Foot and Mouth in Britain: the first 60 days—a problem of dystopia?

Introduction
This paper is written from the middle of a crisis. It is fully accepted that it will be out of date not merely by the time it is read but even by the day after it is posted. As I was starting to put it together, the national press reported the government’s chief scientist as saying that the foot and mouth disease (FMD) was ‘past its peak’, that the government’s policy ‘will eliminate the disease’ and that the average number of outbreaks ‘had fallen to 20 to 30 cases per day’. A crisis has been defined as an ‘ill-structured situation’. The chief scientist’s remarks came on the day after the number of outbreaks hit a near-record level of 41. (Outbreaks, more often reported as ‘confirmed cases’, are counted by the number of farms, not by the number of animals affected.)

To suggest that, as with the BSE crisis, the government’s scientific spokesman may be speaking in a paid role, may be either a slur or a truism. The author would recommend, having seen the reportage of governmental announcements that BSE was not a health concern, and having heard its chief scientist repeating the message, a degree of caution. To lay a statistical trail in the middle of an ill-structured event may be problematic. And we are indeed in an ill-structured situation. New cases occurring tens of miles from already-infected areas are blamed variously and by varying sources on transmission by tourists, by traffic, by birds and by illicit animal movement. Calls for and against larger (or smaller) scale slaughter and for or against vaccination abound and the government has seemed at various times to be completely against to ‘thinking about it’ to preparing to vaccinate, though without taking a decision.

A crisis may be ill-structured, but failure to handle it appropriately permits, or even directly leads to, disaster. In the UK, the outbreak is still—with the number of animals awaiting slaughter in excess of a million—reported as a crisis. Elsewhere, it may be seen as having been allowed to escalate to disaster.

Foot and mouth disease
Foot and mouth is a highly-infectious viral disease which affects, by and large, animals with hooves. It is a relatively mild illness causing blisters in the mouth, on the snouts of pigs and on the hoof/leg margin. The blisters eventually burst and secondary infection, particularly in ‘dirty conditions’, may occur. The overall animal fatality (including that from preventable secondary bacterial infection) is around five percent, mainly concentrated on neonatal and very young animals. It also causes temporary drops in milk and growth yields. The extent to which this mortality is primary (due directly to the disease) or secondary (due to infection of tissue exposed through burst abscesses) does not seem to have been quantified.

In addition to affecting hoofed animals (interestingly, excluding horses), the disease can also be transmitted to rats, hedgehogs and (irrelevant in these circumstances but again interesting) elephants.

The virus can be spread by direct, soil or air contact. It can accordingly be carried from place to place by movement of species (including humans) that are not affected.
as well as those that are. In those animals affected, there is a two week incubation period between contact with the virus and the appearance of symptoms. This delay period has particular implications for control (see below).

**Foot and mouth disease prevention**

Until fairly recently, foot and mouth (FMD) was endemic in flocks and herds throughout the world. Attempts to eliminate it appear to have taken a parallel route to the apparently-successful methodology of eliminating smallpox: that is, initially by vaccination and then by declaring disease-free areas. The payoff of this has been the free trading of meat and livestock between certified disease-free areas without herd vaccination and with apparent certainty of safety. This control is regulated by the Office International des Epizooties. In order to take part in this free trade, a nation must:

To be listed as an FMD free country or area where vaccination is not practised, a nation must:

- have a record of regular and prompt animal disease reporting;
- send a declaration to the OIE that there has been no outbreak of FMD and no vaccination has been carried out for at least 12 months, with documented evidence that an effective system of surveillance is in operation and that all regulatory measures for the prevention and control of FMD have been implemented;
- not have imported animals vaccinated against FMD since the cessation of vaccination.

Nations in this group, then, will not generally accept animals or meat from nations outside the cordon which have a program of herd vaccination or have endemic disease.

For an island state like Great Britain, this should (perhaps!) have ensured continuing immunity. Regrettably, given the vagaries of international trade it clearly does not. It appears at this stage that the virus was introduced through pigswill, and suggestions for the original transmission vector have included a tourist’s sandwich through the (otherwise illegal) importation of cheap unlicensed meat by the military or (in what seems to have been a socio-political blunder) Chinese restaurants. The lesson to be learned is that there is an extension of ‘no man is an island’ to ‘no island is an island’.

**History of the outbreak**

On 20 February 2000 an abattoir in Essex in the east of England was identified as reporting a case of FMD in animals sent for slaughter. Immediate pointers were to farms either on the Isle of Wight (100 road miles to the southwest) or Buckinghamshire (80 miles to the west).

Ministry of Agriculture, Fisheries and Food (MAFF) announced on the same day that a further suspected case had been found on a farm at Stroud, Gloucestershire—70 miles further west from Buckinghamshire. Within a day, a five-mile exclusion zone in which the movement of farm animals was prohibited had been thrown around the Essex abattoir. The next day, all livestock movement throughout the country was suspended—initially for seven days.

On 22 February, two days after the initial finding, a piggery on Tyneside—now 300 miles to the north of the abattoir—was fingered as the possible origin of the outbreak.

A week after the initial finding, the number of cases (farms involved) had risen to 22. A week later, it was rapidly approaching a hundred. On 23 March—roughly a month after commencement—it passed 500, and less than a fortnight after this it exceeded a thousand. Figure 2 shows a cumulative tally of the number of confirmed cases.

Notes
ment throughout England, Wales and Scotland. Footpaths and bridleways in both affected and non-affected areas were closed. General entrance to affected farms was prohibited. At entrances to other farms, and at entrance to rural areas remaining open to the public, disinfected straw mats and boot scrubs were provided. The clear aim of this coupled with restriction of livestock movement was to limit the spread of the disease via human and farm animal vectors.

Early calls for vaccination of farm animals—in infected areas, in a ring around such areas or complete national herd protection—were rebuffed by MAFF and the government. A policy of slaughter of herds on infected farms, coupled with slaughter in immediately-neighbouring holdings, was considered the optimum approach (figures 4 & 5). The stated aim was to bring the outbreak under control whilst maintaining the vaccine-free status of the majority of the national herd, so enabling rapid transition back to national disease-free status.

There was some historical precedent in this approach. The last outbreak of FMD in Britain started in October 1967. Its rate of spread peaked a month later, with more than 400 farms affected in a week, then the rate gradually dropped. The outbreak was officially deemed over on June 4 of the following year. In the eight months, 2,364 farms had confirmed cases and 433,987 animals were slaughtered. It might have been expected that, given the lessons and experience of that model and experience, a further incidence could and would easily have been contained.

Problems and limitations of the control measures

Perhaps the major problem encountered in these control measures has been that the decision on the killing and disposal of sheep, cattle and pigs was taken without apparent regard for capacity. It required a very large number of veterinary surgeons to confirm disease outbreaks, a larger number of skilled slaughterers to kill the animals humanely and a rapid means of disposal of the carcasses. The lack of adequate numbers in the first two cases resulted in a failure to slaughter affected and neighbouring herds within the required twenty-four and forty-eight hours of onset respectively. The limited availability of slaughterers was made worse by a further, and probably unforeseen need.

This compounding problem was that the disease hit when pregnant ewes were on winter pasture—on moorland above, or sometimes on fields hundreds of miles from, their home farms. This was not suitable for lambing, or in some cases capable of maintaining the stock. They could not be moved without a licence, and licences were restricted to movements of only a few hundred yards. The only remaining alternative was a further mass slaughter. By early April, there was a backlog of 350 thousand condemned animals awaiting slaughter for disease control, whilst requests for movement-restriction slaughters had risen to almost a million sheep and over 300 thousand pigs.

Despite early involvement of military assistance, disposal of the dead presented a similarly severe problem. Strategies of burning, of burial and of rendering have all been implemented but, again in early April, the number of carcasses awaiting destruction had risen to 400 thousand. Again the problem was compounded. In the case of at least two mass graves, in Durham and in Wales, it was reported that the bodies would have to be dug up again because of the risk of pollution of the water table (figures 6 & 7).

It may fairly be said that the control measures were insufficient to prevent disease spread. In some cases they may also been of dubious value. Starting from the last observation, it seems clear that piles of dead animals left in the open should be regarded as probable centres of infection for disease spread, notably via the rat and carnivorous bird routes.

Restrictions on non-vehicular traffic have in some cases been criticised as overreaction and in others as insufficient. In the first case, many local authorities reacted by closing all non-urban (and even in some cases urban!) paths. In my own village, a path leading from a main road by the side of the church and between

![Figures 4 & 5: a policy of slaughter of herds on infected farms and immediately neighbouring holding was implemented. All images courtesy David Burgess.](image-url)
industrial buildings down to the factory estate was closed, though there were no fields or animals bordering it. In another case, a friend reported that a canal towpath running through the centre of a nearby town was closed. A maximum penalty of £5,000 ($A13,750) for ignoring closures was imposed. Notices were placed at the path entrances, and plastic ‘incident tape’ was strung across them as a further reminder. Over the two months of the outbreak, this tape has been torn down in many areas where the footpaths clearly present no threat to vulnerable animals. Interestingly, no case of prosecution for infringement of these particular regulations seems to have been reported.

On the other hand, the continuance of all traffic on roads running alongside and through livestock areas brings into question the entire concept of closure. Vehicles can clearly carry, drop and spray mud over very large distances. Whilst many farmers have moved their vulnerable stock away from roadside fields, this has not always been possible (and there is still in any case the problem of rat and passive infection-route spread). And as has already been noted, sheep graze on open moorland in upland areas. Roads running through this moorland have, in general, not been closed. The risk of infection being carried to these animals must be regarded as very high; it is probably more surprising, then, that there has been a generally low, isolated and sporadic spread of infection amongst such flocks.

The political imperative

In many respects, the crisis can be seen as a political one. Britain does not (outside of occasional belligerence) encounter large-scale physical disasters. As a relatively isolated, geologically and climatically stable island mass, it is seen as immune to the more massive disasters occasioned by earthquake, flood, hurricane and tornado experienced elsewhere in the world. Perhaps for this reason, perhaps because of the traditional resistance to change of the administration, there is no experienced national disaster coordinating body. This is a very weak position for a government to find itself in. The experts are scattered, ‘out there’ and not necessarily friendly with each other or predisposed toward governmental priorities.

The government has found itself in a weak position also because of the fiascos surrounding its handling of (most recently) the GM foodstuffs controversy—where it initially supported, and then was forced to back down from, a pro-cultivation policy. Earlier administrations’ (and scientific advisors’) mistakes on BSE and ‘salmonella-in-eggs’ add to its problems. There is now (for the UK) an unusual public willingness to question and to criticise handling of, particularly, agricultural crises. So throughout the crisis, the government has found itself on the defensive. By demonstration of this, it has found itself in the unusual position of having, despite maintaining an unsalable labour lead, to postpone the general election.

Being in a defensive position is not the best environment for managing a crisis situation. There is a need to be seen to be in charge of the situation—as Perrier discovered when they had to withdraw every bottle of its sparkling mineral water, worldwide, in 1990 and was subsequently swallowed up by Nestlé. A political imperative, then, has been to demonstrate seizure of control of the situation. Hence perhaps a maintenance of early stances on control-without-vaccination and other seemingly dubitable measures. Allied to this has been an international imperative of appearing to control the situation. This need has again been enhanced by failure to control BSE in the early stages. In that epidemic, the advisable early step of culling infected cattle and placing adequate restrictions on meat sales was replaced with a ‘wait and see policy’ that...
made the situation far worse than would otherwise have been the case. This time around, international standing may best have been seen as being maintained by ‘taking the situation in hand’ with immediate culls.

A further complicating factor is the political power of the farming industry in the UK. Despite its low economic input (see below), it has a disproportionate lobbying influence on political parties of all persuasions. This has perhaps most recently been demonstrated by the government’s delay and effective withdrawal from implementation of its electoral promise to ban foxhunting—the Bill being finally brought forward when an election was pending, when it was known that the House of Lords would not accept it and when it would accordingly run out of parliamentary time.

This power of the farming lobby is in part traditional—the National Farming Union (NFU) has a large membership and very adequate funds. However, the focus of concern has changed as small landowners and tenant farmers have become poorer, leaving a situation in which the majority voice is that of the very large (and accordingly very rich) landowners. These are people who both have influence and can supply (or withhold) large amounts of funding to political parties. Where there is a conflict between small sheep farmers (whose market may be mainly internal and who will therefore want their flocks protected) and large pedigree herd owners (whose market is largely external and who would therefore stand to lose considerable income through inability to sell abroad), the voice of the latter is more likely to motivate the views of the NFU.

Accordingly, the NFU has been consistently against immunisation; and the government has again consistently, until very recently, upheld that view.

What has also become clear during this crisis is the closeness of the NFU not only to the government as a lobbying body but to the Ministry of Agriculture. According to one commentator:

The union had a team of several hundred experts who had similar mindsets to officials within the Ministry of Agriculture and enjoyed good and regular access to them. This double closeness and consequent effectiveness has been likened to the National Union of Miners setting policy for the energy industry.

Economic factors
Unlike BSE, a disease fatal both to animals and (as vCJD) to humans, FMD is primarily an economic problem. It causes output losses to the farming industry. It is necessary to ask, then, how the financial effects of the disease, and of the effects of the control methodology on the rest of the economy, balance.

The author lives in a semi-rural part of central England. Though he would not claim to be privy to a unique insight, he lives close to a national ‘tourist area’ and has had opportunity to speak with several of those who are involved in the tourist trade—publicans, hoteliers, restaurateurs, guest house owners. All have seen their trade income massively diminished—perhaps (on a guesstimate) to around ten percent of what might be expected at this early time of the year. Given that the current estimates for spread are from the current half-thousand to a projected four thousand farms and a culled half the entire herd, it may reasonably anticipated that this level of attrition of the ‘tourist’ trade will continue, unless preventative measures change, at least summer.

Put bluntly, the farming industry accounts for around 1½ percent of UK national income. The export trade represents a small proportion of this. The tourist trade represents a considerably larger slice of the economy. Though it is accepted that a good deal of this comes from visitors who ‘take the tour’ of towns and cities (traditionally London, Stratford and Edinburgh), the internal and external markets for visitors to the countryside considerably exceed total revenue in what is a depressed agribusiness. Under EU policy as administered by the UK government, agribusiness has been heavily subsidised, with subsidies going in the main to large landowners. (This is in contrast to France, where smaller-scale local farming has continued to be encouraged). Such has led to aggregation of holdings and a business elite of powerful landowners who have and continue to dictate farming policy whilst holding a very powerful (perhaps, outside of the Ministry of Defence, most powerful) parliamentary lobby.

Just as inertia and reliance on historical precedent is typical of central government and its agencies like MAFF, the interest of the large landowners is best served by the exclusion of public debate and democratic process. (Large landowners have been at the forefront of opposition in recent debate about ‘opening up’ the countryside to walkers). Their economic interests are best served through insistence of governmental compensation, at market rates, for slaughtered livestock. Such a policy, which appears at surface level not to differentiate between the ‘rich’ and the ‘poor’—the small farms and the huge estates—in practice plays into the hands of the latter because they alone are able to raise, through their inherent economic power, loans at reasonable rates to see them through the crisis. The almost-certain eradication of a large number of small animal farms is therefore advantageous, and criticism of the governmental policy of slaughter rather than vaccination perhaps understandably muted. Major holdings are more likely to be reliant on export trade.

With impeccable timing, on 21 March, exactly 30 days into the crisis, it became apparent that the Minister for Agriculture was privately disposed to offer a large number of small-scale farmers an ‘early retirement’ package, concentrating agriculture yet more firmly in the hands of large agribusiness.

Total losses to the farming community have been estimated in the hundreds of millions of pounds. An early estimate of losses to the tourist industry, from the Centre for Economics and Business Research, put the likely figure at around £5 billion. Later estimate by the Institute of Directors put total economic losses at £20 billion. Compensation to farmers for culled animals has been agreed at 90 percent of current market value. A farmer at the centre of early spread through trading has just been awarded a reported £1 million. Compensation to the (primarily small and therefore often marginal) tourist traders has neither been agreed nor given. We return to the political power of the two lobbies.

The situation at day sixty
The sixty-day cutoff for this paper was chosen for no reason other than that a cutoff was needed and it seems to provide a convenient point. According to MAFF figures at that date (20 April):

- 1,412 cases had been confirmed
- 1,294,000 animals had been slaughtered
- a further 513,000 were identified for slaughter
- 264,000 carcases still required disposal.

Curiously, the MAFF website noted on this date that ‘Animals culled in Cumbria in a voluntary sheep cull (250,000) and animals culled in Anglesey (45,000) are not included’.

Notes
The government, via its chief scientist and with the support of MAFF, is insistent that the disease spread is now under control, and there is some indication from the figures that this may indeed be the case. Figure 2 certainly seems to show a trend downwards from the polynomial curve. However, caution is needed. The UK remains, by analogy, in a state where a hiatus might become a one-year one. (with vaccination) have been a two-year period during which animals have been bought, sold, moved, intermingled and mixed, and with the support of MAFF, is insistent that the nearest I get now is to know which produce, it is quite likely that the animal came from, but often even which farm. The nearest I get now is to know which produce, it is quite likely that the animal was born in one part of the country, raised in another and only fattened at a nearby farm.

The centralisation of abattoirs — in the UK engendered by European Community Regulation aimed at (ironically!) disease control, has ensured that possibly-infected animals must sometimes travel great distances to slaughter. Again where my local butcher would have slaughtered and prepared local produce, he now buys in from an abattoir that may be slaughter- ing animals from hundreds or, originally even thousands, of miles away.

The overall effect of these changes is that where disease was in the 1960s contained within a relatively small area around the Welsh borders, it is today effectively and actively spread. Animal transport in open trucks further implies the possibility of airborne if not soil- borne contamination on route.

For a disease with rapid onset, this is perhaps not too much of a problem: it can be detected and controlled rapidly. However, FMD with its two-week incubation period (and it has recently been suggested that the period can be much longer) is more of a problem. By the time of detection, we have a relatively long period during which animals have been bought, sold, moved, intermingled and spread. Without a detailed audit trail investigation — which would take several more weeks — we have no way of deter- mining what has gone where, been in contact with what and where these other animals might have gone.

In short, by the time of detection of the disease, it can be expected to have spread throughout the country and abroad. This is precisely the situation we have found ourselves in, and exactly the one that does not seem to have been recognised.

There is a saying that history repeats itself. There is a later assertion that ‘history does not repeat itself; people repeat themselves’. That is where we seem to be. Both the Ministry of Agriculture (MAFF) and the National Farmers’ Union (NFU) appear to have taken the view that the current outbreak could and should be contained according to previous experience. What they do not appear to have taken into account is that customs, legislation and practice have changed over the period. This is a clear example of dystopia — of difficulty in, of limitations and objectives and the farming community see is what they want to see: an unfortunate and containable outbreak of a transmissible disease. What they are encountering is very different: an unfortunate and, if the same measures are used, uncontainable outbreak. The response is identical, based on history. The circumstances are very different.

What should have been done?
The slaughter policy demonstrably failed. Focus on the historical has resulted in a dystopia — a distortion of vision — that failed to see the present. This dystopia also apparently failed to notice that the tourist business was economically and socially more important than the meat and livestock trade.

In their defence, the crisis caught MAFF and the government by surprise. FMD had been absent for a generation. It was, effectively, unimaginable. Contrarily, the job of a crisis manager is precisely to think the unthinkable: to plan in advance for the event that ‘can never happen’. This had clearly not been done and needs doing in the future.

The decision not to vaccinate appears to have been taken on the shaky economic ground that it would hamper the export trade. Although European Regulation was cited, it is notable that when eventually approached the European authorities did not demur from giving consent. Fifty-five days into the crisis, the government appeared finally to be gearing up for vaccination, though only in the heavily-infected areas of Cumbria and (perhaps) Devon; though at day 60 still no decision had been made.

Given the size of the cull even at this stage, it seems likely that holders of unaffected stocks will have their hands full satisfying the domestic market. The export trade at this stage should seem less of a problem. The price of live animals internally will rise sharply with demand — farmers are already suggesting that compensation based on current values will be woefully inadequate to enable re-stocking.

In these circumstances, it is on balance hard to see why vaccination was not immediately employed. The tourist trade would have been protected and there...
would have been no need for a cull that may eventually involve half of the farming stock. Compensation would have been far lower and internal markets for meat and live animals would largely have been unaffected.

At day sixty, one can rest assured that a policy of vaccination still brings an apoplectic attack from the larger pedigree breeders who depend heavily on export. However, despite their heavyweight political status it has to be realised that their contribution to exports is considerably less than the cost arising from the mishandling of the crisis. Most of the smaller farmers—the majority in terms of numbers—whose average income has been estimated at a mere £9,000 ($A25,000) a year would have been protected.

Conclusion

At this, probably still early, stage of the crisis (or disaster), any conclusions must be tentative. Future events may demonstrate that the response was the best possible. Equally, though, the state of play appears strongly to indicate that the government, driven by MAFF and the NFU, in playing a weak hand has got it wrong. What should have been a short-lived crisis has been turned into an ongoing disaster. The author therefore offers some thoughts based on the current state of play.

- The main areas of infection were remote from the place of detection (the Essex slaughterhouse) and the reported original site (the piggery on Tyneside). One was on the opposite side of the country from Tyneside, in Northwest England/Southwest Scotland, the other some 400 miles away (by road) in the southwest.
- This apparent immediate cross-national spread makes this occurrence significantly different from the 1967 event.
- New events need new thinking. If an emergency management lesson is to be learned, it is that response should not be based solely, or necessarily even mainly, on historical experience—on hindsight. In a rapidly-changing society, what was applicable and appropriate yesterday is not necessarily so today.
- In this crisis, the lobbying power of the NFU coupled with its closeness to MAFF has ensured a suboptimal response to a crisis. There needs to be a national disaster 'centre of excellence', independent of traditional and entrenched power structures, able to offer guidance and assistance in major untoward events.

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This article has been refereed