Foot and Mouth Disease in UK and Our National Plan

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Foot and Mouth Disease

- Extremely Contagious Viral Disease
- Affects Cloven-hoofed Animals
  - Cattle
  - Swine
  - Sheep
  - Goats
  - Deer
  - Hedgehogs
  - Elephants
FMD - Clinical Signs

- Fever
- Lameness
- Blanching of Coronary Bands
- Excessive Salivation
- Vesicles Progress to Erosions
  - Tongue, lips, mouth, snout/muzzle, coronary bands, interdigital clefts, soles, teats, & rumen pillars.
Oral lesion on dental pad of Sheep
FMD - Clinical Signs

- Clinical Signs Dependent on Strain of FMD virus and Species Infected
- Cattle and Pigs are markedly affected
- Sheep and Goats are mildly affected
- Pigs Amplify a FMD Outbreak
  - Exhale 400 million IU / day
FMD Epidemiology

- **Horses:**
  - Not susceptible
  - Not biological carriers
- **Humans:**
  - Not susceptible
  - Short term survival in throat
    - For 24-30hrs after inhalation of high dose aerosol
    - Experience at USDA Plum Island Disease Laboratory
FMD - Epidemiology

- Incubation: 1 - 5 days
- Duration of C.S.: 1 - 4 weeks
- Morbidity: 90 - 100 %
- Mortality: Adults <1%, Neonates >50%
- Inapparent Carrier: 2.5 years (Cattle)
FMD Virus Excretion

- Exhaled air
- Vesicular fluids
- Milk
- Semen
- Manure
FMD - Transmission

- Aerosol – Primary
- Direct Contact
  - Raw contaminated garbage
  - Infected semen (AI)
  - Contaminated biological products
- Fomites (Indirect Contact)
  - People
  - Facilities
  - Vehicles
  - Water source
  - Feed and Bedding
FMD Virus Stability

- pH Sensitive: <6.5 or >11.0
- UV Sensitive: (sun light)
- Survives in moist, organic-rich materials
### FMD Virus Survival

<table>
<thead>
<tr>
<th>Product</th>
<th>Survival Time</th>
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<tbody>
<tr>
<td>Pork, frozen</td>
<td>&gt;55 days</td>
</tr>
<tr>
<td>Bacon</td>
<td>10 - 183 days</td>
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<tr>
<td>Bone Marrow</td>
<td></td>
</tr>
<tr>
<td>- Beef</td>
<td>10 - 30 weeks</td>
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<tr>
<td>- Pork</td>
<td>6 - 24 weeks</td>
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<tr>
<td>Butter</td>
<td>4 months</td>
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FMD Virus Survival

- Meat Products on Packaging Materials (Cardboard, Wood, Metal)
- Stored at 4° C
  - Serum 33 days
  - Blood 55 days
  - Ground Lymph Nodes 57 days
  - Fat 398 days
FMD Virus Survival

- Hides - green, salted at 4°C for 352 days
- Manure - Summer for 1 week
  - Winter for 24 weeks
  - Frozen, liquid for 180 days
- Hay for 200 days
- Straw for 4 weeks
FMD Virus Serotypes

- 7 Types (with > 60 Subtypes)
  - A (A₅, A₂₄, etc)
  - O (O₁, etc)
  - C (C₃, etc)
  - SAT-1
  - SAT-2
  - SAT-3
  - Asia-1
FMD

- Vaccines are available
  - Type and Subtype Specific
  - No Cross Immunity
  - Decreases Clinical Signs and Virus Excretion
  - Does Not Prevent Infection
  - Short duration of Immunity (3 – 6 mos)
Foot and Mouth in the UK - 2001
Epidemiology of 2001 UK FMD Outbreak

- **Initial sequence of events**
  - C.S. of FMD noticed in swine on 2/19/01
  - 8 km (4.5 mile) quarantine of slaughterhouse and adjacent farm
  - Once FMD confirmed, all 300 animals were slaughtered
  - Traced source of the infected pigs to 2 farms
Epidemiology of 2001 UK FMD Outbreak

- Destroyed all FMD infected animals
- Traced all movements to and from the FMD infected farms
- Trace farms and adjoining farms checked for evidence of FMD
Epidemiology of 2001 UK FMD Outbreak

- Index case was a swine farm
- Source of disease was the feeding of FMD contaminated products
- Despite clinical signs, owner did not immediately report the problem
Epidemiology of 2001 UK FMD Outbreak

- FMD spread to 7 nearby sheep farms
- Minimal clinical signs
- Sheep moved to Hexham market exposing more sheep
Map of Initial FMD spread

Foot and mouth
Tracing the epidemic

348 sheep are exported to Germany via Dover before the outbreak is identified.
Week 3 – 180 Confirmed cases

Spread of the disease

Week three
Over 180 confirmed cases of foot and mouth throughout England, Wales and Scotland.
One confirmed case in Northern Ireland.

Animals slaughtered: 119,994
Awaiting slaughter: 411,090

One confirmed outbreak in north-west France.
FOOT and MOUTH DISEASE

CON I NFECTION AREA

CLYWY TRAED at GENAU

RHA I DAN
MAFF Regulatory Response
(Ministry of Agriculture, Food & Fisheries)

- Emergency Regulations
  - Movement Restrictions
    - All animal movements are banned
  - Quarantine areas
    - 8km infected zones
- Intensive Biosecurity
  - Vehicles
  - People (animal workers, milk truck drivers, etc)
World Response

- Importation bans
  - European community banned all livestock imports (includes France, Belgium, Germany, Republic of Ireland)
  - Animals previously exported to France, Germany, Belgium were traced and slaughtered

- Economic Impact
  - Millions of dollars in producer compensation and trade loss
United States Response

- Previous Import ban for live ruminants and ruminant products due to BSE
- USDA issued Interim Rule Jan 27, 2001:
  - Prohibits all importation of live ruminants and swine, products derived from ruminants and swine.
  - Pork products and other imports (machinery) in transit are quarantined at ports of entry
United States Response

Precautions for travelers include

- Awareness campaign at airports
  - (self quarantine if visited a farm)
- Baggage inspection
- Footbaths (where applicable)

Providing technical assistance

- Sending more than 40 federal and state employees to aid in surveillance, tracing animal movements and carcass disposal.
Week 4 - 400 Confirmed Cases

Spread of the disease

Week four
Nearly 400 confirmed cases of foot and mouth throughout England, Wales and Scotland. One confirmed case in Northern Ireland.

Animals slaughtered: over 100,000. New extensive slaughter plan aims to create a buffer zone around infection sites by killing all animals even if healthy: possibly up to 1 million animals to be culled.

One confirmed outbreak in northwest France, and four suspected cases in the Netherlands.
Week 6 - 900 Confirmed Cases

Spread of the disease

Over 900 confirmed cases of foot and mouth throughout the UK.

Animals slaughtered: over 600,000.
Total animals authorised for slaughter so far: over 900,000.

Mass vaccination programme could start soon to provide ‘firebreaks' around infected areas.

Herds will now be culled on suspicion of an outbreak without the need for laboratory verification.

One confirmed case in the Irish Republic, two in France and twelve in the Netherlands.
Spread of FMD during the 2001 UK Outbreak

- Movement of FMD Contaminated Animals, People, and Equipment
  - Livestock owners
  - Feed suppliers
  - Milk trucks
  - Farm workers
  - Farm service providers
Foot-and-Mouth in Great Britain
Confirmed daily case incidence

SOURCE: Defra
Spread of FMD during the 2001 UK Outbreak

- Delayed Diagnosis and Disposal of FMD Cases
  - Index case not reported
  - Observation of livestock difficult due to adverse conditions and multiple sites
  - Lag in epidemiologic investigations, diagnosis, and disposal due to lack of trained personnel and available facilities
Due to the outbreak of foot and mouth disease elsewhere in the country, it is necessary for us to take precautionary measures to restrict access on County Council countryside land.

We urge you to avoid walking or riding on or through this site.

Your cooperation is appreciated.

BEDFORDSHIRE COUNTY COUNCIL
Death in the Dales

Front page
comment

THOSE are the pictures we hoped we would never have to publish. The grim reality of foot and mouth is brought home by farmer Richard Barron as he surveys the remains of his dairy herd.

For only the second time in the history of the Craven Herald we have abandoned our traditional and famous front page to convey the full impact of the catastrophe which has now engulfed our community.

Mr Barron welcomed us on to his farm, despite his personal tragedy. He wanted the world to know the full horror of the cull now engulfing farmers which have formed the backbone of our community for so many generations.

For those readers who fear that this will be an end to the traditional Herald front page we say: Rest assured. This is an exceptional step at a time of great suffering reflects the gravity of the crisis facing our community. We realise that these pictures may upset some readers. However, this is the reality of what is going on in our community and it is our duty to record it not just for today's reader but tomorrow's researcher looking back on the history of Craven.

More than 100 farms have lost their entire stock as the Craven Herald goes to press. The figure is sure to rise. 80,000 animals have been slaughtered, another figure which is climbing rapidly even as our presses roll. We have turned up at farms to take pictures to illustrate the unfolding story only for grown men to burst into tears, unable to record their suffering. For some, a life in farming has come to an end.

Let us not forget either those whose livelihoods depend on the farming industry. As one Malhamdale farmer put it: "It's as though the clock has been turned back 100 years. There is absolutely nobody about; the village is dead."

Sadly, businesses will receive no financial compensation. Rates relief, possibly, but for many family run shops, hotels and tourist outlets, these are horrendous times. We urge all local people to rally round and support our community as much as possible.
‘MAFF is tearing the heart out of Devon, it shows no compassion for any of God’s creatures’ – Noel Edmonds

‘Unite to fight the inhuman killing’

FOOT and mouth campaigners Noel Edmonds is urging farmers to form a solidarity group to fight the Ministry of Agriculture’s “aggressive” culling policy in Devon.

The TV personality and businessman, himself a farmer, believes the only way they can beat MAFF’s policy of “decimate and decimate” is for farmers to stand together to save their livestock and their futures.

Mr Edmonds, who lives at Jacobstow, near Okehampton, whose foot and mouth blights the rural community, is proposing a campaign to save the “Heart of Devon” from any more unnecessary killing.

Andrea Kuhn

message that “Heart of Devon” will become a testing ground for researchers attempting to reverse the MAFF culling policy.

It will be a way of solving the isolation of farmers who are not getting anything like common information, sympathy and support outside the Ministry.”

Mr Edmonds’ campaigner is a member of the Home Guard, who has been flooded with calls of support in his battle to save 22 sheep, which are due to be killed seven weeks after a neighbouring farm became infected.

Mr Edmonds said he was supporting the “Heart of Devon” group to fight MAFF in cases where it has acted aggressively and inconsistently, but would not fight culling per se.

Mr Edmonds said: “No one disputes the need for culling in certain cases but the current rate does not affect the apparent downturn in the number of cases.”
MAFF Regulatory Response
(Ministry of Agriculture, Food & Fisheries)

- Euthanasia
  - 4.2 Million animals
  - 10,511 Premises
- Carcass Disposal
  - Rendering
  - Burial
  - Incineration
**FOOT AND MOUTH CRISIS**

Ministry finally releases figure for controversial carcass pit

MARK FASHMORE

**FOOT AND MOUTH**

**THE TRUTH**

**By Mike of the Daily Mirror**


The Government brushed the foot and mouth disaster under the carpet so that the Labour Party could proceed smoothly with the General Election. But in the Westcountry it is still a sensitive problem, involving going on at an alarming rate: scandalous animal welfare issues continuing; huge questions about disposal remaining and fear,stigma, confusion and anger still rife in our farming communities.

It is all going largely unreported in the national media but the Western Morning News has steadfastly refused to be silent and tomorrow we publish an in-depth, special investigative report into all aspects of the on-going crisis.

We pin down Agriculture Minister Michael Gove and top vets opposite, we reveal Alpine £1m 4 armed police story which the rest of the country is not being told.

**KILLERTON EVENT**

**SUNDAY 27TH MAY**

**PLANT FAIR**

11AM - 5PM

Wonderful range of specialist growers - Ferns, Grasses, Herbaceous, Bedding etc

Advice on Lawn Care

**HALF TERM ACTIVITIES**

**WEDNESDAY 30TH MAY**

**STEPPING STONES**

2.30pm - 4.30pm

Thames Stories 1.30

Dragon Stories 2.00

**THURSDAY 31ST MAY**

**DRAGON TREASURE HUNT**

2.30pm - 3.30pm

The Royal Agricultural Benevolent Institution

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**£7.5m cost of mass burial site revealed**

The Ministry of Agriculture has finally revealed that the controversial Ash Moor burial site in North Devon cost £7.5 million. If the pit is eventually used to house carcasses from infected premises it will cost an additional £2 million.

The price tag covers the cost of acquisition of the site, construction and preparation for operations, as well as allowing the site to be kept in readiness for another year.

The WMA has learned that the burial pit, between Meeth and Petrockstone, was acquired from the company Innerss in a deal worth approximately £1.5 million.

The cost of the three barrows pushed costs up the remaining £6.5 million. The WMA has since won a court case against the company to get the money back. The case centred on the £1 million. Ash Moor protestor Joe Skinner said: "It seems to me that they have spent too much on it, what were their motives?"

How to make a difference

**DONATIONS TO THE WANP**

The Watercress Alliance are still appealing for donations to help the Westcountry's farmers and agriculture-related businesses which have been, left devastated by foot and mouth disease.

If you would like to help, you can pay your cheques into our NatWest account made payable to the Westcountry's Farmers and Agriculture-related Businesses. Please include your address and a telephone number.

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**ANDREA KUHN**

won't be able to afford to put any pressure on them," he said. "I think it's an awful lot of money."

He claimed the site was used as the £5 million maintenance costs would be three or four times that figure.

"It took MAPP officials over a month to track down the site at Ash Moor, agree a price and complete the necessary paperwork. The carcass buck had not even been dug out and the site would not be only £5 million to maintain, it would be an incineration plant and a site which is not in use."

The cost to the WMA was £500,000, which would be increased by another £500,000 for the eventual disposal of the carcasses. The site was now being used.

"The costs are significant and the site needs to be kept available for the future," he said.

Regional director of the National Farmers' Union Anthony Gibson said: "As well as the financial costs, there is also the emotional cost to farmers. They are not only financially affected, but also psychologically affected by the situation."
Keep Foot-and-Mouth Disease OUT of America

Remember to declare any visits to farms or contact with livestock.

Remember to declare all food and agricultural items in your possession on your Customs form.

Failure to do so could result in a fine of up to $1,000.

USDA
U.S. Department of Agriculture
Animal and Plant Health Inspection Service
FMD - Prevention

- Control of importation of animals and products
- Education and public awareness
- Strong disease & intelligence networks
- Decontamination and disposal of foreign garbage
USDA Prevention Activities

- Increased Awareness
  - Slaughter Plants
  - Auction Markets
  - Approved Establishments
  - Veterinary Schools
  - Accredited Veterinarians
  - Customs Officials
  - Immigration Officials
USDA Prevention Activities

- FMD Information
  - Presentations
  - News articles
  - Fact Sheets
- Surveillance of Flights, Ships, Vehicles
- Screening Incoming Packages
USDA Prevention Activities

- The Animal and Plant Health Inspection Service (APHIS) awarded $1.8 million in grant money.
  - National Animal Health Emergency Management System (NAHEMS)
  - Intended to increase the level of animal health emergency preparedness
Prevention Activities

NAHEMS

• Federal and State Governments
• Universities
• Private Veterinarians
• Industry
Overall Goal of the NAHEMS Strategic Plan

• To have, in operation in the United States, a World Class National Animal Health Emergency Management System (NAHEMS) by 2005
NAHEMS Action Guidelines

- Strengthen partnerships and networks
- Reinforce coordination between State, Federal and industry
- Support animal disease research and diagnostics
- Improve disease monitoring and surveillance, both domestically and internationally
NAHEMS Action Guidelines

- Expand training, education and awareness
- Build a national preparedness and response infrastructure
- Develop emergency preparedness and response contingency plans
What Would the U.S. Do If We Found a Foreign Animal Disease?

- Determine the nature of the outbreak
- Initiate an appropriate measured response
- Eliminate the disease
- Ensure resumption of business and trade
Keys to Emergency Response

• Prompt reporting of C.S. and diagnosis of FMD
• Strong animal health infrastructure
• Adequate laboratory facilities
• Resources and skills necessary to rapidly eliminate any outbreak
Foreign Animal Diseases

- Accredited veterinarians are required to report all suspected Foreign Animal Diseases (including FMD) to state and federal animal health officials (CFR title 9, 161.4)

- All reports received by USDA are promptly investigated
Farmer or Veterinarian detects a problem -> AVIC/State Vet -> Hold Order

AVIC/State Vet:
- Investigation w/i 24 hours
  - Clinical Diagnosis
  - Laboratory Diagnosis

Hold Order:
- FADD

FADD:
- Investigation w/i 24 hours
  - Clinical Diagnosis
  - Laboratory Diagnosis
FMD
Control and Eradication

- Infected zone
  - Area surrounding the infected premises where infection is assumed or likely

- Surveillance zone
  - Test susceptible species for evidence of disease
Single Premises Response

- Limited to one location FADD investigates
- Quarantine farm
- Confirmed diagnosis
- State, Federal and industry agricultural authorities handle situation
- Depopulation with existing funds by State and Federal personnel
Multiple Premises in a Confined Area Response

- Everything in previous response plus:
- State and Federal agricultural authorities handle the situation
- Depopulation with mixture of State and Federal contingency funds
- Regional and National coordination

Multiple infected Premises, limited geographically
Multiple Premises in Multi-States Response

- Everything in a 2nd level response plus:
- Depopulation with emergency funding
- Not enough Federal & State team members
- Additional personnel required
- Regional, National and international coordination

Example:
- 1914 U.S. FMD Outbreak
- 2001 U.K. FMD Outbreak
Emergency VMO Program

This program identifies nonfederal veterinarians who have volunteered to be temporary USDA, APHIS employees in an outbreak.
Potential Risks to Disease Eradication in U.S.

- Clinical Presentation of Many Exotic Diseases Can Resemble Endemic Diseases Thereby Delaying Diagnosis
  - Foot-and-Mouth Disease (FMD)
  - Vesicular Stomatitis (VS)
  - Swine Vesicular Disease (SVD)
  - Vesicular Exanthema of Swine (VES)

- Vesicular diseases are clinically indistinguishable from each other
Potential Risks to Disease Eradication in U.S.

Intensive Livestock Management Factors Contributing to Rapid Disease Spread

- More Animals in Less Space
  - Greater number of infected animals
- Increased Movement of Animals
  - Distance to Markets
  - Specialized Growers
Potential Risks to Disease Eradication in U.S.

- Animal Euthanasia and Disposal are Critical Issues
- Litigation Could Delay Disease Eradication
- Delays Result in Increased Disease Spread