

**Evaluation of Cattle Health Schemes in certain
European countries, with particular
reference to Paratuberculosis**

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**A report to the Milk Development Council
based on a three day study tour to
France, Germany and the Netherlands**

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Executive Summary

- The MDC kindly provided funds for the Executive Director of CHeCS to visit a number of European countries to look at how they managed various non-notifiable diseases of cattle. Day visits were made to France, Germany and the Netherlands. Contacts made and details of the discussions are included in the Report.
- Prior to that Jim Scudamore, Defra Director General, Animal Health & Chief Veterinary Officer had written to his European counterparts on behalf of CHeCS to try and get a picture across Europe. As one would expect the response was patchy but this information combined with what has been found on the more detailed MDC funded tour gives a pretty good picture of the European framework for control, monitoring and eradication of non-notifiable diseases of cattle.
- The MDC expressed particular concern re Johnes/Paratuberculosis (Para TB) and any link with Crohns disease in humans. Thus this report has tried to highlight this whole area. An overview based on OIE data is given re the increase of Johnes on a worldwide basis.

Of much relief is that as far as it is possible to ascertain it is only the UK that is worried about the link between liquid milk consumption and Crohns. Various comments and views are expressed about this.

- Finally the report concludes by listing a number of areas where the MDC could provide a valuable role in helping create better understanding about non-notifiable diseases of cattle to dairy farmers.

Introduction

The uptake of cattle health schemes in the UK has been very low and despite a number of initiatives, it is only where EU funding has been obtained has any significant progress been made. The Highlands & Islands Cattle Guarantee Scheme (HI Health) and the Welsh Black Cattle Society Johnes eradication scheme are the two best examples of this. Details of the Welsh Black scheme are included as Appendix 1.

It has also become very clear that when live animal exports are allowed, then the UK will be severely penalised, not least because of its recent history with particularly BSE. Most of our European neighbours will place derogations upon us because of our lack of knowledge and control in non-notifiable diseases of cattle, such as BVD, IBR, Lepto and Johnes.

It was for this reason that CHeCS asked Jim Scudamore, Defra Director of Animal Health & Chief Veterinary Officer to write a letter on our behalf to ascertain the position in other European countries for the monitoring, control and eradication of the four non-notifiable diseases of cattle of interest to CHeCS.

As one would expect the response to this letter was somewhat patchy and the CHeCS Board subsequently decided to approach the Milk Development Council to provide some limited funding for travel to visit near European states to make more personal contacts and to ascertain just what is happening elsewhere and what can be learnt to encourage uptake in the UK.

Consequently visits have been made to the Animal Health Service, Deventer, the Netherlands; to the Institut für Biometrie, Epidemiologie und Informationsverarbeitung, Hannover and the Fédération Nationale des Groupements de Défense Sanitaire du Bétail (FNGDS), Paris.

Each visit lasted a day and much useful information was gleaned although in all three cases it is quite difficult to see how the systems actually work in practice. For certainly in France and the Netherlands they have a long history of co-operation, collaboration and mutual solidarity, concepts not exactly prevalent in the UK!

In order to standardise our approach, a list of relevant questions were drawn up and used as the basis for discussion (see Appendix 2).

CHeCS are very grateful for the financial help that the MDC have provided to fund these short trips. The whole exercise has proved more difficult than had originally been expected due to the UK's lack of knowledge about what is happening with our near neighbours. For this reason prior to any overseas trips, we held extensive discussions not only with Defra officials, notably Lawrence Gibson, but also with Neil Cutler, at the time the NFU Chairman of their Animal Health Committee, Professor Kenton Morgan from Liverpool Vet School and Francis Anthony, lately President BVA. From them we gained contacts and much useful background information.

It was very reassuring that everyone we met was interested in the CHeCS approach and extremely impressed with the Technical Document, to which all cattle health schemes and farmers participating in them must adhere. Brief details on CHeCS are given in Appendix 3.

Hopefully the MDC will find this report of use. There are contact details provided in Appendix 4 as requested. Further an overview section on Paratuberculosis (Para TB) has been included because of its high profile in the UK and the apparent link with Crohns disease. This concern, much to our relief, appears to be a problem unique to us!

Bovine Paratuberculosis - An Overview

Paratuberculosis (Para TB), or Johne's disease, was first recognised in Europe in 1895 and during the 20th century has been detected in an increasing number of countries. The disease in cattle occurs mainly in cattle industries that have developed from British and European breeds. However, it is not restricted to those breeds and continues to spread. It occurs worldwide in several other domesticated species, including goats, sheep, deer and South American camelids. It has also been recorded in a wide range of other domesticated, wild and zoo animals. Limited ability to identify disease-free populations and herds from which to source animals, and to identify and remove infected animals, has prevented total exclusion of infection from importation.

All the evidence indicates that this chronic insidious infection is spreading. It is estimated that 10-50% of dairy cattle herds globally are infected. Paratuberculosis is an OIE List B disease and reporting on the occurrence of this chronic disease is variable. In 1998 OIE Report of Status and Control Measures for Paratuberculosis records the presence or suspicion of paratuberculosis in bovines in about half the countries that reported. Paratuberculosis was less commonly reported from the Caribbean, Africa and by the republics that formerly comprised the USSR.

The availability and quality of information on the herd prevalence of paratuberculosis within infected countries is also variable. Although paratuberculosis is a notifiable disease in many countries that reported to OIE in 1998, some of the reasons why under-reporting occurs are:

- Very few reliable investigations of prevalence have been undertaken.
- Animal health authorities and industry have other priorities.
- Infection may be present for many years before the farmer is aware.
- Clinical signs of Johne's disease can be confused with other diseases.
- Consequences of reporting may discourage farmers from investigating.

Even countries that have developed herd certification and/or control programmes for paratuberculosis in cattle, provide relatively little information on the activity or progress through the OIE reporting system. At the IDF workshop on M.paratuberculosis in Brussels in May 1999, it was reported that the occurrence of paratuberculosis in Europe was significantly under-reported by OIE compared to studies that had been undertaken to estimate prevalence in Denmark, Germany and the Netherlands. In 1998, the Netherlands reported to OIE that 20-40% of its herds were infected but later work indicates that this underestimated the true herd prevalence.

Those countries where the true prevalence of infection is low, such as Finland and Norway, appear to have good knowledge about the occurrence of the disease. Sweden is stamping out infection that was re-introduced in cattle in the 1970's, although the infection has been largely confined to beef cattle and has not been detected in pure dairy herds. In Australia, Western Australia, Queensland and the Northern Territory have enforced movement controls and stamped out infection when detected in introduced and in-contact animals. Most countries however do not have accurate data on herd prevalence.

Despite the lack of accurate data on herd prevalence of paratuberculosis, evidence is that the infection is endemic in most countries with large developed dairy industries. For instance, in 1998, paratuberculosis was diagnosed in approximately 330 cattle herds in Japan, the majority in dairy and beef herds in Hokkaido. In south-eastern Australia, where most of the country's dairy herds are situated, approximately 1500 dairy herds are officially known to be infected. Since 1996 the State of Victoria has implemented a wide scale Test & Control Programme (TCP). This has a legal component in that farmers must comply with the requirements of the programme. They have now gone further and implemented a Johne's Disease Calf Accreditation Programme (JDCAP). In New Zealand, 60% of dairy herds are thought to be infected.

During the 1990's, studies were undertaken in the USA and several European countries to estimate the proportion of herds infected with paratuberculosis. Across the main dairying States of the USA, the herd prevalence in 1996 was estimated to be 22%. Similar estimates were made in dairy herds in Arnsberg, Germany and in Belgium. A serological study biased towards older cattle in Austria in 1997 found evidence of infection in 7% of cattle herds and a postal survey of dairy farmers in England and Wales suggested that 17% of herds might be infected. In 1998 the Netherlands' survey found serological reactions in 55% of herds and a bulk milk survey in Denmark found 47% of herds tested positive. It is important to note that the objectives, sampling methods and tests used in these published studies have varied considerably and they should not be used for drawing conclusions about the comparative occurrence of paratuberculosis in these countries or in other countries that are not listed. They are presented to illustrate that paratuberculosis is common in cattle in those countries that have conducted surveys to estimate its prevalence.

The causal organism of Johne's disease has been linked to the human disease of the bowel known as Crohns disease. No direct link between Johne's disease and Crohns has yet been shown to exist. However in the UK both the Food Standards Agency and Defra have advised that the precautionary principle should be observed and that measures should be taken to minimise the numbers of Johne's disease organisms that enter the food chain. To date, their strategies have focussed on the dairy herd and milk. The concerns expressed in the UK do not appear to be replicated elsewhere. As the French noted "we do not have a Prof Hermon-Taylor to deal with!" Appendix 5 lists Current Research on detection of Para TB in milk.

Armed with this information, the Milk Development Council might usefully fund some work to ascertain the level of prevalence of Johnes in the UK dairy herd and particularly to see whether there are breed variations and to get a better handle on the economic costs of this insidious disease on farm.

General European responses on how they deal with certain non-notifiable diseases of cattle

Overview

Some countries appear to have no official schemes for these four diseases such as Portugal. Any monitoring or control is established on a voluntary basis between the farmer and his own vet. Other countries such as Spain have not responded to requests for information. As one would expect the Dutch have provided a great deal of information.

The key point from what follows is that most key European cattle countries have commenced or completed national eradication programmes for BVD, IBR and to a lesser extent Lepto, and some will/are refuse/refusing to trade cattle with countries where these diseases are still present. This is allowed under EU legislation.

Johnes/Para TB is different. This has a worldwide distribution and is listed by OIE as List B (i.e. a serious economic or public health importance). Countries can be split into those where the disease is of low prevalence or almost absent such as Austria, Norway and Sweden or those where the herd prevalence exceeds 15% such as Denmark and Belgium.

Finland

IBR - First case detected in 1990. In total only six herds have found to be positive. Since 1994, Finland has been recognised as IBR free and therefore has been granted additional guarantees relating to IBR/IPV by the EU Commission. Official eradication programme is based on bulk milk samples tested using the ELISA method. Maintenance of IBR-free status is certified by continuous official monitoring of milk and blood samples. In 1999, for example, 24,872 bulk milk samples from dairy cows and 2,920 blood samples from slaughtered beef cattle were analysed.

BVD - A voluntary programme since 1994 and still continuing. Prevalence of BVD-antibodies in bulk milk samples is very low (0.4-0.5%). Aim still to eradicate disease from Finland. The principle of their programme is to divide herds into different categories depends on their BVD status. Decided by serological analysis of blood and/or bulk milk samples by using the ELISA method and virus isolation if sero positive animals are found. All BVD positive animals are slaughtered.

The key control measures are restrictions on animal movements or extra testing.

Lepto - Neither clinical cases nor antibodies towards Lepto hardjo have been recorded in Finland. Blood samples for serological analysis are taken from all bulls which are in quarantine before movement into semen collection centres. The rest of the samples examined have mainly been taken for export purposes.

Johnes/Paratuberculosis - Controlled on a voluntary basis. A pilot survey is currently being conducted among dairy cattle which might lead to a voluntary health control programme.

Denmark

IBR - Has been eradicated since 1991 and Denmark was recognised as free by the EU Commission decision 93/42/EEC (same as Finland). Eradication and surveillance programme run by the Danish Dairy Board in collaboration with the Danish Veterinary Service.

BVD - A control programme is in place run by the same organisations as for IBR. Working hard to eradicate.

Lepto - Not a problem in Denmark - no control is needed.

Johnes - As existing diagnostic tests are not considered sufficient for control, no programme is run. There is on-going research under a general project title established by the Danish Dairy Board "The Integrated Cattle Health and Milk Quality Project" (The Kongeaa Project).

Luxembourg

Only run voluntary control schemes for IBR and Johnes/Paratuberculosis under the supervision of the Administration of Veterinary Sciences. Lab tests used are:-

For IBR - ELISA g B
g E

For Johnes - Coproculture
ELISA serum

They have sent details of the two schemes but they are in German!

Sweden

IBR - Free from IBR and has, through Commission decision 98/362/EC, amending decision 93/42/EC received additional guarantees. Since 1998, testing of animals is on a monitoring basis. The organisations which administer the monitoring programme is the Swedish Dairy Organisation (Svensk Mjolk), whilst tests are analysed by the National Veterinary Institute (NVI), Dept of Virology at Uppsala.

BVD & Johnes - A voluntary control programme for BVD was started in 1993 and for Paratuberculosis in 1998 largely funded by Government. BVD is administered and tested as for IBR. For Paratuberculosis the scheme is run by the Swedish Animal Health Organisation and tests analysed at the NVI, Dept of Bacteriology. No cases have been found in dairy cattle. A full compensation scheme is in place for beef animals. 100% for animal value and 50% for production loss.

Switzerland

IBR - A national eradication policy was organised and implemented in 1978. By 1992, 50,000 animals had been slaughtered and by 1995 Switzerland was designated officially free from IBR.

Lepto - Not considered to be of significance.

BVD - Not notifiable and no data available. Close co-operation between practitioners and universities over herd health problems - mastitis, fertility.

Johnes - "A disease to control but not an active control". Incidences low. Six positives in 1999. Tests carried out serologically or via biopsies.

Switzerland, largely because of geography and history, has been able to maintain fairly secure import barriers.

Norway - BVD is a notifiable disease. Para TB in cattle has been diagnosed, sporadically but no cases since the late 1970's. However they have a National Bovine Para TB Programme started in 1996 looking specifically at imported cattle and where cattle graze with goats. Still no problems with dairy cows but a major issue in goat herds.

Slovenia and parts of Northern Italy have BVD eradication schemes in place.

Belgium - IBR - Has no national IBR eradication scheme but the industry itself has recognised the need to do something as 50-65% of bloods tested were IBR-positive in 1997. Began a voluntary vaccination scheme in 1997 which became compulsory in 1999. Aiming to be IBR-free by 2011.

Other Points

IBR

Countries free of IBR

Austria	Denmark
Finland	Norway
Sweden	Switzerland

Countries with IBR Eradication Initiatives

<u>Country</u>	<u>Nature of Scheme</u>
Germany	Variety of schemes organised at state level
Italy	Northern area of Italy has eradicated IBR
Belgium	Voluntary scheme in place. No conventional IBR vaccines authorised
The Netherlands	National eradication programme initiated
France	Regional eradication programmes
Turkey	Eradication programme planned

Scandinavia - Sweden, Norway, Finland and Denmark are participants in an EU project "Concerted action for the setting up of a European veterinary network on diagnosis, epidemiology and research of mycobacterial diseases" which includes Paratuberculosis.

France

The Groupements de Défense Sanitaire (GDS) is essentially a farmer organisation concerned with animal health. They first appeared in the early 1950's as an attempt to control tuberculosis and Brucellosis. They operate on a département basis (regional) (roughly 100) and bring together livestock farmers to:

- Assist the veterinary services in the implementation of disease prevention.
- Carry out collective programmes for animal health improvement and disease prevention.
- Offer breeders personalised services in the whole area of animal health and welfare.

At a national service the various GDS regions come together as a National Federation of GDS (FNGDS) by Act of Parliament and have responsibility for a framework of animal health risk surveillance networks. A specific bovine health network project is currently in the process of legal finalisation.

FNGDS has the following three objectives:

- To act to improve public health by improving animal health.
- To contribute to increasing a farmers income by reducing the cost of animal health actions.
- To help make livestock rearing more economic whilst guaranteeing the quality and health of the animals and their products.

Three other points are relevant as to why France is more successful with cattle health schemes than the UK:-

1. There is a much greater emphasis on home production than in the UK; a coolness towards food imports and a commitment throughout animal production to instil consumer confidence.
2. A high degree of co-operation between farmers' representatives, local veterinary practitioners and the state veterinary service (SVS) on a regional basis.
3. Some 10,000 local vets are contracted by the SVS to do specific tasks. There are about 1000 state veterinary inspectors (ENSV).

FNGDS is based in Paris and has an administration of 37 people. They have regular council meetings, involving all 100 GDS regions (two per département) and have 12 working groups/committees.

Today about 95% of all cattle farmers, 60-70% of sheep and goat producers and 40-45% of pig breeders are members of GDS.

Apart from their original aim of supporting veterinary services in the implementation of disease prevention, they have diversified into cattle identification, breeding health plans, sale of medicines etc. In other words in a UK sense they have a role similar to BCMS and the proposed Defra Animal Health & Welfare strategy and Vet Surveillance Networks.

The FGDS have also created an association of European states interested in primarily cattle animal health - comprising Germany, Belgium, Luxembourg, Italy and the Netherlands. CHeCS representing the UK have been invited to join.

How does it work?

It is not terribly easy to see how this system works because it is based on mutual support and partnership built up over the last 50 years. Essentially GDS is a private farmer run organisation but working closely with central government (the French Ministry of Agriculture). At an individual farm level it is up to that individual producer but on the basis that diseases do not know farm boundaries, GDS operate on the basis of collective action. A producer pays an annual fee of £1/head to GDS and receives appropriate certification (an animal certificate which accompanies the animal when sold etc). Costs of vet and treatment are met by the producer himself.

GDS also administers a National Indemnity Fund for notifiable diseases, based on voluntary contributions topped up by central government funds.

Certification

This took on a new dimension in 1996 with the creation of the Association for the Certification of Animal Health (Association pour la Certification de la Santé Animale, A.CER.SA), an organisation founded by the FNGDS and the National Society of Veterinary Technical Organisations (Société Nationale des Groupements Techniques Vétérinaires). The objective of A.CER.SA is to be an accreditation body and supply certificates on diseases which are not notifiable. These certificates are carried with official health documents and are used for export. A typical certificate is attached. It merely stipulates freedom from leucosis, Brucellosis and tuberculosis.

A system of certification exists today in 67 départements for IBR and another is being put in place for warble fly. It is hoped to introduce certification schemes for PRRS in pigs and maedi visna in sheep.

Para TB

FNGDS had hoped to put in place a voluntary certification scheme by 2003. This has still not been given the go ahead by national government for two reasons:

1. The possible link between Johnes and Crohns in humans is not proven and there is no public outcry or concern.
2. The testing for Para TB is expensive and limited funds can be used more effectively elsewhere.

Therefore the French have no idea of what percentage of the natural cattle herd is affected. They believe that it is fairly breed specific (Limousins particularly prone) and were very interested in the work being done by the Welsh Black Cattle Society to eradicate.

Thus to conclude:

Johne/Para TB - No national plan although attached to this report is the voluntary scheme which they would like to launch (Appendix 6). If implemented, the plan is that when Para TB is diagnosed, the farmer, GDS and the local vet enter a written contract to implement a long term control programme. Agreed strategies depend on the severity and prevalence of infection within the individual herd.

IBR - Despite having an active programme throughout France, still not eradicated.

BVD - No national plan. Brittany has eradicated. Compensation paid.

Lepto - Not a problem. No action needed.

Germany

Control and eradication of non-notifiable diseases (they call them recordable diseases) is done on a state basis. There are no national schemes.

The paratuberculosis programme is run by the Tierseuchenkasse, an organisation run by farmers and financed in even parts by farmers themselves and tax-payers money. However there is no unified scheme and it is up to individual member states. There are currently attempts to try to convince officials that a control scheme based on a bulk milk ELISA licensed in Germany would be affordable and effective in providing an overview of the situation. So far all attempts have been unsuccessful.

In Northern Germany, an experimental programme has been run on several farms looking at the control of paratuberculosis. Their approach is quite similar to approaches run in the USA and the Netherlands. The Germany have found that a combination of serology with the Svanovir-ELISA (as it detects infected animals earlier than other ELISA systems) and culture of faecal samples (or if possible PCR) is necessary for an effective control programme. Animals can apparently be serologically negative shedders, which are not detected by serology alone.

However another state Nordrhein-Westfalen have shown that the culture of faecal samples alone is not effective either, as animals are only detected once they have started to shed this organism.

From work done in Lower Saxony over a six year period paratuberculosis prevalence rates have been reduced in three herds from 10, 20 and 30% to 3, 5 and 8% when a proper control programme is put in place. However the Germans do not believe that complete eradication is at present possible.

Of the four diseases of interest to CHeCS, only IBR is notifiable. The eradication programme is based on a marker vaccine and is quite successful. Germany has had guidelines for voluntary eradication since 1986 but little has been achieved until the advent of vaccines on a national basis. However the old East Germany (Bundeslander) have been working on their own eradication scheme based on the Dutch model.

Bavaria has been particularly successful.

	<u>Herds participating</u>	<u>Herds IBR-free</u>
1987	40,000	18,000 (45%)
1992	45,000	31,000 (69%)
1997	71,500	51,680 (72%)

There is a voluntary eradication scheme for BVD.

Here a PCR (Polymerase Chain Reaction) test based on bulk milk is proving to be extremely helpful.

There have been no attempts to do anything about Leptospirosis as the Germans do not believe that the diagnostic methods are sufficiently robust.

Apart from Johne's disease, Leptospirosis is considered a zoonosis, but Leptospira are heat sensitive and therefore will not survive pasteurisation.

The reasons why the IBR scheme became mandatory is because of European Trade restrictions re the movement of cattle throughout mainland Europe. The voluntary schemes for BVD and Johne's eradication are because of high economic losses. This comment is slightly surprising when one looks at latest UK estimated losses.

Average Losses for Disease Outbreaks

<u>Disease</u>	<u>Loss</u>	<u>Estimated cost/100 cows (£)</u>
BVD	Mucosal disease calves	13,300
Salmonellosis	Abortions and cow deaths	16,015
Venereal campylobacteriosis	20% barren cows	5,350
Johne's Disease	Increased waste of cows	1,617

(Source: G Caldow, British Cattle Breeders Conf, Jan 2004)

The schemes are run by state governments or a public body (Tierseuchenkasse) financed in equal parts by a state government and farmers within that state.

Schemes are publicised to farmers via mail, internet and local farmer meetings. Participation in the non-notifiable diseases is entirely voluntary.

As far as costs are concerned, lab costs are paid for by the organisation running the scheme. Vet costs are paid by the farmer.

Usually farmers only participate if they have severe problems with one of the diseases. The incentive to participate is that there is some compensation for infected animals.

Local vets do not appear to be terribly interested in scheme participation unless they have individual farm problems. Most of the interest in these recording diseases comes from the state veterinarians.

To sum up, IBR eradication is progressing well. Progress on BVD control is slow, but varies greatly between states, but there are grounds for optimism. Progress on paratuberculosis control is non-existent!

(Based on discussions with individuals at the Institut für Biometrie, Epidemiologie und Informationsverarbeitung and Institut für Mikrobiologie und Tierseuchender Tierärztlichen Hochschule, Hannover).

The Netherlands

The following gives a brief resume of the progress that the Dutch have made with the monitoring, control and eradication of the four non-notifiable diseases of cattle of interest to CHeCS.

Lepto

Disease first introduced via semen in 1984. Importation of semen still considered to be a risk.

1989 Voluntary bulk milk testing (BMT) commenced three times a year run by the Animal Health Service (GD). Approximately 50% of dairy farmers took part. In 1989 43% of those participating were positive by BMT. This figure declined very rapidly so that by 1995 only 15% were positive.

1993 A voluntary certification programme was introduced and 70% of dairy farmers took part. Programme based on:

- Testing for antibodies using BMT and individual milk/blood testing
- Animal movement monitoring
- Post mortem results

1995 50% of dairy farms were certified free.

1998 The Chain Quality of Milk (KKV) (a farm quality assurance scheme) was introduced. This included Leptospirosis. Farmer had to get a certificate for the Chain System. Price of milk lower for farmers not in the chain.

2000 All dairy farmers are certified in the Chain System (i.e. disease status known). Status of all non-dairy cattle farms to be known by end of 2000.

2001 Lepto hardjo bacterium has almost completely disappeared from the Netherlands. 75% of the 55,000 cattle farms have eradicated the bacterium voluntarily.

2005 Holland expects to be lepto free.

Eradication has been hugely helped by the Dutch I&R System (Identification and Registration) and their co-operative based structure. Since October 1999, I&R has been completely automated. Thus when a certified farm buys in an animal from a non-certified herd, the buyer will be notified automatically and promptly of the lepto status of the animal.

On-going monitoring by bulk milk samples three times a year.

Johnes/Para TB

- Johnes is considered to be of great importance, both from a production point of view and as a potential zoonosis.

- The certification programme has been postponed until 2004-2005 and pessimism has set in re control. Until 1999 the Netherlands was planning to implement a compulsory eradication programme based on whole herd faecal screening. A number of factors have caused this position to be revised:
 1. The national prevalence survey found the percentage of dairy herds with serological evidence of infection to be 55%.
 2. Results of the faecal preliminary programme was disappointing.
 3. The simultaneous problem with contamination of the marker vaccine used in the Bovine Herpes 1 Virus eradication programme had an adverse effect of how farmers perceived national disease control initiatives.

Consequently the Dutch have now launched a voluntary programme where the emphasis is on management procedures with test and cull programmes limited to high prevalence herds. Further details about the Paratuberculosis Programme (PPN) are given later.

- Work on vaccine development is continuing with the aim to eliminate clinical disease within a couple of years. The vaccine must not interfere with TB diagnosis. The Netherlands is free of bovine TB.
- Currently vaccine can only be used in high prevalence herds. No difference in efficiency between killed and live vaccine.
- The Dutch are interested in the Welsh Black Cattle Society eradication scheme (see Appendix for details) run by SAC Premium Cattle Health Scheme. They confirm that the French have a good certification scheme but are hesitant to implement (see under section on France).

BVD

- A voluntary eradication programme was started in 1998.
- BVD prevalence:
 - ± 70% of cattle antibody positive
 - on 80% of farms there are serologically positive animals
 - 1-2% of cattle are BVD carriers
 - 50-60% die in just 6 months
- The Dutch aim to make Holland a BVD virus free cattle population via identification and removal of BVD carriers to slaughter.
- How - Farm with BVD history → individual testing of all animals over 3 months → removal of BVD carriers (after retest 3 weeks later) → examination of all calves during following 12 months → negative → status BVD free.
- Monitoring of BVD free status two times a year, 5 animals between 8-12 months, screened for antibody per farm.

- Since May 1999, Dutch VI Service has been using the PCR on bulk milk and pooled bloods. PCR considered to be very sensitive compared to antigen ELISA.
- PCR on bulk milk samples around £30; antigen ELISA £4.
- The Netherlands has declared all its exported animals must be free of the virus.

IBR

In 1995, before the eradication schemes began, 85% of Dutch herds tested positive to IBR, a slightly higher figure than currently found in the UK. Their reasons for eradication were losses of:

1. exports of both semen and breeding cattle (50,000 per year)
2. milk production losses and
3. increases in sub-clinical infections

Adopted a strategy based on a model generated by the Agricultural University Wageningen. This had three key elements:

1. Obligatory/compulsory vaccination with a live marker vaccine. Vaccinations recorded electronically by the animal health service.
2. Elimination of late gE-positive animals.
3. Completion of vaccine programme (estimated to be in 2005).

Conditions for IBR-free certification

- Serological examination of all animals, 1 year old +.
- Mandatory bulk milk control (13 times/year) or random sampling for serological examination.
- Applying rules for the prevention of virus introduction.

A herd is considered IBR-free if there are no animals with gE antibodies.

After a herd is certificated, vaccination may cease.

Farmer pays for vaccination, milk/blood sampling, elimination of positive animals and certification. Other costs met by collective financing (admin, on-going research etc). In other words farmers meet about 98% of the costs of eradication.

More recently some farmers have expressed a preference to close their farms instead of vaccination. Therefore there have been modifications to the eradication policy.

Non-vaccination is allowed when:

- Animals brought in from IBR-certified farms.
- Selling of cattle only to slaughterhouse direct or with 'fattening exemption'.

- No contact allowed with other cattle (e.g. shows).
- Yearly individual blood sampling should show a decrease in the infection percentage on the farm.

Current

The Dutch scheme has 17,000 IBR free herds out of a total of 57,000. Their stated objective was to free the entire Dutch cattle herd of IBR and to obtain recognition for this within the EU when they would seek to ban imports from countries with a lower health status. Their scheme relied heavily on the use of a live marker vaccine. Unfortunately, one batch was contaminated with BVD type 2 virus, which infected 12 herds (400 cattle) - 11 herds were slaughtered and a total of 14,000 cattle killed. As a result the industry has lost confidence in the vaccine and in the control programme and the scheme has ground to a halt. Consultations have taken place within the industry and the decision has been taken to shelve their programme for the next couple of years. The Animal Health Service continue to monitor the situation. Recent bulk milk surveillance indicates a further reduction in prevalence compared to 2000 but the national scheme is still shelved.

Paratuberculosis control in the Netherlands

The Dutch launched a national Paratuberculosis Programme (PPN) in 2000. The steering committee consists of representatives of the Ministry of agriculture, nature management and fisheries, the Ministry of human health, the Commodity Board, the National Dairy Organisation (NZO), the Animal Health Service (AHS) and the Dutch NFU equivalent (LTO), the latter provides the Chairman.

Animal Health Service

Based at Deventer, was set up about 10 years ago and centralised on one site two years ago. AHS see themselves as providing Quality Assurance in animal production. They effectively manage a centralised Oracle database for all livestock species. There is a very sophisticated Monitoring and Surveillance system in place which effectively controls all animal movements with an electronic check list based on the I&R data. The AHS issue an Animal Test Certificate when animals are sold. A system that SAC Premium Cattle Health Scheme have now instituted in the UK starting at last year's Perth Bull Sales (Appendix 7). The Animal Health Service runs the scheme/program.

There are five main components:

1. Research projects
2. Communication
3. Certification program (MAP free herds)
4. Control program (infected herds)
5. Para planner (Para management check)

The costs of the program for activities such as certification, control and the Para planner are directly charged to the farmer. There is public funding for the project management, communication and research.

The AHS advice and guidelines to veterinary practitioners and via Para planner centre on preventive measures at calving, during calf rearing to weaning and measures after weaning.

These can be briefly listed:

At Calving

- Bring the cow to a clean and separate shed
- Prompt removal of the new-born calf from the mother to a clean environment

During Calf Rearing

- Eliminate natural suckling from the dam
- Only feed milk replacer
- Individually pen (minimum 2 weeks)
- Separation from other adult animals
- Provide clean water from day 1
- Clean straw

After Weaning

- Rear young animals well away from adult stock
- Graze on land free of cattle manure
- Provide clean water supply - no streams/dykes etc
- Provide straw/big bale silage as buffer feeds at pasture

With adherence to these rules, the Dutch believe that they can show favourable results within one cow generation.

Research

A number of different elements:

1. Modelling and intervention studies to improve control and certification schemes based on a number of epidemiological studies.

One interesting and recent development has been the refinement of the existing certification scheme. Workers at AHS have compared the current scheme with alternative test schemes in which the individual and pooled faecal culture, ELISA, Johnin intradermal test and gamma interferon ELISA were employed, whilst the test frequency, age groups tested and number of animals tested were varied in a series of simulation models.

What they found that on reaching 'Map free' status with the standard certification scheme 11% of the simulated herds were not truly free of 'Map'. Therefore the name of the 'Map free' status is to be changed to 'Map unsuspected'. This alternative certification scheme meant that 'Map free' status was reached after four herd examinations, at two year intervals, consisting of serial testing of all cattle ≥ 2 years of age by pooled faecal culture followed by individual faecal culture for positive pools, seemed to be the best option in lowering total and annual costs to the farmer and a lower prevalence when reaching 'Map free' status.

2. Transmission experiments aiming to prevent transmission within and between herds.
3. Improvement of detection techniques like PCR, ELISA and faecal cultures.
4. More basic fundamental research.

The results of this work are and will be published in several refereed scientific journals. The Dutch aim to replace the Para planner with a prevention Planner some time in 2004.

Communication

Because the Dutch have a very joined up approach based on collaboration and co-operation, communication to the 25,000 dairy farmers is relatively simple. They use a mix of traditional communication methods that are still paper driven. Regular mailings are sent out every 3 months from AHS. Some examples are attached specifically on the PPN program (Appendix 8).

Local veterinary practitioners are a vital link and AHS send out to them a checklist of actions needed per farm based on data provided by the Identification and Registration system. This is also copied to the participating farmer.

Lab samples are taken by the local vet and sent into AHS, who do the analysis and provide a written interpretation of the results and what they mean.

A good impression about the Dutch Animal Health Service can be gleaned by visiting their web-site: www.animalhealthservice.nl.

Conclusions

This brief report has examined how our near European neighbours control, monitor and attempt to eradicate certain non-notifiable diseases of cattle. Johnes Disease (Paratuberculosis) has been particularly studied because of the possible link with Crohns disease in humans.

What this report highlights and confirmed by the day visits to France, Germany and the Netherlands is that the UK is some way behind the rest of Europe, although the apparently rosy picture painted across the Channel is not quite as advanced as is often claimed.

A number of points stand out:

1. The UK has not until now been much involved in European cattle health matters. Perhaps understandably we have been too involved with BSE and more recently FMD. The advent of CHeCS and the apparent willingness for the French to ask us to be involved in a European network on non-notifiable diseases of cattle is a most encouraging sign.
2. One of the difficulties which these brief study tours highlighted is how few people in the UK vet world knew who to contact with regards how our near neighbours operate their health schemes. One of the UK problems is that with no longer a traditional extension/advisory service we are missing a vital link in the chain between vet practitioner and government policy etc.
3. The GDS system appears a paradigm that is worth studying. Their approach seems to be 'bottom up' rather than top down. It is to be hoped that Defra in developing their Animal Health & Welfare Strategy and Veterinary Surveillance approach look at how the French seem to have a system based on mutual benefit.
4. The problem that the Dutch have encountered with the BVD Type 2 virus shows just how quickly the cattle farming sector can loose confidence in a scheme, despite having good knowledge transfer mechanisms.
5. Other major dairy producing countries such as Germany are considerably less advanced than we are.
6. The Scandinavian countries need to be viewed with some caution due to their very different structures, their high degree of co-operation and compensation systems which could never be advanced in the UK.
7. In our three visits, CHeCS, as a cross-industry cattle initiative, was widely applauded, and our detailed Technical Document was a cause of much envy and surprise. They had not appreciated that we potentially had in place a system that could help the UK cattle industry.
8. Clearly Paratuberculosis is a growing and insidious disease. However as OIE have pointed out it is very difficult to get a clear picture upon its prevalence and spread. The Dutch PPN programme which does not appear 'rocket science' could easily be transposed to the UK but much greater evidence needs to be given to estimating the costs of Johnes. If George Caldow's recent estimate of losses at the British Cattle Breeders Conference in January 2004 are correct then a cost of £1617/100 cows is not going to cause many to be concerned.

9. The link between Johnes and Crohns was not an issue in any of the three countries visited. As the French remarked we do not have a Prof Hermon-Taylor! Nevertheless nothing should undermine public confidence in milk and milk products and therefore a continuing watching brief by the Dairy Council is vital. CHeCS could provide help here.
10. Implications for the Milk Development Council
 - a. Most of the activities by our European neighbours are cattle orientated, not specifically dairy. Thus discussions with the MLC re Cattle Health Plans would be beneficial.
 - b. It would be perfectly possible to get closer to some of the work being conducted particularly on Para TB but really where the MDC should be putting its resources is in encouraging better biosecurity on farm.
 - c. There is a real need to get a better feel for the incidence of Johnes/Para TB in the UK national herd and to quantify its effect on an individual unit. Are there breed variations etc?
 - d. Based on these findings and others it would appear beneficial to have an industry briefing to decide what to do next. Do the MDC Extension Officers/ Regional Committees have a role to play?

Overall, the UK is lagging behind the rest of Europe with respect to the control, monitoring and eventual eradication of non-notifiable diseases of cattle. However it is not as bad as is often claimed. It should be possible to encourage milk producers to at least monitor via bulk milk samples to get an indication of the scale of the problem on their own particular farm. Co-operation and collaboration seems to be the key for success and a 'bottom up' approach. The HI Health initiative in the Highlands and Islands of Scotland shows what is possible. Our continuing problem is that we have no joined up plan - BCMS controls movements and passports but no health data. Let us hope that government's Animal Health & Welfare Strategy addresses some of these underlying problems.

Relevant Questions

1. Are any of the four diseases (IBR, BVD, Lepto Hardjo and Johne's) notifiable?
2. For which of these four diseases do you have control or eradication schemes? Are these entirely separate schemes or linked to each other in any way?
3. Apart from Johne's, are there considered to be any consumer considerations for any of these diseases?
4. What were the motivating factors to start these schemes?
5. Which organisation(s) run the control/eradication schemes?
6. How do you publicise them to farmers?
7. Are they entirely voluntary to farmers?
8. Who pays for the laboratory costs? Also the veterinary costs?
9. What is the approximate cost for (a) start-up and (b) annual running of each scheme?
10. Who pays (or has paid) the major portion of the start-up and annual costs?
11. What does the individual farmer pay?
12. What incentive has he to participate?
13. What support is provided by the veterinary practitioner?
14. What are the pros and cons of each scheme?
15. Do they know the current situation with regards to each of these four diseases and what is this information based on?
16. What progress has been made, and over what period of time, in control/eradication of each of the four diseases?

CHeCS

Cattle Health Certification Standards (UK), abbreviated to **CHeCS**, is a self-regulatory body for Cattle Health Schemes in the UK. It is a non-trading organisation established by the British cattle industry for the control and eradication of non-statutory diseases by a set of standards to which all licensed Cattle Health Schemes must adhere.

These standards ensure that herd health status in one scheme is equivalent to that in all other schemes in the UK. Close collaboration by **CHeCS** with other countries ensures that licensed schemes in the UK are compatible with those in most other countries.

CHeCS is owned by the British Cattle Veterinary Association, the National Beef Association, Holstein UK and the National Cattle Association (Dairy). It received start up funding from the Milk Development Council and the Royal Association of British Dairy Farmers provides administrative back-up. In its establishment and on-going activities, **CHeCS** has had much support from Defra, particularly its Chief Veterinary Officer, the Veterinary Laboratories Agency and the various livestock auctioneer and valuer associations in the United Kingdom.

CHeCS principal objectives are:

- To promote improvements in cattle health and welfare.
- To provide standards and certification for Cattle Health Schemes.
- To develop and maintain links with cattle farmers, breed societies, veterinary practitioners, laboratories, Government agencies and animal welfare organisations to promote the above objectives.

A Technical Document has been produced which sets out the rules to which **CHeCS** licensed Cattle Health Schemes and their member herds must adhere to retain **CHeCS** approval and to demonstrate compliance with the standards, which have been agreed and found to be acceptable to the cattle industry.

The information, rules and disease control programmes contained in the Technical Document are based on the best currently available information and are intended to represent best available practice.

Cattle Health Schemes provide programmes for the monitoring, control and ultimate eradication of disease. The schemes also provide certification when a herd meets the agreed national **CHeCS** cattle health standards.

Contained within the Technical Document are programmes for the four most important non-statutory diseases that are prevalent in both beef and dairy herds in the UK.

Infectious Bovine Rhinotracheitis (IBR)
Leptospirosis
Johne's Disease
Bovine Virus Diarrhoea (BVD)

Herd owners may test for any or all of the diseases at the same time. Where to start depends on a herd's individual circumstances. The entry level to a Cattle Health Scheme

only requires routine monitoring (which in dairy herds is by regular bulk milk testing). This will give a good assessment of the health status of the herd. Once the health status is known, a herd may progress through a programme of control and eradication to eventual accreditation of disease-free status. All of this is explained in much greater detail in the Technical Document. A copy of which is available on request.

Finally, it is important to note that **CHeCS** is not itself a Cattle Health Scheme. It is the regulatory body for Cattle Health Schemes. **CHeCS** is a stamp of approval and a quality mark signifying conformity to an industry standard.

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FNGDS Proposed Voluntary Scheme for Paratuberculosis

Not yet introduced

Useful Publications

Bulletins of the International Dairy Federation

362/2001 Mycobacterium Paratuberculosis

364/2001 On-farm control and diagnosis of Paratuberculosis

372/2002 A fresh perspective for managing milk-borne diseases

Paratuberculosis Newsletter-editor-in-chief
geoffrey.delisleg@agresearch.co.nz

Proceedings of the 7th International Colloquium on Paratuberculosis in Bilbao
(www.zICP.info)