V Encontro Nacional de Defesa Sanitária Animal - ENDESA 2017

Strategies for preparedness in animal health emergencies

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Contents

- Impact on international trade
- Dealing with the emergency
- Recovery of trade
- Decision making

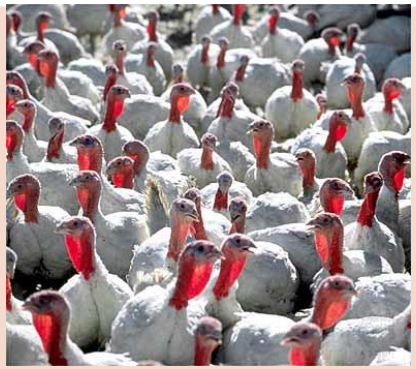
Challenges during an animal health emergency

Dealing with the emergency

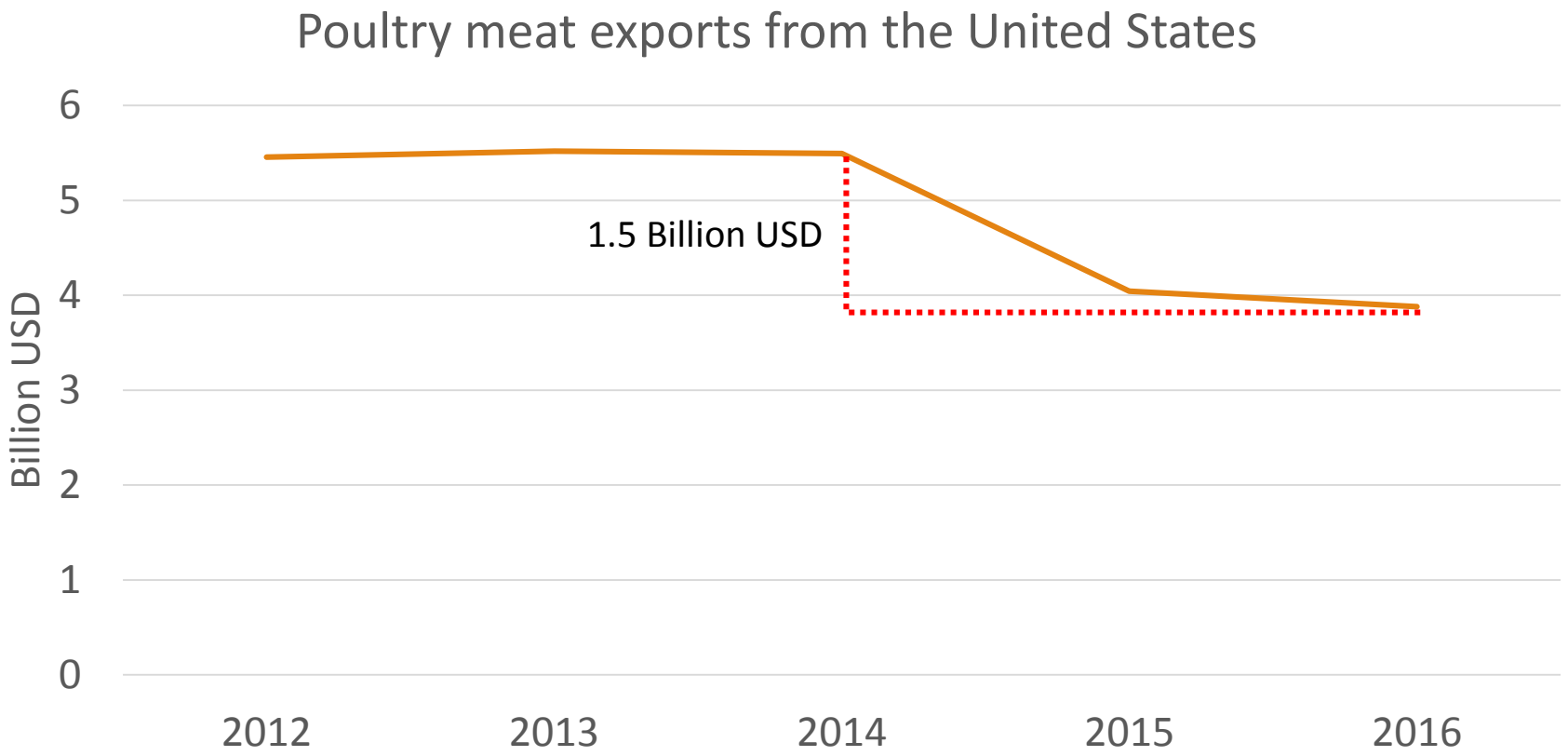
Dealing with the economic and trade consequences

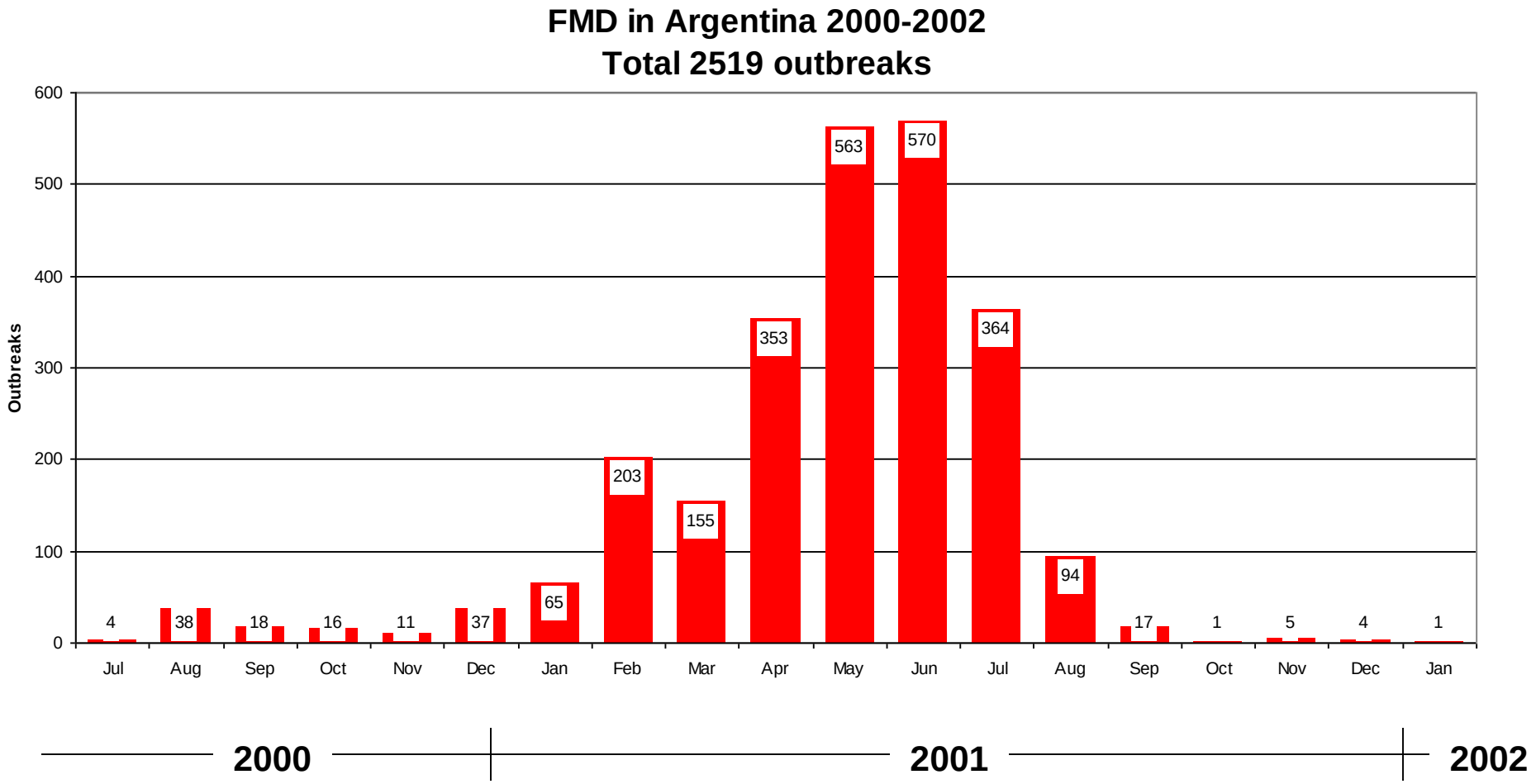
Impact on international trade

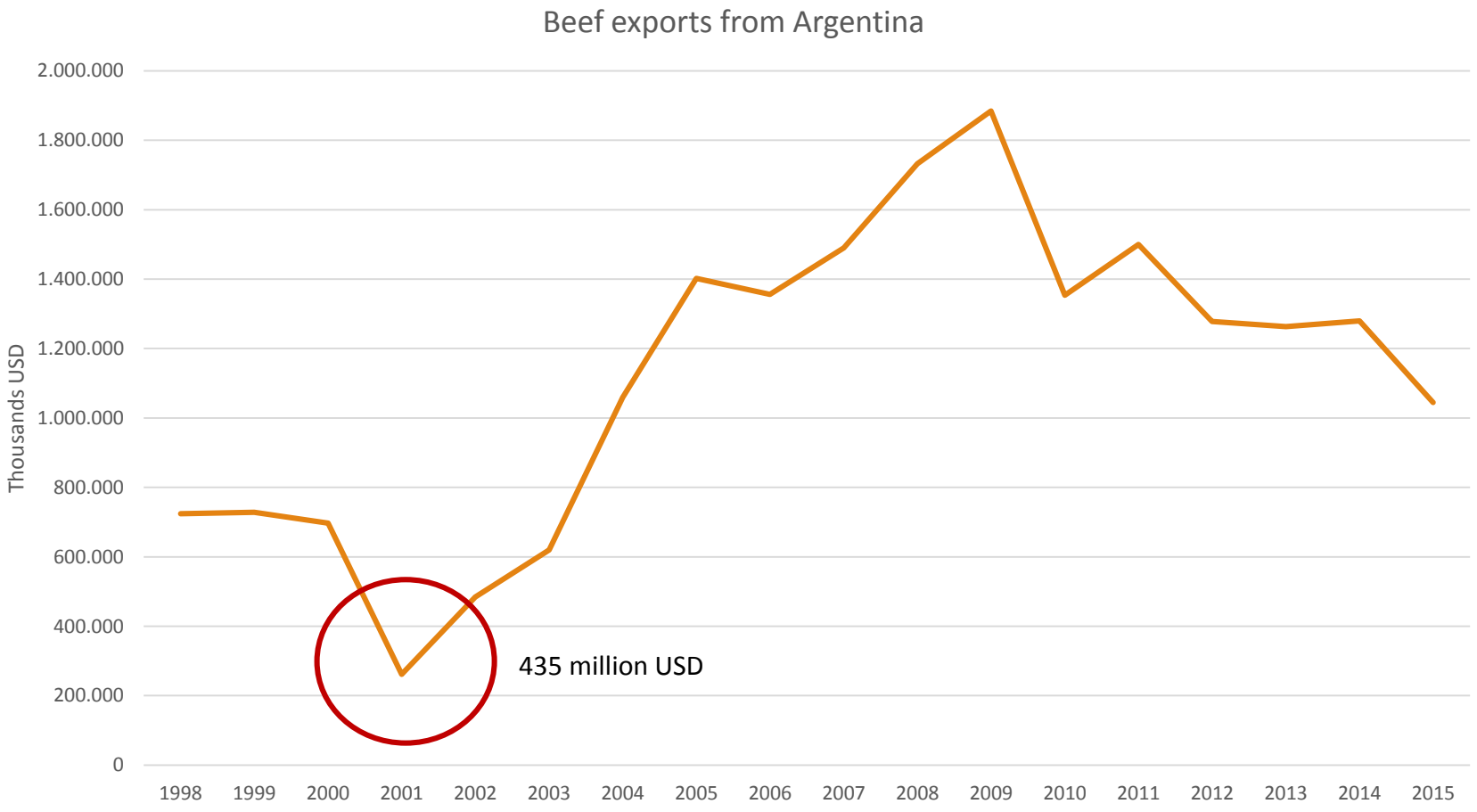
Avian influenza in the United States

	Outbreaks	Birds
	68%	7.5 million
	32%	42.1 million

Direct cost of the outbreak~ 1 billion dollars

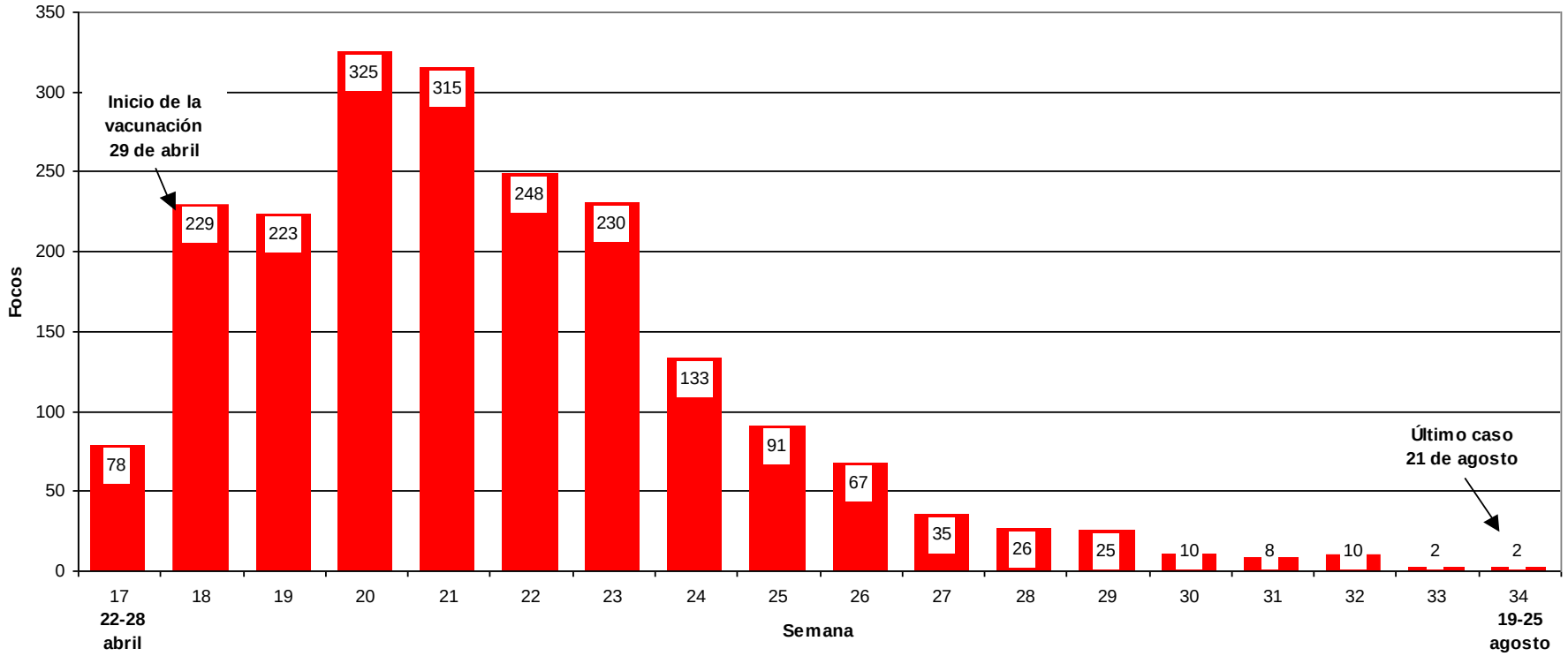

Poultry meat exports from the United States
Billion USD
6
5
4
3
2
1
0
1.5 Billion USD
2012
2013
2014
2015
2016

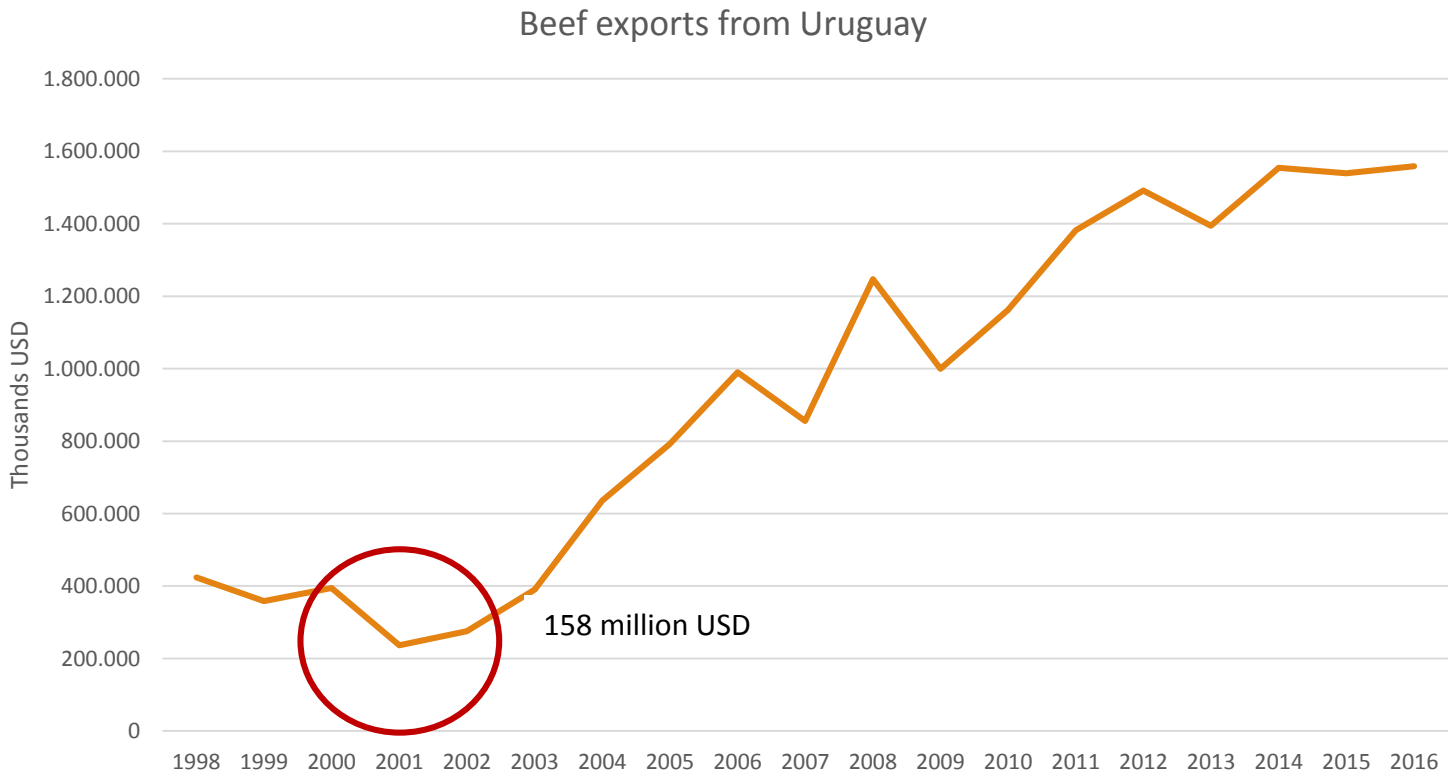

FMD in Argentina 2000-2002
Total 2519 outbreaks
Outbreaks
600
500
400
300
200
100
0
4
38
18
16
11
37
65
203
155
353
563
570
364
94
17
1
5
4
1
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
2000
2001
2002

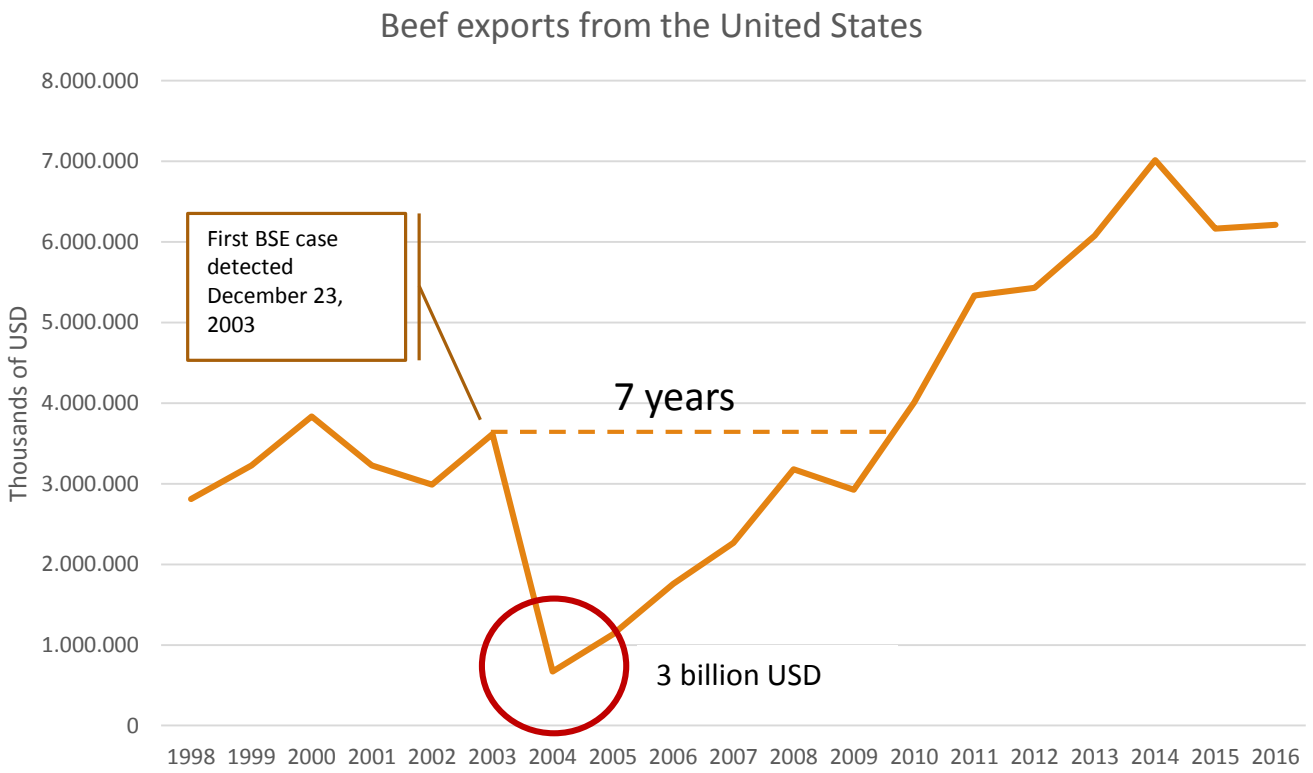


Source: United Nations Commodity Trade Statistics, United Nations Statistics Division

Aftosa en Uruguay 2001
Total 2057 focos



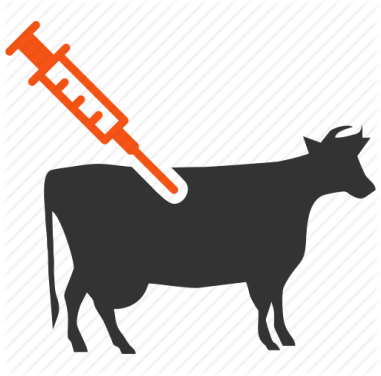

Beef exports from Uruguay
Thousands USD
1.800.000
1.600.000
1.400.000
1.200.000
1.000.000
800.000
600.000
400.000
200.000
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
158 million USD


Beef exports from the United States
Thousands of USD
8.000.000
7.000.000
6.000.000
5.000.000
4.000.000
3.000.000
2.000.000
1.000.000
0
1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
First BSE case detected December 23, 2003
7 years
3 billion USD

Dealing with the emergency

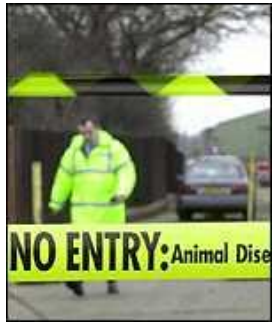
Alternatives for disease control during an animal health emergency

- Stamping out without vaccination
- Emergency vaccination
  - Suppressive vaccination
  - Protective vaccination
- Mass vaccination
- Do nothing



Stamping out without vaccination

- Historically used
- Massive slaughter of animals is less socially acceptable and expensive
- Logistics of carcass disposal are complex and environmentally challenging



Emergency vaccination

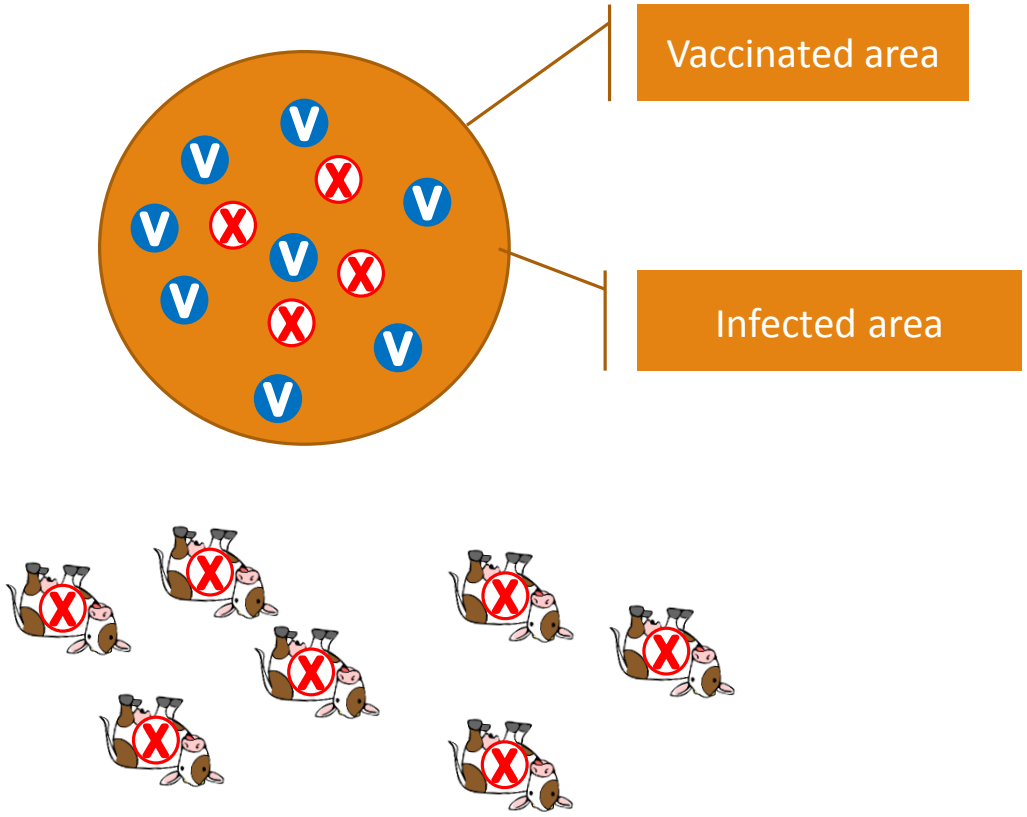
- A vaccination program applied in immediate response to an outbreak or increased risk of introduction or emergence of a disease

Terminology:

- Protective vaccination
- Suppressive vaccination
- Vaccinate to live
- Vaccinate to die

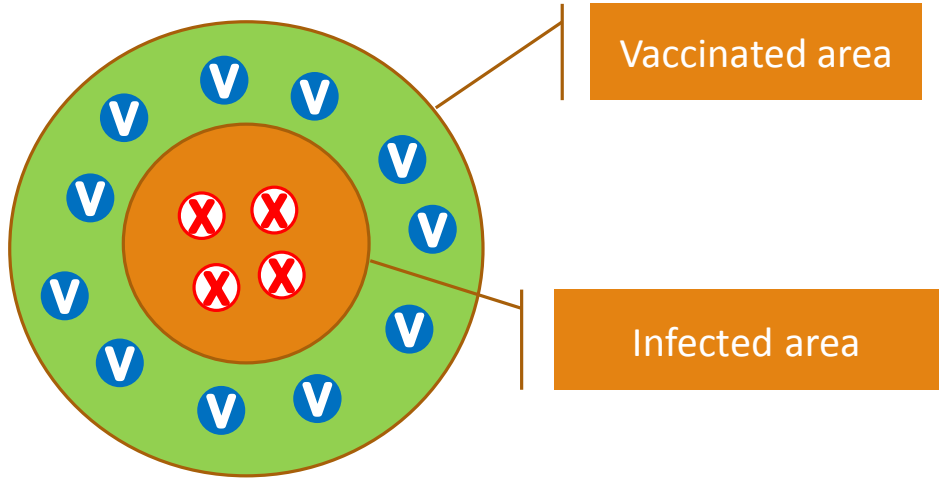
Suppressive vaccination

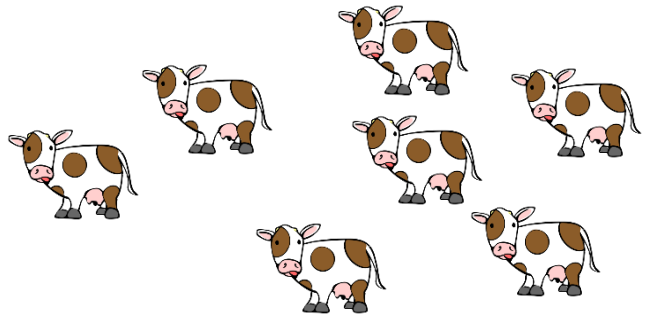
- Emergency vaccination carried out within an infected area with the objective to reduce shedding
- Carried out in conjunction with a stamping-out policy
- ***Vaccinate to die***



Protective vaccination

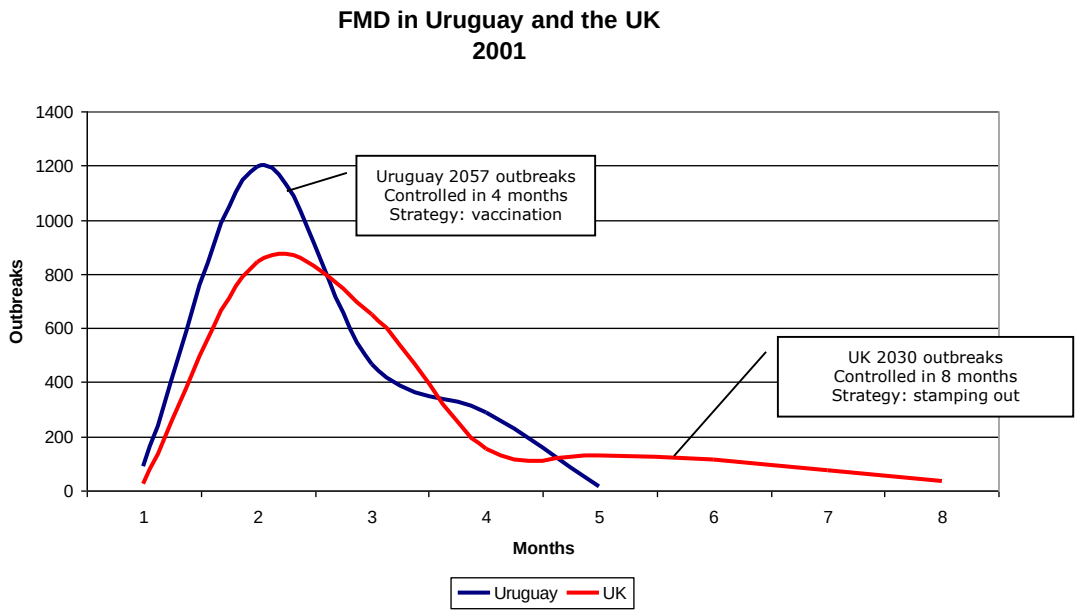
- Emergency vaccination carried out on holdings in a designated area in order to protect animals of susceptible species
- Stamping-out of affected premises
- Vaccinated animals are intended to be kept alive following vaccination
- Can be applied as ring vaccination
- ***Vaccinate to live***





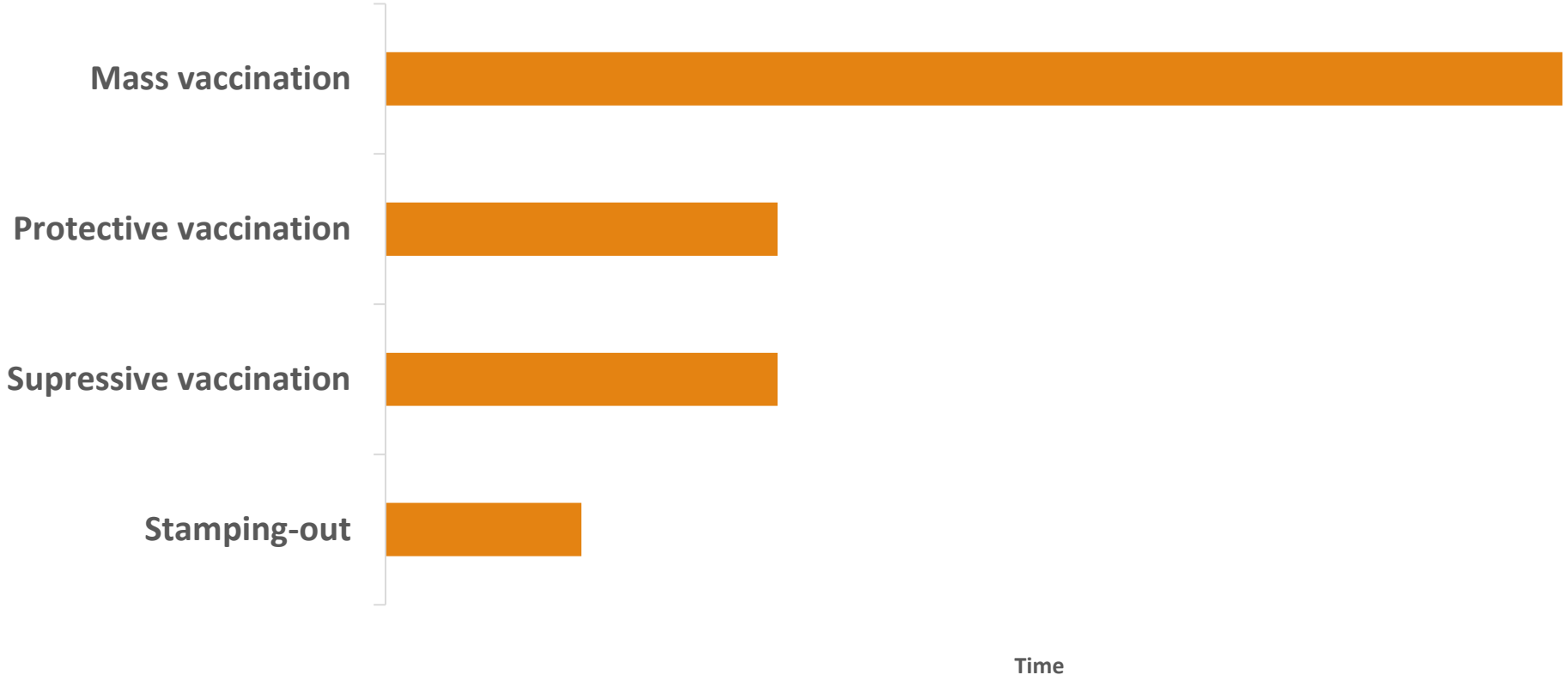
Mass vaccination

- Mass immunization of the susceptible population
- No stamping-out
- Animals are intended to be kept alive following vaccination
- ***Vaccinate to live***



Recovery of trade

Time for recovery of status



Disease freedom

Is disease freedom the only answer?

- Traditionally has been the goal
- May not be achievable in a reasonable time frame
- For some diseases may not be achievable at all

Are there other options?

Alternatives

Country freedom

Regionalization

Compartmentalization

Commodity-based trade

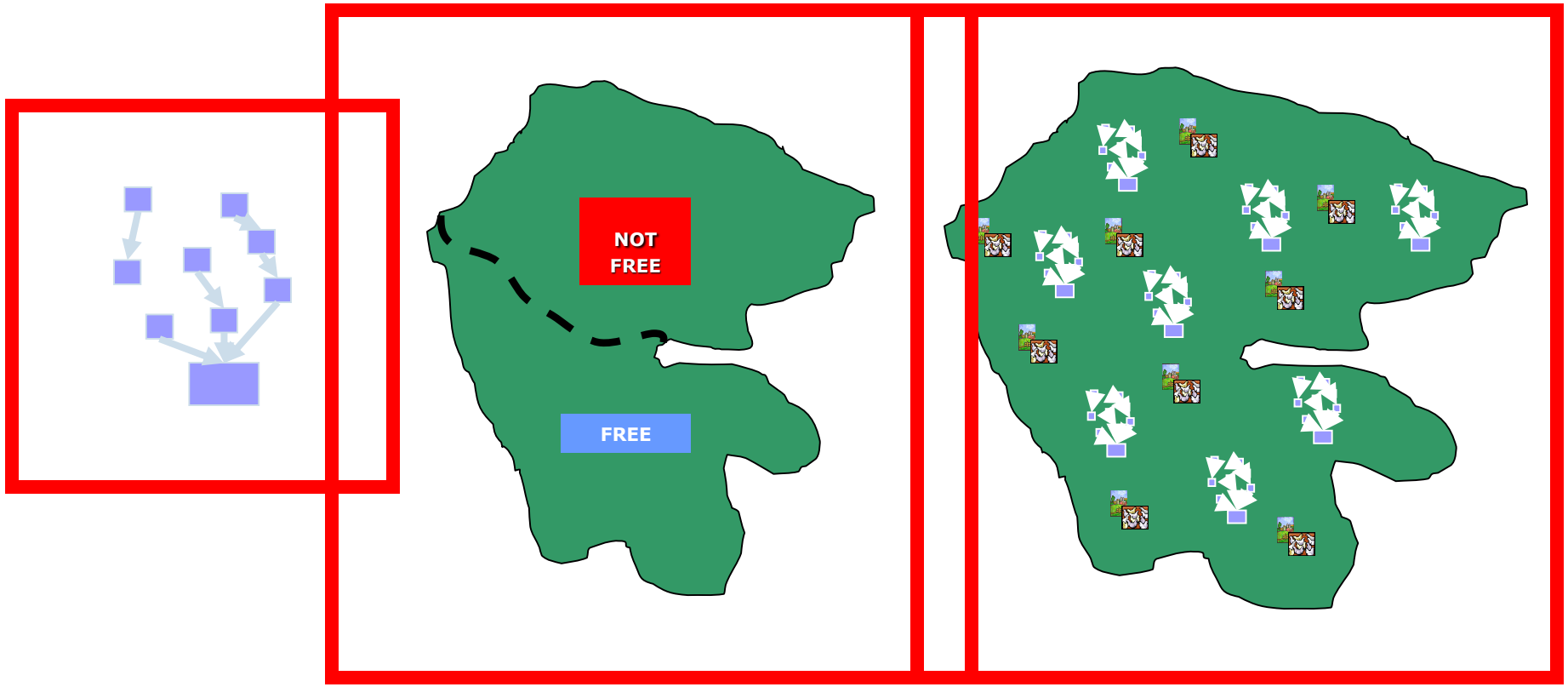
All depend on

Effective veterinary services

- Veterinary accreditation
- Para-vets, CAHWs

Producer participation

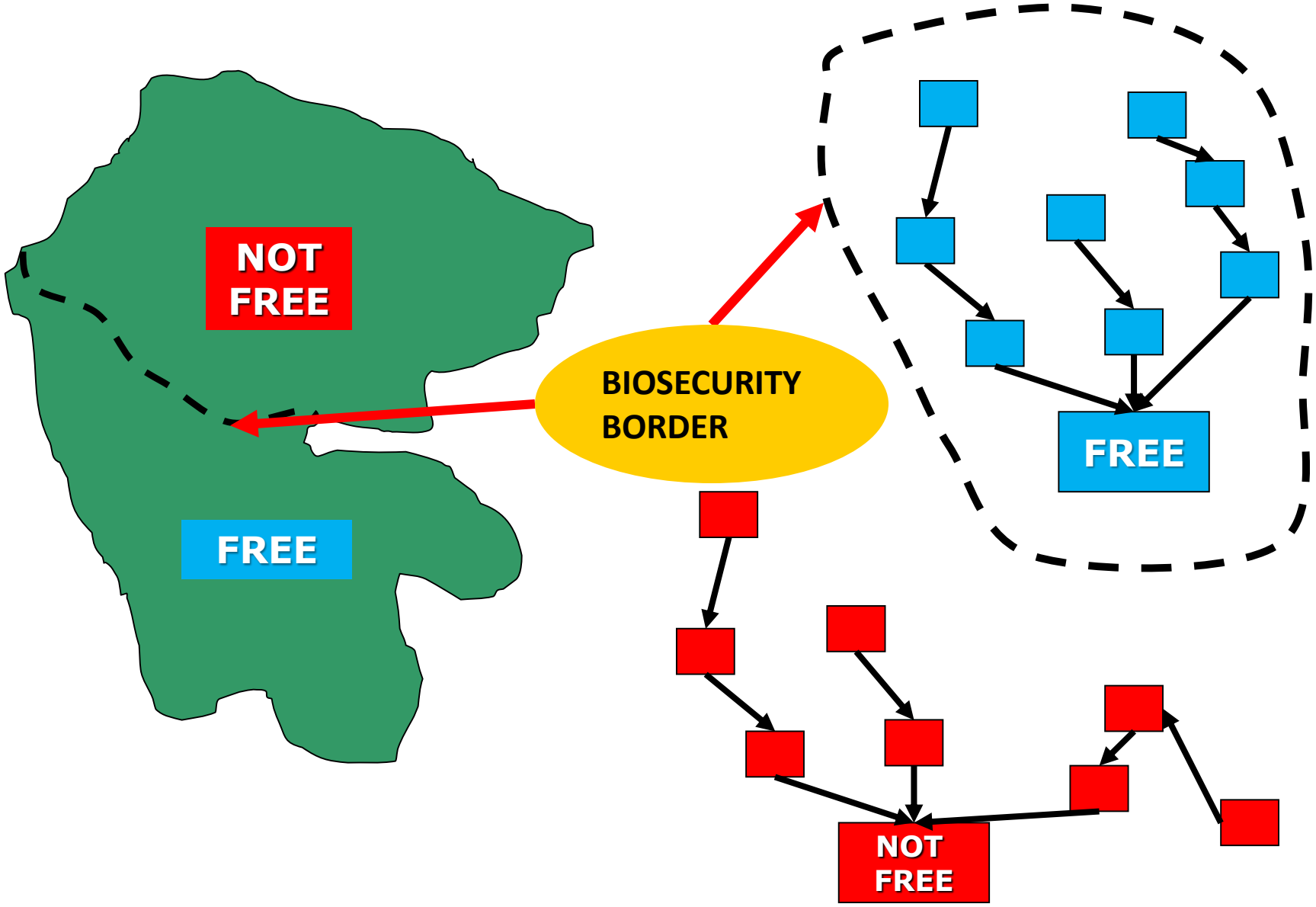
A shift in approach



Zones and compartments

Recognition of animal populations of different health status

- Zoning
  - Geographical basis
- Compartmentalization
  - Management and biosecurity


NOT FREE
FREE
BIOSECURITY BORDER
FREE
NOT FREE

Commodity-based trade

The OIE Code explicitly mentions for each listed disease:

- Commodities for which no measures are required
  - e.g. milk and BSE
- Commodities for which specific requirements have been established
  - e.g. beef and Foot-and-Mouth disease

Commodity-based trade

- Different approaches depending on the presence or absence of the agent in the commodity
- CBT allows to trade from countries or zones where disease is still present
- CBT is **NOT** a substitute for efficient official veterinary services
  - Certification processes still required

Layered mitigations

- Country or zone level
  - FMD control program
  - Surveillance
    - Herd-level
      - Vaccination
        - Animal level
          - Ante and post-mortem inspection
            - Commodity level
              - Maturation
              - Deboning

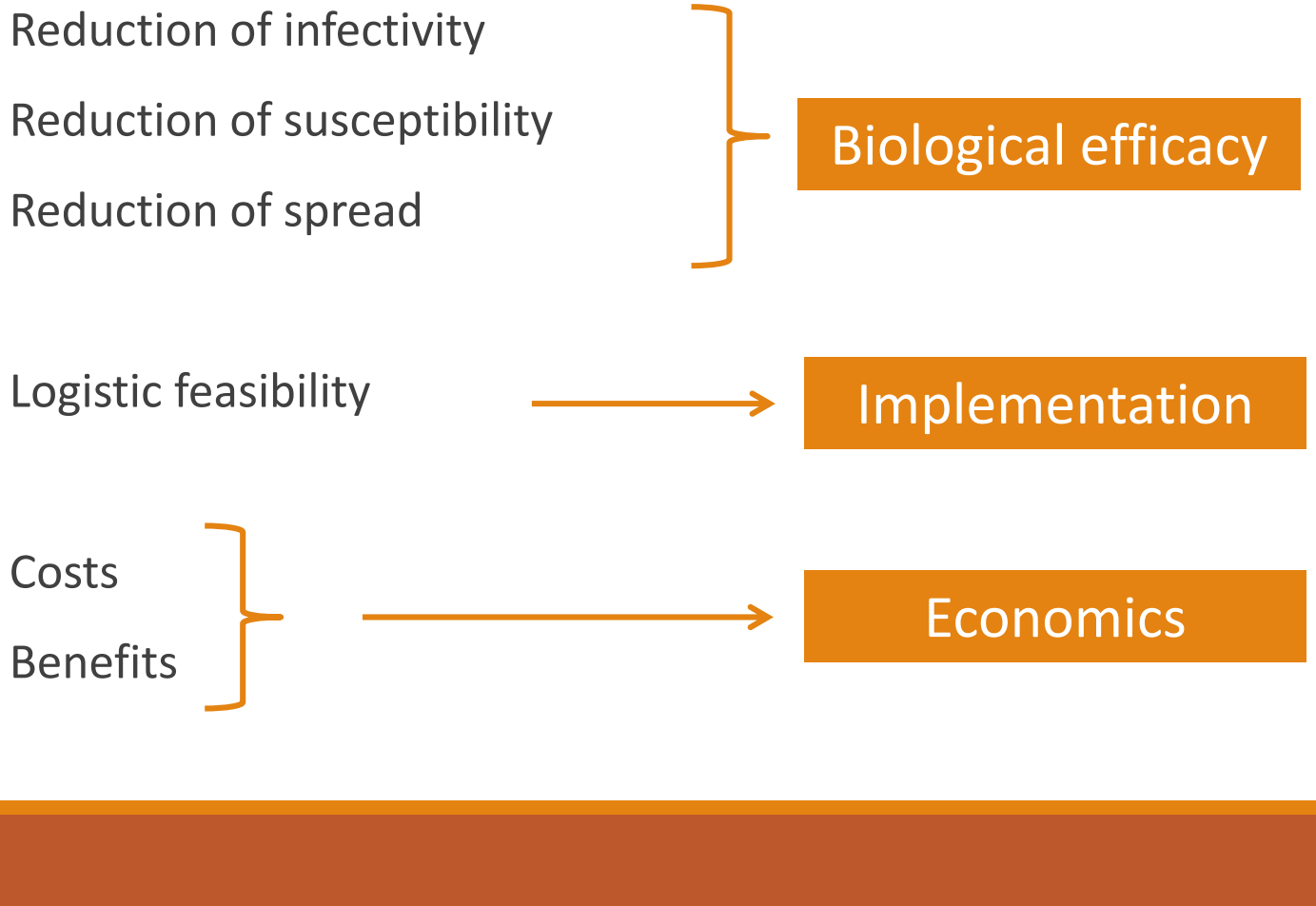
Proactive risk assessments

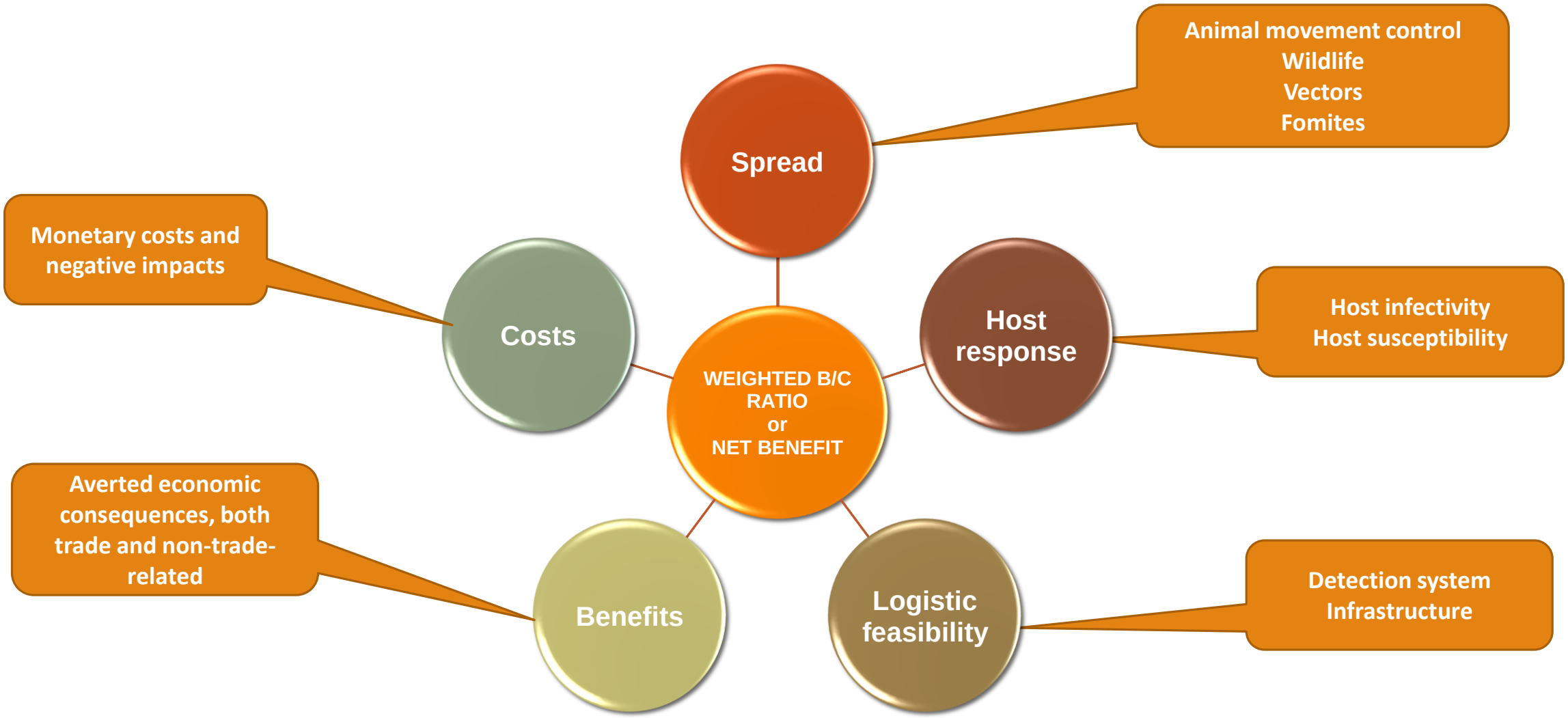
USDA-APHIS Center for Epidemiology and Animal Health conducted risk assessments for several products to ensure business continuity

- Secure egg supply
- Secure broiler supply
- Secure milk supply
- Secure pork supply
- Secure turkey supply

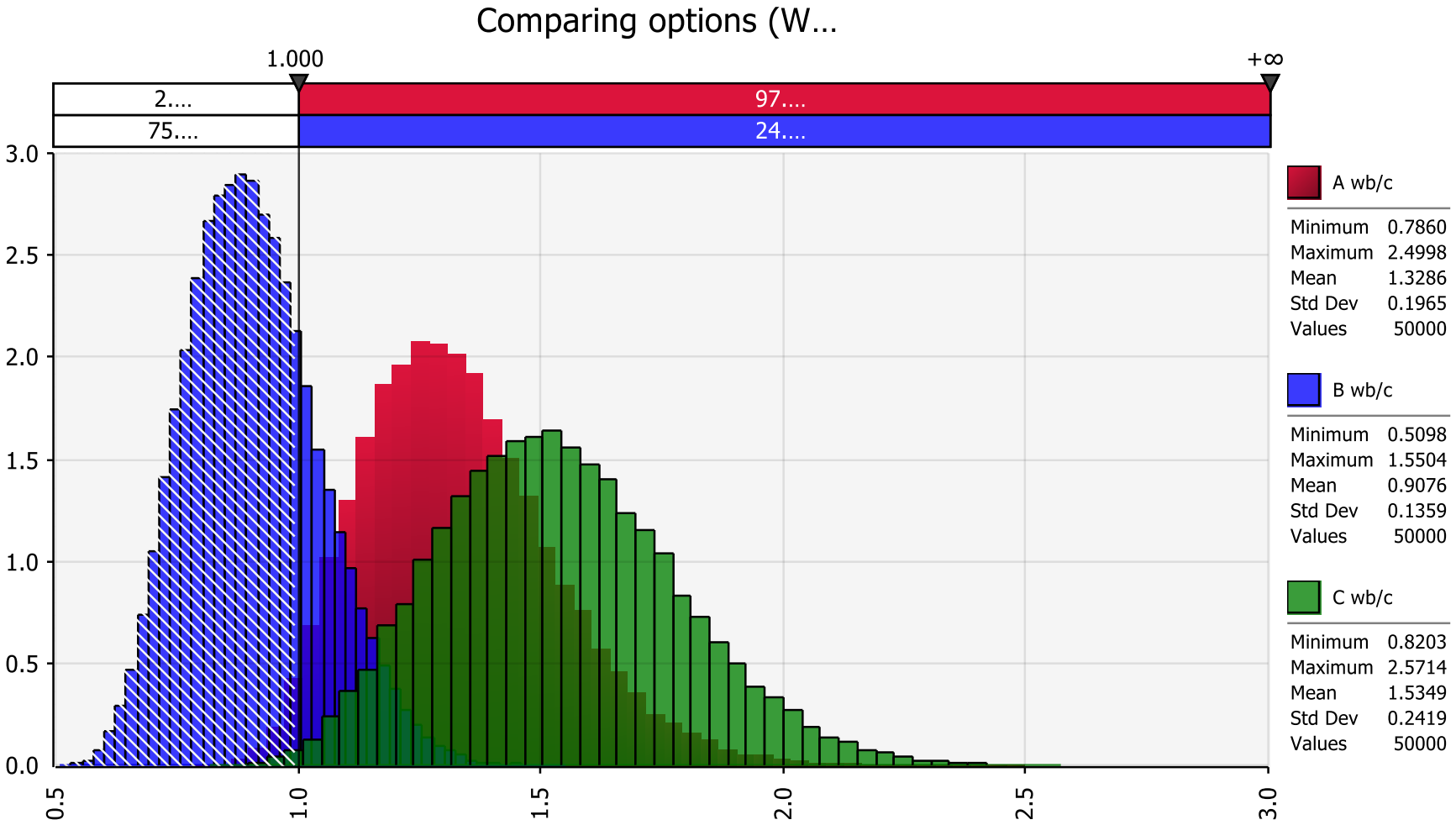
Decision-making

Elements in disease control




Animal movement control
Wildlife
Vectors
Fomites
Spread
Monetary costs and negative impacts
Costs
WEIGHTED B/C RATIO or NET BENEFIT
Host response
Host infectivity
Host susceptibility
Averted economic consequences, both trade and non-trade-related
Benefits
Logistic feasibility
Detection system
Infrastructure

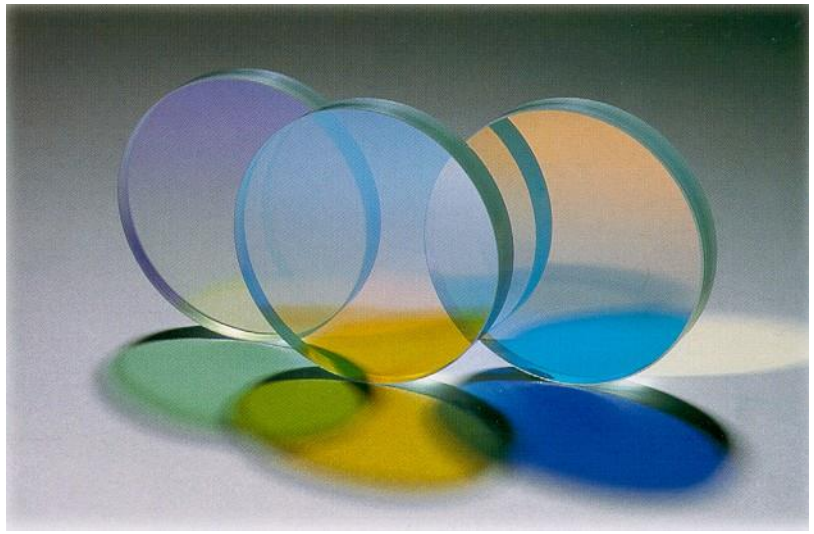
$$WBC = \frac{P(success) \times Benefits}{Cost}$$


Comparing options (W...
1.000
+∞
2....
97....
75....
24....
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0.5
1.0
1.5
2.0
2.5
3.0
A wb/c
Minimum 0.7860
Maximum 2.4998
Mean 1.3286
Std Dev 0.1965
Values 50000
B wb/c
Minimum 0.5098
Maximum 1.5504
Mean 0.9076
Std Dev 0.1359
Values 50000
C wb/c
Minimum 0.8203
Maximum 2.5714
Mean 1.5349
Std Dev 0.2419
Values 50000

Trade is based on trust

Trust is based on transparency

- Efficiency of veterinary services
- Surveillance systems
- Disease reporting



Conclusions

All countries have the right to protect their human, animal and plant health

Science-based approaches should be the basis to establish and maintain trade