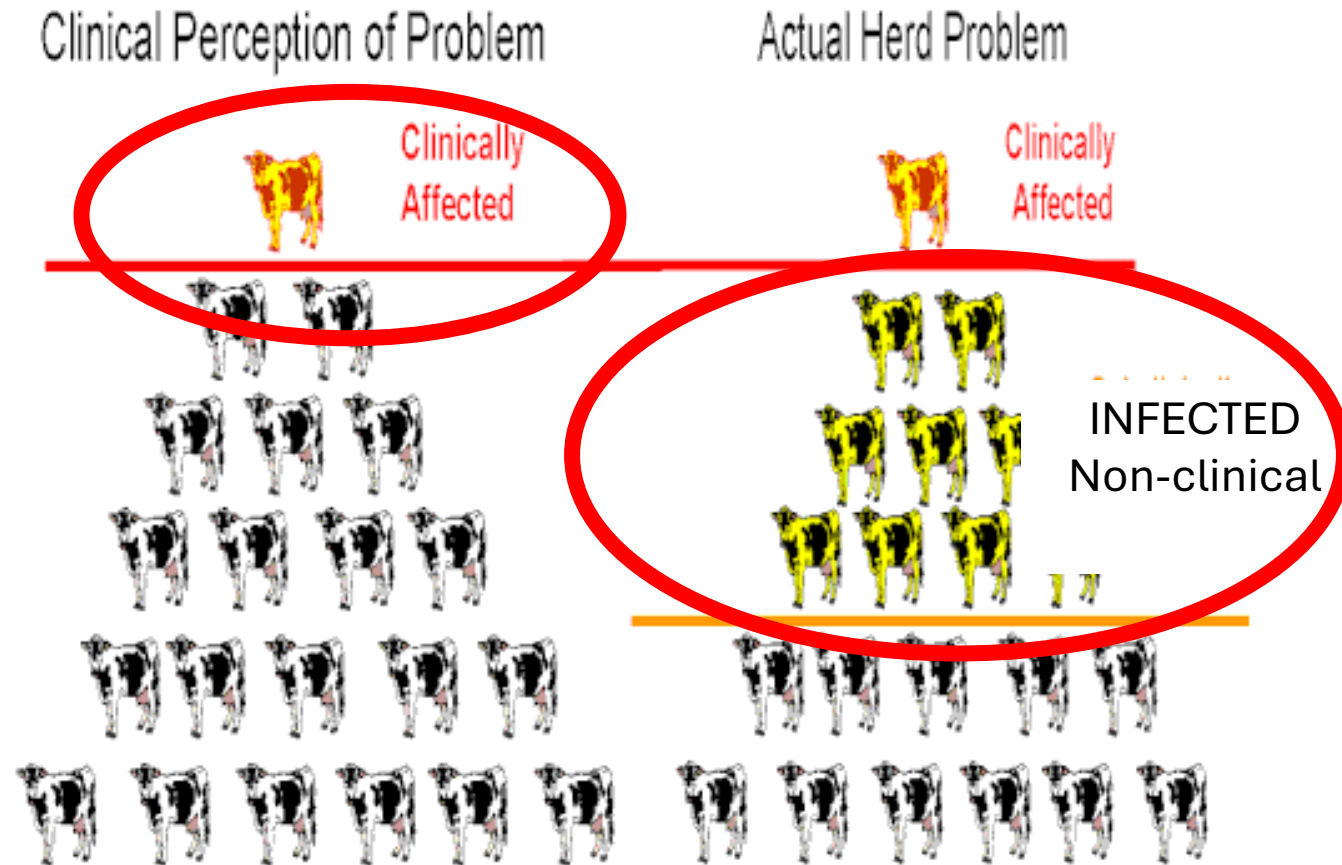
com/posts/fermatslibrary

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47, 263-291

Time from infection to response



Clinical vs Subclinical – “tip of the iceberg”



Time to diagnosis and action

Country	year	Time to diagnosis	Time to emergency	source
USA	1924	63 days	90 days	DAIRY-L@.UMD.EDU
USA	1929	3 days	10 days	DAIRY-L@.UMD.EDU
UK	2001	~3 weeks	~3 weeks	PRO-MED
IL	2007	2-3 weeks		pers.com
IL	2009	2-3 weeks		pers.com
IL	2011	2-3 weeks		pers.com

USDA:

"If your livestock become lame or develop blisters or sores, call us"



Detecting clinical signs – Tech or Vet Depends on farm type

Housed



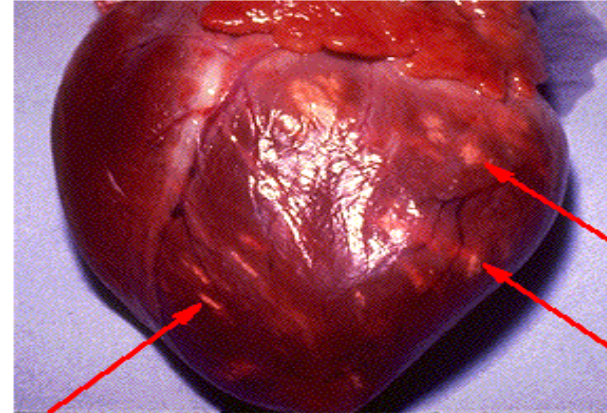
Pasture

Intensive



Extensive

Passive surveillance by farmers and clinical vets



“tiger heart”

- FMD O vaccinated dairy-goats herd
- Near int'l border
- Sampled for virology/ bacteriology / mycoplasma/ toxicology ...
- Not sampled for FMD
- 3 weeks to diagnosis... FMD

Early signs are not always “classical”

Missed / delayed diagnosis is common



normal



youngstock diseases



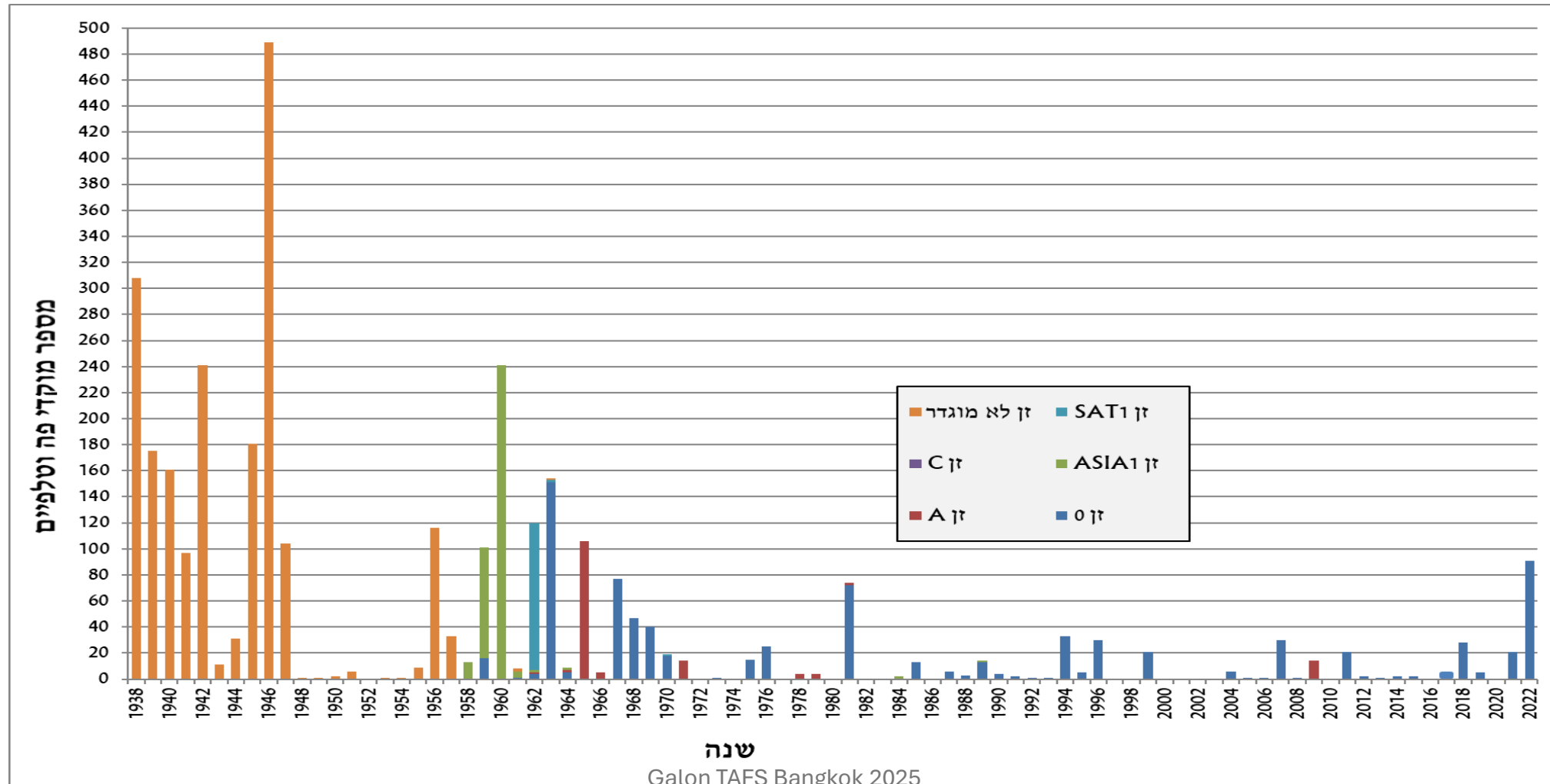
youngstock mortality

Lameness - feet lesions

Non-vaccinated Australian imported steers in 2005
Eilat Quarantine, Red Sea, IL



FMD outbreaks by strain



Most suitable vaccine ?

- Which strains to include
- Which strains to “bank”
- Tailored-made / off the shelf
- Availability / Price
- More than 1 supplier / alternate
- Preventive vaccination
and
- Responsive vaccination

O

A

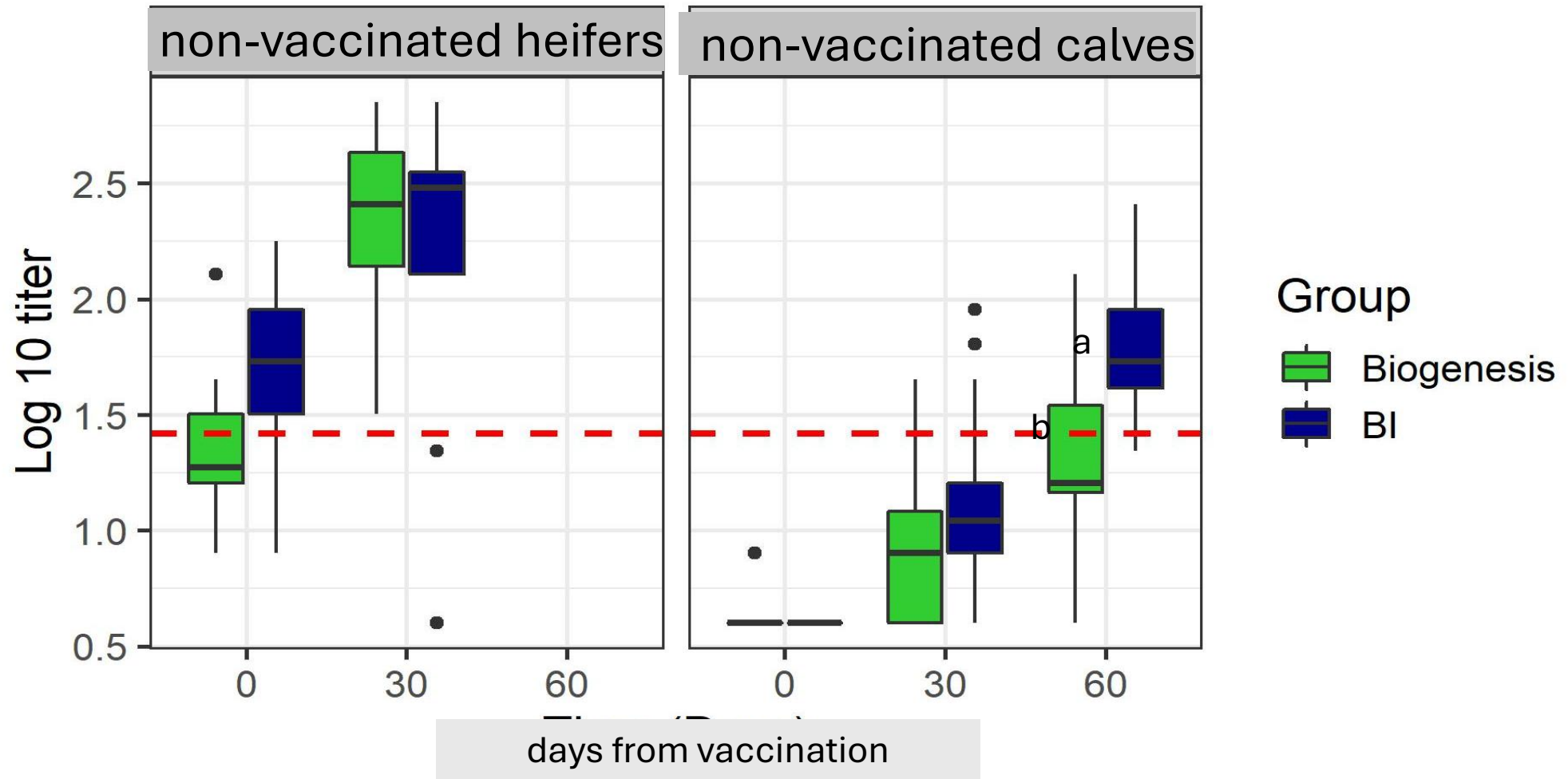
Asia 1

SAT- 1

SAT- 2

Testing vaccine field effectiveness

FMD O/ME-SA/PANAsia-2^{ANT-10}



Source: Israel Vet Services

Knowledge gap - wildlife involvement ?



Future FMD detection technology



agupdate.com/livestock/thermal-cameras-arm-drones-for-cattle-scouting

IFT photo –Austin Black

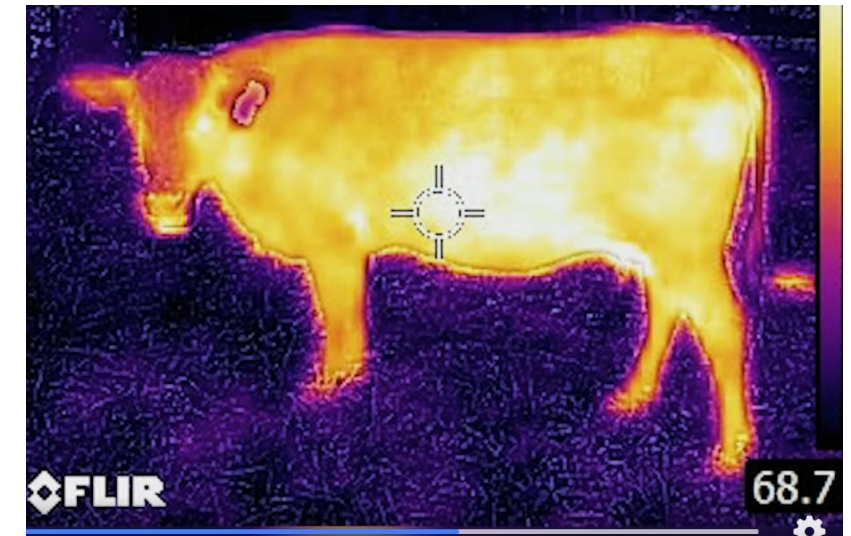
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Drones Temp detection FMD Dx coming up ?



David Balinsky UGA I-Corps project
National Science Foundation
“Shepherd Drones” to market

<https://news.uga.edu>



Summary

- FMD - high risk - still surprising
- Surveillance – difficult / future Dx ?
- Isolate - send - matching - protecting
- Adjust vaccine strains
- Reserve for other strains
- Evaluate vaccine in field
- Vaccination – properly
- Risk communication



How do you know if you use the best perspective?



Thank You