



From Farm to Table — **Food System Biosecurity for Animal Agriculture**

Identifying Risks, Challenges and Solutions

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Understanding Incentives for Livestock Biosecurity Investments & Efforts

Closing General Session

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Does Partial Biosecurity Reflect Producer Knowledge Gaps?

- Perhaps,
 - Ongoing education can help



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 - but we must consider economic incentives
 - effectiveness & practicality
 - private-public distinctions
 - absolute vs. relative value
 - producer's expectations
 - role of globalization



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 - role of globalization
- ✓ **Bottom-line**: lack of knowledge is likely NOT sole reason for partial implementation of recommended biosecurity measures



Perspective on Economics

- Science of decision-making and allocation of limited resources
- Centers on trade-offs and incentives for action



Broader Perspective on Animal Health/Disease Risk

- Key biological processes underlie risk.
 - Clearly a role for epidemiologists, veterinarians, etc.



Broader Perspective on Animal Health/Disease Risk

- Key biological processes underlie risk.
 - Clearly a role for epidemiologists, veterinarians, etc.
- Human activities also endogenously impact risk & ultimate impacts of adverse events



Effectiveness & Feasibility

- Why create something with low odds of adoption?
 - How would investors on *Shark Tank* react?



Effectiveness & Feasibility

- Why create something with limited odds of adoption?
 - How would investors on *Shark Tank* react?
- Just because a biosecurity measure “works” doesn’t mean it will be 100% implemented
 - Feasibility, effectiveness, & net econ. value are key
 - E.coli vaccines for fed cattle are prime example



Private-Public Considerations

- Private decision
 - Invest where MY benefits $>$ MY costs
 - May partially capture impact on neighbors, broader industry, etc.
- Public decision
 - Take action so SOCIAL benefits $>$ SOCIAL costs



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- Consider ind. animal ID in beef cattle industry
 - Pendell et al. 2013 (*Food Policy*)
 - » Small + in exports (~S. Korea) offsets costs of full, national Age & Source Verification program
 - » Yet a segment of producers would be better w/o ASV & losing market access



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 - » Small + in exports (~S. Korea) offsets costs of ASV
 - » Segment of producers would be better w/o ASV & losing mkt access
 - **What is socially optimal is not necessarily optimal for every individual!**



Incentive Compatibility

- USDA APHIS – HPAI Indemnity Claims
 - Proposed move to make payment eligibility tied to having a biosecurity plan in place
- Producers currently have limited incentive to fully & quickly share information externally



Absolute vs. Relative Assessment

- We often conduct benefit-cost assessments of single biosecurity measures in isolation.
 - “If positive should implement”
- In reality, the relative merit ACROSS available biosecurity measures is key.
 - Consider case of 2 measures with returns on investment of 15% and 5%



Reference Points in Producer Decisions?

- What level of risk do producers expect and manage around?
 - If near 0%, we are frustrated by “irrational behavior” of partial biosecurity
 - If different threshold is used (e.g. 1 event/20 yrs), this reference point is central to producer decisions



Globalization's Role

- Expanding trade can increase:
 - Volume and Potential for adverse events
 - Economic impact when adverse event occurs



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“9 billion in 2050” + U.S. Comparative
Advantages + Growing role of trade =

**interest and need to better understand
economics of biosecurity efforts**



Preliminary Expert Survey Findings

- Relative Benefit-Costs Differences

	Industry Sectors	Benefits	Costs	Difference
Dairy	Retailers	21.0	9.1	11.9
	Processors	26.9	18.4	8.5
	Dairy Producers	52.1	72.6	-20.4
Beef	Retailers	16.6	5.6	11.0
	Processors	20.9	9.7	11.2
	Feedlot	28.0	30.8	-2.8
	Stocker/Backgrounder	16.3	22.3	-5.9
	CowCalf	18.1	31.6	-13.5
Swine	Retailers	12.2	2.6	9.5
	Processors	17.4	8.1	9.2
	Finishing	21.6	25.1	-3.5
	Nursery	14.9	23.6	-8.6
	Sow-Breeding	33.9	40.6	-6.6

N=86 (35 beef, 34 dairy, 17 swine) as of 4/1/16



More information available at:



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