

## Royal Agricultural Society of England Annual Scientific Lecture 12 February 2003

**An Animal Health Strategy for the 21st Century**  
**R. J. Sibley BVSc MRCVS**

### **Introduction: view of Devon grasslands**

This area, where I have lived and worked for the past 22 years, is everything that we would like the countryside to be. Beautiful, diverse and productive. Its main function is to convert grass into meat and milk via livestock, which have been farmed here for centuries. The beauty and diversity has evolved from that primary function.

Its future is threatened, not by pollution, urbanisation, or pestilence, but by the possible demise of livestock farming. One of the pressures on the industry is being brought to bear by issues of health and welfare. This pressure is not disassociated from the other forces that have affected our livestock producers in recent times.

This picture is particularly relevant as it shows, in the foreground, a farm that has been affected by bovine tuberculosis for several years. You will notice the tree planting. This farmer has been driven into submission by this disease, and has taken the option to give up. The TB has beaten him.

### **A health and welfare strategy – Curry report and BSE**

The Policy Commission on the Future of Farming and Food recognised the impact that animal health disasters have had on farmers and the country as a whole. “Abysmal” may be an exaggeration, but it has not been a good record. And it has probably not been just a matter of “bad luck”. Not even an “act of God” as one senior civil servant described it.

BSE has cost the country over £4 billion. It has been an animal health disaster, which has changed the industry. The causes have been subject to massive inquiry and deliberation, but there is no doubt that the structure of our industry, and the husbandry practices that we adopted, led to the massive amplification of what may have been a minor problem.

### **A health and welfare strategy – Curry report and FMD**

Foot and mouth disease cost the country over £3 billion pounds. This animal health disaster really highlighted the failures in animal health policy throughout the whole chain. It demonstrated the linkage between livestock and the countryside, between agriculture and tourism. It also graphically demonstrated the fragility of our livestock populations and the vulnerability to infectious disease.

### **A health and welfare strategy - Curry report and TB**

And finally as a demonstration of an ongoing animal health disaster; bovine tuberculosis. An escalating disease problem.

### **Increasing disease risks – livestock densities**

If the disease disasters of past and present are not simply bad luck or coincidence, what is it that has predisposed our livestock to such problems?

The economic drivers that have changed our production systems over recent years have been the main forces for change. Increased efficiency and productivity have been paramount for the survival of our livestock producers, and those forces will continue. However, those forces have undoubtedly predisposed our livestock to disease and health problems. This change has not been deliberate, and reflects the absence of a strategy and health policy that should have adapted at the same time as the changes. A Luddite approach of reversing the changes in livestock production will not work in the long term. The future of livestock production will depend upon its efficiency, and its competitiveness. A small exhibition agriculture, downgraded by the pressures of minority groups, is not acceptable, not sustainable. Exporting

our agricultural production will not keep our countryside.

The first major risk that we have is the distribution of our livestock. Concentrating our 40 million or so farm animals into small areas of an already small country is a hazard in itself. The cattle are not surprisingly in areas of grassland, and the pigs in the East. Indeed, 20% of our pig population is concentrated around the Humber estuary. This caused some excitement when FMD started spreading south through Yorkshire!

### **Increasing disease risks – movements**

Having our livestock concentrated in small areas is bad enough, but we have developed trading systems that move large numbers of animals between these areas. Not only that, but we mix them all up before moving them! The pig industry recognised this risk some years ago and developed a pyramid system that ensures all movements are one way. The sheep and cattle industries seem reluctant to embrace such change, instead choosing to mix and match. A major change in attitude and understanding is required here. Imagine what would happen if you placed a dozen sheep with FMD into this market and then spread them around the country (picture of Longtown market sheep sale).

### **Increased disease risks - Livestock husbandry**

What became evident through the FMD epidemic, to people who should really have known anyway, was that farm sizes have increased markedly over recent years. Economies of scale have been a key change in livestock production systems. Unfortunately, the expansion of farms has not been within a single boundary, and so a farm such as this --a 550 cow dairy herd – now occupies 15 different premises scattered around the area.

During the winter months, over 600 cattle are housed in these sheds, mixing closely and interchanging their pathogens. Introduce an infected animal into a population such as this, carrying a pathogen to which they are naïve, then you have a disease disaster. Fortunately, this herd is expertly managed with an active health plan, and so such risks are managed, but many units have grown to scales such as this with little regard to health and disease control. Husbandry and management must move with risks.

This is not all down to the farmers. Some of the regulations and policies forced upon them for other reasons have, and will, increase the risks of diseases. The retention periods for sheep led to some of the unnecessary movements of cull ewes in that fateful February. NVZ regulations will make it difficult to manage slurry during the winter months on many farms, potentially increasing environmental contamination of the cow in order to supposedly, protect the environment.

### **Increased disease risks – genetic change.**

The drive for efficiency has pushed genetic changes towards higher yields and conversion efficiencies. Despite the best efforts of breeders to claim and promote health benefits, the main incentive for selection is yield and efficiency. We want a cow that gives 60 litres of milk a day, and delivers it in 10 minutes. That inevitably opens its teat ends and predisposes the cow to mastitis. This is not an inevitability, but a 10,000 litre cow needs a 10,000 litre cowman to look after it. In many cases, our husbandry and resources have not kept pace.

### **Increased disease risks – Global trade**

While we trade in the world's animals and animal products, we will trade in their diseases. This challenge was recognised in the 19th century, when cattle plague decimated our cows and led to the creation of the State Veterinary Service and the veterinary schools. The challenges remain, and while we have FMD virus endemic in the world, our own livestock are at risk.

As we reduce domestic food production and satisfy market demands by increasing imports, we unwittingly increase the risks of importing disease. The problem of national biosecurity is getting worse.

Isolationism is not a realistic option, and so our strategy must take into account that global challenges will continue, and we must manage them.

### **Objectives of an animal health strategy– International and domestic trade.**

We should define the objectives of an animal health strategy for the 21st century. The value of our farmed livestock depends upon trade. Their very existence is dependent upon their value, and so any animal health strategy must ensure that their value is maintained. So, we cannot prevent or prohibit free movement to maintain trade, but we must ensure that the inherent risks are managed. This is

already done on an international scale, with regulation and legislation within and without the EU. There may be more room for improvement on a domestic front. The distribution of bovine TB around the country by the movement of infected animals has been a salutary lesson.

### **Objectives of an animal health strategy– productivity and efficiency**

This is a key component of a realistic and sustainable strategy. Our livestock agriculture will only survive if it responds to market demands, and price will be a major part of that. Fortunately, in most circumstances, animal health produces production efficiency. A healthy animal is a productive animal. Disease is a financial cost to farms, yet in many cases it is tolerated as inevitability.

A proper strategy for health should deliver production and efficiency benefits, and this will help pay for the delivery of the strategy. There has been a failure of the veterinary profession to demonstrate the economic benefits of good health management, and a failure of the farming industry to embrace the technology that is available to improve and maintain health. Economic models are developing, and sectors of the profession are addressing these issues. Poor health and disease are costing the typical dairy farmer over 4 pence per litre in production costs, much of which can be saved by better health planning. The best farms manage to reduce that cost by a half.

### **Objectives of an animal health strategy– food safety and quality**

There is a close connection between animal health and food safety and food quality. Many diseases are transmissible to man via food products, some of which are asymptomatic in the animals that harbour them. E Coli 0147 is an example. The control of such hazards may not be best placed on the farm, but risk management will undoubtedly involve the animal at some stage. Our strategy must address these issues.

### **Objectives of an animal health strategy – animal welfare.**

The biggest threat to an animal's welfare is disease. Our strategy must address the realities of health and welfare rather than the perceptions. It is this objective that is most open to the well intentioned but sometimes misguided influences of minority groups. The biggest current threats to cattle welfare are mastitis, lameness and infertility. Over 20% of our dairy cattle are lame at this very moment, and over a third of them will get a painful condition of their udder in the coming year. Yet we have the most complex and bizarre legislation for calves which requires them, for example, to have tactile contact with another, and we end up shooting thousands every year because they have been devalued to the point where they are a liability rather than an asset.

### **Objectives of an animal health strategy – human health.**

Our strategy must address the potential for animals to spread human disease either directly or indirectly. This differs from food safety issues, as the animals themselves may harbour diseases that are directly communicable to man. Abortion in ewes, and leptospirosis in cattle may pose a danger to susceptible workers and those having contact, and so our strategy should address such issues to assess and manage the risks.

### **Components of an animal health strategy – biosecurity**

Once we have established the objectives of the strategy, we must consider ways of meeting them. Delivering the strategy will require some key components, with some allocation of responsibilities. Our first key component is to introduce a strategy for biosecurity.

Biosecurity is a process of risk assessment and risk management. It is not a straw mat at the farm entrance, which really embodies the general misunderstanding about this concept. Washing the wheels of the livestock haulier as he brings in another load of livestock of unknown disease or immune status would seem somewhat futile.

Biosecurity has various levels. A more robust national biosecurity programme is essential. FMD and Classical Swine Fever were infectious diseases that we did not have. They were brought here, and while we maintain an animal population that is entirely susceptible to infections such as these, we must strengthen our national boundaries.

Regional biosecurity has not figured in this country, but is a feature of some other livestock producing countries, and may have some value here. Our beef producers of Northern Scotland and the Orkneys have managed to increase the health status of their herds by proper health controls and programmes. Their status is protected by their regional co-operation and the movement of cattle out of the area rather than in. Other regions may be able to follow this example, and improve health on a regional basis, protecting their

stock from incoming diseases.

The biggest room for improvement is in local biosecurity at farm level. Farm specific biosecurity planning delivers health benefits with relatively little cost. The pig and poultry industries have led the field in this, and our other livestock producers must adapt and adopt these principles.

### **Components of an animal health strategy – Surveillance**

There is currently a review of surveillance strategy, prompted by the Phillips report into BSE. We reminded Lord Phillips that BSE was discovered by veterinary surgeons whose interest was aroused by the presentation of clinical signs with which they were not familiar. They reported and investigated, to discover a novel disease. Unfortunately, the rest of us were unaware, and were not informed. The information was one way.

The review of surveillance will hopefully conclude that a broad approach using all the resources available will allow a comprehensive, yet structured collection and dissemination of data and information. This must be based on clinical, pathological as well as laboratory data. The data must be selected, cleaned, and analysed continuously and must reflect the true picture of health and disease.

This report (Surveillance of cattle diseases VLA Summer 2002) tells me that the major diseases of concern in our cattle population are salmonella, fluke, and the major infectious endemic diseases of cattle such as BVD and IBR. Yet, on my day to day travels around the farms, the disease picture is very different.

This is what I see – (picture of digital dermatitis) – affecting something like a million cattle this winter. A severe disease that is diagnosed clinically, new to the UK several years ago, yet not recorded nor appreciated in any of the official surveillance statistics. It has no laboratory diagnosis, and is rarely seen by vets themselves, and so escapes the loop of data collection. Our surveillance strategy must be inclusive, and reflect the current health issues as well as scan for novel diseases and changes in conditions.

### **Components of an animal health strategy– Priorities**

Our strategy will not be able to be total, and comprehensive. Priorities will have to be established, and this leads to the necessity to establish a system of surveying and measuring outcomes rather than inputs.

Because of our preoccupation with laboratory diagnosis, and our research programmes tending towards specific pathogens we have concentrated on specific disease conditions in our various current health schemes. Companies that have products that are able to fit into the programmes have encouraged these. We should not attempt to control or eradicate a disease just because we have the wherewithal to do it. It is better to focus attention on the outcomes of disease processes, such as the economic costs, the implications for health, consumer benefits and welfare benefits. This will ease the process of establishing priorities, and also define the beneficiaries.

### **Components of an animal health strategy - research**

It was Professor Brian Follet who observed that we knew the detailed molecular structure of the FMD virus, but didn't really know how long it survived on your boot. There are gaps in our knowledge, and a robust animal health strategy will identify relevant voids and direct research towards filling them. We are not alone, and there is a wealth of information out there, and it is heartening to see the international co-operation that exists within the scientific communities. One of the greatest appeals of this profession is that you are never far from someone who knows a whole lot more than you, and who is willing to freely share their knowledge.

### **Components of an animal health strategy– resources**

The resources for any sustainable strategy must be established from the start. There is an opportunity for partnerships, and some lateral thinking. In reality, the beneficiary should pay, but identifying the beneficiaries may not be simple, as there will be joint responsibilities and benefits in many cases.

The system of prioritisation and the use of economic models should make this job easier, but suffice it to say that if any part of the strategy is not beneficial to anyone, then it should not be included.

The concept requires a change in attitude from all parties. Investing in health will save paying for disease. The £3 billion paid out over FMD may not have been totally avoidable, but a robust and workable national health strategy would undoubtedly have minimised the losses.

### **Components of an animal health strategy – delivery.**

And here we arrive at the final hurdle, which may be the biggest. We have to establish delivery routes and mechanisms to make sure that our strategy reaches the animal. A strategy that supports a massive bureaucracy without delivering health, welfare, productivity and food safety will be a black hole for money and will fall into disrepute. Currently, we have several disparate routes of delivery, which can be coordinated and strengthened.

We have national animal health programmes that are regulated and legislative. We have voluntary schemes, and we have farm specific health controls, which are piecemeal and fragmented. All of these have their strengths and weaknesses.

### **Example of a national animal health programme – Bovine tuberculosis**

There has been a national programme for the control and eradication of bovine TB for over 40 years. It is a tale of success and failure, where the objectives have changed due to the changes in risks and pressures that have overwhelmed the control programme. Many of the increased disease risks that we mentioned at the beginning of this lecture are having an effect on the prevalence of TB in our cattle, such that the control programme is failing. Science has not kept pace, and we are applying a strategy that does not suit the disease. Rather than change the strategy, we change the objectives – bizarre!

With an annual spend of nearly £50 million, we maintain the primary objective which is to protect human health, but are failing in the secondary which is to remove the infection from this food producing species. A rethink is needed, and emphasises the need to ensure that any animal health strategy or disease control programme is dynamic and reviewed.

### **Examples of a national animal health programme – diseases of dairy cattle.**

Bovine TB pales into insignificance compared to the other major diseases of cattle. The number of dairy cows culled prematurely is staggering. Only half of the cows reared ever reach an age, which allows them to generate profit, spanning their entire productive life repaying their rearing costs. The reasons for culling are many, but over 60% are forced culls, and the three major reasons are infertility, mastitis and lameness. Diseases that have changed little in incidence over recent years, with infertility getting worse.

Note that these are not pathogen specific – they are outcomes – which miss surveillance.

These conditions, and the economic costs that they represent to the industry, highlight the need to avoid a minimalist strategy that includes only health and disease that is of a legislative concern. We must include economics as well.

### **The cost of premature culling for disease– BSE slaughter rates.**

This complex graph shows the losses of cattle through BSE. Remember that these animals were killed for reasons of welfare and food safety – not for disease control. For controlling BSE, it would have been better to keep them all alive. A living animal with BSE is of no risk to anyone, it is only when it is dead that it becomes a risk.

Anyway, it shows that at its peak, 1000 cows a week were being slaughtered with this disease, which has now been controlled through an effective and well constructed control programme that is a credit to the scientists who devised it. Created, I might add, without knowing what the pathogen or agent was that caused it, but using clinical surveillance and epidemiology and pathology to determine controls.

### **The cost of premature culling for disease– BSE slaughter including OTMS cattle.**

You can see that the destruction of affected cattle, and those killed to attempt to accelerate the demise of the clinical cases, is heavily overshadowed by those destroyed at the end of their productive lives to protect any potential spread into the human food chain. The over thirty months scheme removes about 800,000 cattle a year at huge cost to the state.

Some lateral thinking in health strategy may have highlighted the benefits of including the health conditions that we just talked about. Improving the fertility, lameness and mastitis of the national dairy herd would have reduced the culling rate – they account for over 50% of all these cows presented here. Increasing the productive life of a dairy cow by just 1 lactation, entirely achievable and managed on some of our most efficient farms, would have reduced the numbers presented to OTMS and saved the state some £270 million in the last 7 years.

A programme to improve cow longevity by reducing the prevalence of mastitis, lameness and infertility

would have been a wise and effective investment in health.

### **Delivery of the Strategy – stakeholders**

Finally, our strategy must identify the stakeholders and their responsibilities.

Farmers and producers are the key element in the strategy, and without their support and enthusiasm the plan will fail. Farmers will support it if they see benefit. Adding cost without value will not work.

Incentives and disincentives will have to be established, with the veterinary profession improving its ability to demonstrate the cost benefits of better health.

Other options that are possible are linkage with subsidy, through modulation, and linkage with codes of practice. The current draft cattle welfare codes contain very welcome recognition of the importance of health and health planning in cattle welfare and productivity. Price differentials, efficiency rewards, and other commercial incentives may also be possible.

A key component of the delivery will be education and training. These two farms (pictures of well-managed intensive unit and small farm of low standard) get the same price for their milk, and the smaller one receives proportionately more support. Yet they only require the same training. As it happens, the owner of the big farm here is expert in his job, hence his success, but the strategy must encourage him, not remove him.

### **Delivery of the Strategy. Stakeholders – Processors and retailers**

Processors and retailers will undoubtedly be involved as stakeholders. Slaughterhouses and processing plants are a key component in the surveillance strategy, and all the various parts of the chain have obligations under due diligence legislation to minimise the risk to human health. However, simply passing that risk back to the producer may appear to be the simplest option, but is not always acceptable. Processors must accept their responsibilities.

### **Delivery of the Strategy. Stakeholders – Consumers**

Consumers are taking more of an interest in how their food is produced, and the industry are now giving them the opportunities to help pay for some of the benefits that they enjoy. It will be disingenuous of the consumer to demand standards of production that add cost without adding value, only then to purchase products that are simple cheaper.

### **Delivery of the Strategy. Stakeholders– the State**

The State has regulatory and statutory interests, as well as EU and world trade obligations. They have opportunities to be the hub of the strategy and reconnect with the industry that they serve. They should also see an animal health strategy as an opportunity rather than a threat, in terms of establishing world markets, protecting our own markets, and improving the efficiency of UK agriculture.

It is important that the State Veterinary Service does not take a minimalist view of the proposals. We have proposed that in the first instance, they chair an animal health forum of all interested and genuine stakeholders, to take this strategy forward.

### **Delivery of the Strategy. The stakeholders – the vets.**

You would not expect me, (Mr Chairman,) to miss out on the veterinary profession. I see ourselves as having a significant and key role in the development, structuring and delivery of an animal health strategy for the 21st century.

Our first role will be helping to list and prioritise syndromes, diseases and conditions that are of relevance to a comprehensive strategy and fit the objectives.

Developing practical health programmes that will deliver benefits to livestock and farmers has been a long tradition of the veterinary professional, and these skills can be further enhanced by education and training. BCVA have already trained over 700 veterinary surgeons in the basics of health planning, and have produced a computer software programme to allow veterinary surgeons to deliver effective health planning onto farms. This includes, surveillance, risk assessment, risk management and action planning for health and welfare.

Veterinary surgeons will undoubtedly be main conduit of information and technology to and from the farm. We are the interface between the animal keeper and the strategy. We will be a key provider of education and training. Our own practice runs training programmes for farmers and stockman as part of the health-planning programme. These are oversubscribed; there is a hunger for knowledge.

We will be involved in surveying health, collecting data and cleaning it for central collection and analysis. It will be essential for that data be used, and passed back to modify and generate health programmes.

And we will be responsible for the ultimate delivery of farm animal healthcare to where it will matter – the farm. Health planning will become a key component of this delivery mechanism, and it is heartening that this concept is being embraced by some many progressive veterinary practices and farmers.

#### **An Animal Health Strategy for the 21st Century – conclusion.**

- The strategy should be broad and inclusive.
- The strategy should be effective and efficient
- The strategy should focus on outcomes rather than inputs
- The strategy should be financed by the beneficiaries
- The strategy should co-ordinate and focus research in applied veterinary science
- The strategy should be dynamic and sustainable.

The views expressed in this lecture are not necessarily those of the Royal Agricultural Society of England