FMD, Animal Agriculture and Public Opinion

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Merging Values and Technology

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Immediate devastation from stamping out is usually attributed to cost of operations and personal loss.

However, in the long run, restructuring of industry and changing priorities for rural areas have a much larger impact.
The US has a Perfect Track Record of Successful Response to Foreign Animal Disease Outbreaks

Success measured in terms of:
- Eradication
- Cost Comparison
- Duration
- Command and Control
However, Technical Plans do not Address the Full Spectrum of Impacts of an Outbreak

- Traditional accounting in outbreaks uses tallies
  - Interpreted as sum of direct and indirect costs

- Agriculture is driven by economic efficiency
  - Economist approach (cost categories)
    - Transaction costs
    - Indirect cost/Lost Revenue
    - Marginal costs
    - Opportunity costs

- Emergencies are economic disruptions (shocks)

- Successful plans minimize disruption
  - Either driven by or shape public opinion
Tiers of Preparedness/Planning

- **Tactical**
  - Focus on managing personnel, equipment and resources
  - Facilitates incident response

- **Operational**
  - Defines roles and responsibilities, tasks, integration and actions required of jurisdictions, departments, agencies and private sector
  - Facilitates unified response

- **Strategic**
  - Describes how jurisdiction wants to meet responsibilities over the long-term
  - Driven by policy and (public) priorities
To Fully Understand the Impact of Animal Disease Outbreaks
It Is Helpful to Study How Costs are Distributed

Costs arising in emergencies:
- **Transaction costs**
  - Direct costs
- **Lost revenue**
  - Indirect costs
- **Marginal costs**
  - Cost of proving disease status
- **Opportunity costs**
  - What else could have been done with the same resources?
    - Economic multiplier effect

Costs Affected by Preparedness/Planning Efforts

- **Tactical**
- **Operational**
- **Strategic**
Transaction (Direct) Costs

- Commonly confused with tally of operational outlays
  - E.g., “The FMD outbreak in the UK cost the livestock industry £2.4 billion”

- Better: the additional cost of doing business
  - “The cost to administer operational outlays was …”
  - 2005 FMD hoax in New Zealand: NZ$ 2M
  - Federal compensation in US (non-indemnity)
  - Interest on loans
Transaction Cost Example:
Moorlands Hotel, North York Moors

- In 2003 the Moorlands Hotel in North York Moors, closed because of over £25,000 in Bank Charges on Loans that could not be repaid after the FMD Outbreak
Lost Revenue (Indirect Costs)

- Lost income
  - Livestock: Lost production
  - Tourism income in the UK

- Affected by co-dependencies of system
  - Often cannot be foreseen completely
  - Should not be assumed to apply to all situations
“A combination of 9/11, the SARS and foot and mouth scares a few years ago, together with the floods, had a massive impact in reducing the number of tourists, particularly big-spending Americans.”
Marginal Costs

- The increase in cost needed to produce more

- For example:
  - In Veterinary Practice: Cost of staff overtime to see more clients
  - In Animal Disease Control Programs: Increased cost of doing business, e.g., cost of
    - Active surveillance over existing (passive) surveillance
      - US BSE surveillance program
    - Operations (contracts)
    - Indemnity
Marginal Cost Example
Federal Cost (non-indemnity) for Response to Disease Outbreaks (23-89% of disbursements)
Opportunity Cost

- **Cost of choosing one option over another**
  - Finite resources dictate that every option/choice occurs at the expense of another
  - Costs are determined by asking:
    - What will not get done as a result of my choice?
    - Which option has greater cost (immediately vs. long term)?

- **Magnitude of opportunity cost driven in**
  - Short term by size and distribution of affected stakeholder groups
  - Long term by economic multiplier effect resulting from redistribution
Opportunity Costs Resulting from Response to FMD in the UK

- UK paid $263M less in subsidies in 2002 than in 2001
  - Approximately equal to cost of lost trade
- By 2006 waste management at FMD burial sites had become a lucrative business
Opportunity Cost Example: Carcass Disposal at Great Orton Airfield, Cumbria

• In 2001, 466,312 carcasses, comprising 448,508 sheep, 12,085 cattle and 5,719 pigs were buried in 26 trenches.
  • £12M to build facility

• In 2006, still disposing of 240m3 leachate/week
  • £850,000/yr. to maintain
Opportunity Cost Example:
Ash Moor, Meeth, Devon, Burial Site

- In 2001, 174,660 carcasses buried
  - £7.5M to construct

- In 2003, “Ash Moor site to be restored to farmland”

- In 2006 £240,000/yr. to maintain (security, drainage, maintenance)
Opportunity Cost: Economic Multiplier Effect

- For every dollar by invested (incl. government spending) how much more
  - Spending (demand) and employment (jobs) are generated
  - Agriculture vs. Industrial vs. Services vs. Construction Sectors
  - Choices often driven by public interests

For example

- Does paying for cleaning and disinfection after an FAD generate more economic growth and jobs if the work is done by federal employees or contractors?
  - Short term: Added income supports comparable increases in spending
  - Long term: Contracts supports more jobs
Long term outcome: Moorlands Hotel, North York Moors

- By 2012 the hotel was under new management and rated amongst the best hotels in Yorkshire
Economic Recovery from 2001 FMD

Shambles, York

The Shambles, York, is now a major tourist destination with international recognition.
Economic Recovery: Ash Moor, Meeth, Devon, Burial Site

- In 2010, “Landfill gives Butterflies a Boost” … awarded £257,469 to help boost the fortunes of a number of fritillary butterfly species on Dartmoor.

- In 2013 “Ash Moor is a real rags to riches story, which now has a far more positive future. Wildlife Trust is managing the woodland and hedgerows and putting in a series of pond and scrapes. The site is buzzing with wildlife … so hopefully lots for people to see”
To Fully Understand the Impact of Animal Disease Outbreaks It Is Helpful to Study How Costs are Distributed

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Costs Affected by Preparedness/Planning Efforts

- Tactical
- Operational
- Strategic
Projected Impact of Stamping Out FMD on 60 Farms in a Single U.S. Rural County

- **Operational costs**
  - $1.4 million/week
  - 750 personnel

- **Local impact**
  - Approx. $6.4 million per week to the Gross County Product
  - Lost jobs (1 year):
    - 752 from food manufacturing
    - 1,466 from retail
    - 1,128 from hospitality
    - 1,203 from health and social
  - Stop movement estimated to cost over $700,000 in lost revenue to producers and owners of non-susceptible species
Special Interests often Drive Strategic Choices affecting Opportunity Cost and the Impact of Economic Multipliers

- Public Opinion Challenges to Agriculture that will likely impact decisions during an FMD outbreak
  - Environment
  - Animal Welfare
  - Food Safety
  - Economics
  - Biotechnology
Public Opinion in Disease Outbreaks: Environment

In the Netherlands during the 2006 AI outbreak public concern arose over why so much pollution at home to support exports abroad.

Little discussion on use of marginal land and opportunity costs.
Impact of Environmental Lobby on Taiwan Swine Industry after FMD in 1998

Taiwan EPA issued a moratorium on restocking swine …

.. unless farmer could dispose of manure in 3-stage sewer handling facility or relocate
Public opinion on animal welfare supports animals being able to roam free. But there is little consideration of animal husbandry on welfare in disasters.
Animal Welfare is a Major Concern in Disasters

- More animals suffer in disasters in natural settings than when housed
  - E.g., floods, blizzard, heat
- Yet intensive agriculture is often cited as cause
Public Opinion in Disease Outbreaks: Food Safety

Growing popular interest in locally sourced organic food with novel preparation and retail

Little discussion on cost and affordability of food, quality control and variety
Public Opinion in Disease Outbreaks can Turn on Food Safety

- Loss of consumer confidence
- Loss of value added jobs
- Driven by
  - Risk communication
    - Killing animals to save animals is an inherently conflicted message
      - Assumption is that killing animals will protect public health
    - Will the public accept this?
  - Response options
    - If the methods used for stamping out adversely affects consumer confidence
      - Why do we do it?
Public Opinion in Disease Outbreaks: Economics

- In it for the money
- Trade Protection is good

Versus

- Meat is in high demand worldwide
- Economic efficiency is key to sustainability
- Innovation provides competitive advantage
- Disease free trade partners are better for exporters
PER CAPITA MEAT CONSUMPTION vs. GNP
(1971-95 country averages)

Log per capita GNP vs. Log per capita Meat Consumption

Trend

Philippines
China
India

Livestock to 2020: The Next Food Revolution, a joint IFPRI, FAO, ILRI study.
The highest growth and demand from agriculture is for animal derived products.

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<th>Commodity</th>
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<tr>
<td>Cereals</td>
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Projected Growth in Global Meat Demand, 1997-2020

- Poultry: 40%
- Pork: 31%
- Beef: 24%
- Sheep/Goat: 5%

FAO, IFPRI, 1999
Changes in Livestock Production

Annual Growth Rates of Meat Production Systems

Percent Annual Growth

Region

Asia SSA WANA CSA

System

Grazing Mixed Industrial

Annual Growth Rate of Livestock Production Systems (1985-90)
Impact of FMD on Soy Imports (Pig Feed) (mostly US soy exports) to Taiwan

Mean (1991-7): 6,526 MMT
Decrease by 11.5%
Mean (1998-2004): 5,776 MMT

FMD Outbreak
Impact of Syria Becoming Free of FMD

- **US Feed Grains Exports (MT) or Syrian Cattle Population (X1,000)**
  - Mean: 219,000 MT

- **Cattle population (head)**
  - Mean: 662,000 MT

- **Grain Exports (MT)**
  - Mean: 662,000 MT
Trends in Uruguay Beef Exports

Tons (X1,000)

Year


FMD positive

FMD free

Exports to FMD infected countries

Exports to FMD free countries
Global Livestock Populations, US Feed Exports and Foot and Mouth Disease
(5-year mean, 1997-2001)

Country FMD Status

- FMD-free
  - N=84

- FMD-infected
  - N=86

Global Livestock Population (%#)

or US Feedgrain Exports (%MT)
Narrow Views of the Economics of Animal Agriculture Undermine Its Many Benefits

- Meat is a desirable food – worldwide
  - Growing demand correlates with increased income

- Meat adds value to
  - Pasture (developing countries)
  - Feed grains (North America)

- Value added agriculture products
  - Create jobs (processing, distribution, retail and export)
  - Exports bring in foreign currency

- A country’s animal disease status affects trade balance

- Every $1 million of value added through agriculture supports approximately 5,000 jobs
Public Opinion in Disease Outbreaks: Biotechnology

Public Opinion condones terms such as “Frankenfoods” and questions the value of vaccinating children.

But little discussion over progress made through science.
Reports on Science, Disasters and Urban Myths are not well Matched

- Media demand is for crises and sensations
- In response media supplies disproportionate number of reports on, e.g.,
  - Vaccine and autism
  - GMO’s and safety concerns
  - Threat of diseases from animals
- Growing resentment of vaccines in Pakistan, Nigeria and in many North American families
- As progress is made will the public laud science or remember incomplete and pseudo facts?
Systems Mapping Helps Identify Interests and Contributions Before a Crisis Strikes

- Public Opinion can become a dominant driver of strategic choices in a crisis
  - Interests of the public and agriculture are often very focused
  - Focused interests have merit but only contribute to quantity and quality of final product

- Systems Mapping is an important tool for shaping the future or, if ignored, allowing special interests to determine the future
Systems Map: What’s for Dinner?

Each step is necessary but none are sufficient to put dinner on the table.

A systems map is a strategic tool to identify interests that drive choices for the future.
Peter Löscher CEO of Siemens on Using a Scandal to Drive Change: … But as I always remind anybody who is listening, never miss the opportunities that come from a good crisis—and we certainly didn’t miss ours. The scandal created a sense of urgency without which change would have been much more difficult to achieve, regardless of who was CEO. Siemens is a very proud company with a history of innovation and success. In the absence of a catalyst like this, people would have asked themselves, “Why alter anything?” (Hired as the first outsider to become the company’s top leader)

David King, Science Advisor to PM Tony Blair during the 2011 FMD outbreak: At the Budget, we committed to raising science spending faster than the trend rate of growth of the economy. We can now announce that in total, the average annual growth rate for science funding is 5.8 per cent in real terms.
Public Opinion of Animal Agriculture Has Supported its Role in Scientific Progress

- Disease eradication
  - Rinderpest
- Vaccines
  - Encephalitis, clostridial diseases
- Environmental health
  - Field Hospitals
- Food Safety
  - HACCP
- Epidemiology
  - Herd immunity
The Future of Public Opinion of Animal Agriculture Should be Shaped as Supporting Scientific Progress

- Surveillance, early detection, rapid response and recovery from high consequence disease outbreaks
  - Tipping point for choice of intervention
  - Disease counter measures using information technology
- Manage risks from greenhouse gas emissions, water use, carbon sequestration, renewable and bio fuels
  - Transformative Sustainable Agricultural Systems
- Human nutrition
Following the foot and mouth crisis of 2001 he converted some buildings on his 150-acre farm into commercial units. As part of the “Devon Renaissance” Rexon Cross Farm became Wolf Valley Business District providing an inspiring pastoral setting for business.
THANK YOU

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