Understanding Incentives for Livestock Biosecurity Investments & Efforts

Closing General Session

Glynn Tonsor
Dept. of Agricultural Economics, Kansas State University
April 6, 2016

This material is based upon work that is supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, under award number 2015-69004-23273. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.
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.
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• 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
Private-Public Considerations

• Private decision
  – Invest where MY benefits > MY costs
• Public decision
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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
Private-Public Considerations

- Private decision
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- Public decision
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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 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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• Expanding trade can increase
  – Volume and Potential for adverse events
  – Economic impact when adverse event occurs

“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

<table>
<thead>
<tr>
<th>Industry Sectors</th>
<th>Benefits</th>
<th>Costs</th>
<th>Difference</th>
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<tr>
<td><strong>Dairy</strong></td>
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<tr>
<td>Retailers</td>
<td>21.0</td>
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<td>11.9</td>
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<td>Processors</td>
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<td>18.4</td>
<td>8.5</td>
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<td>Dairy Producers</td>
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<tr>
<td>Retailers</td>
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<tr>
<td>CowCalf</td>
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<td><strong>Swine</strong></td>
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<tr>
<td>Retailers</td>
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<tr>
<td>Processors</td>
<td>17.4</td>
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<tr>
<td>Finishing</td>
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<td>Nursery</td>
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<tr>
<td>Sow-Breeding</td>
<td>33.9</td>
<td>40.6</td>
<td>-6.6</td>
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</tbody>
</table>

N=86 (35 beef, 34 dairy, 17 swine) as of 4/1/16
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Glynn Tonsor
Associate Professor
Dept. of Agricultural Economics
Kansas State University
Email: gtonsor@ksu.edu
Twitter: @TonsorGlynn
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