Vote 31 - Agriculture, Food and Rural Development

27. Bovine Tuberculosis and Brucellosis Eradication

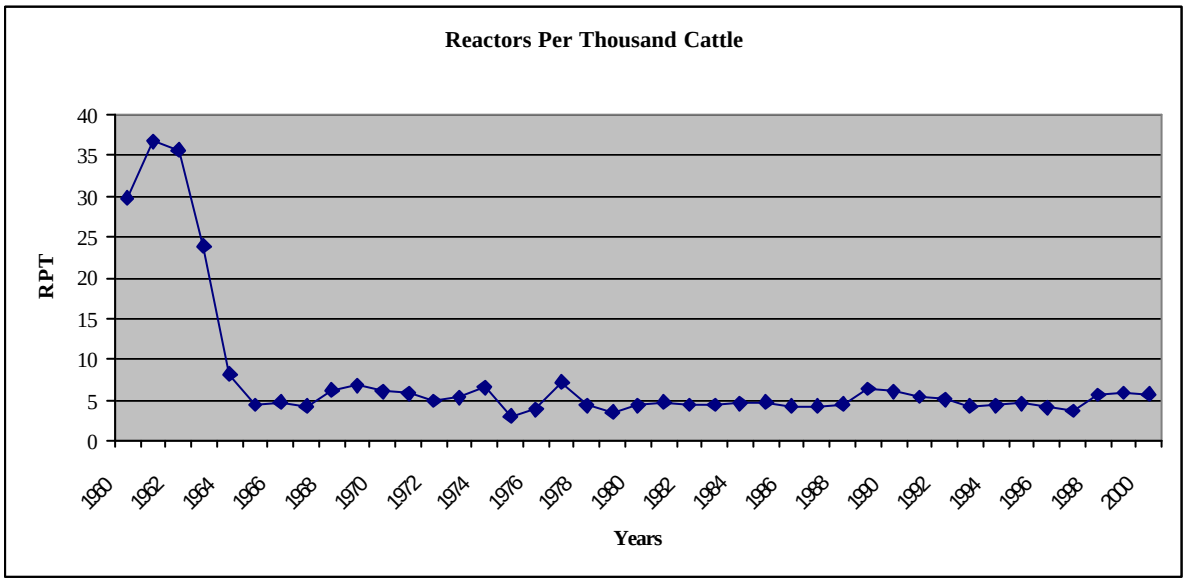
Introduction

Bovine Tuberculosis (TB) is a chronic disease in cattle. The disease may be passed on to humans who consume meat or milk products from infected animals. Brucellosis in cattle is a highly contagious disease, which can result in abortion, infertility, morbidity, and reduced milk yields. There is also a much higher risk of humans catching the disease than for TB through drinking unpasteurised milk from infected cows, by inhalation, cuts and abrasions, or by droplet infection.

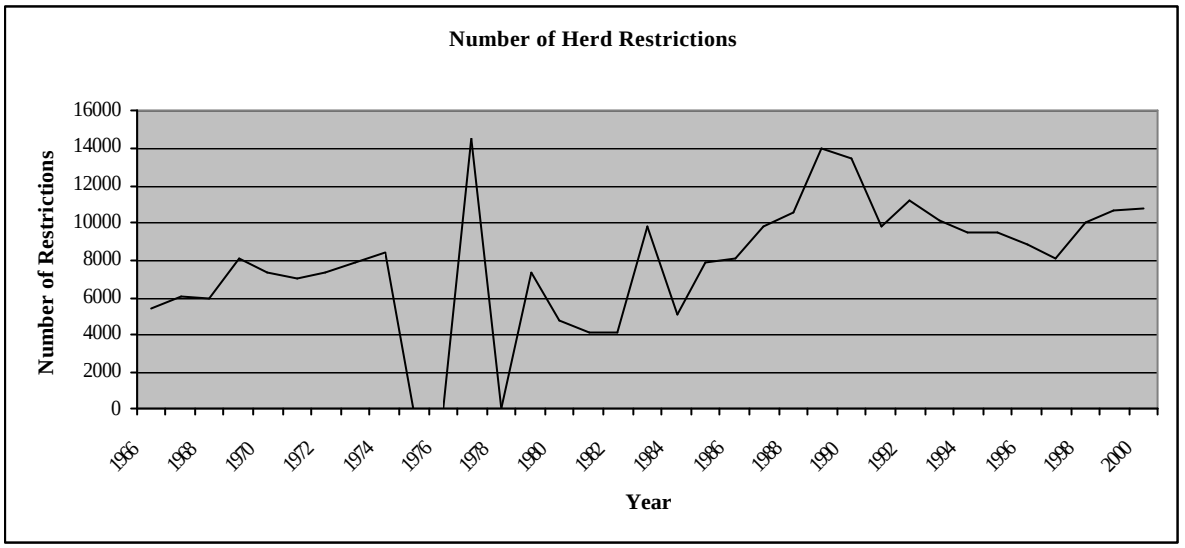
It has long been official policy to control and/or eradicate TB and Brucellosis in cattle both because of the risks the diseases pose to human health and because of their adverse impact on markets in agricultural products, in particular export markets. The food chain is further protected by the pasteurisation of milk and through the meat inspection procedures in place.

Incidence of Diseases

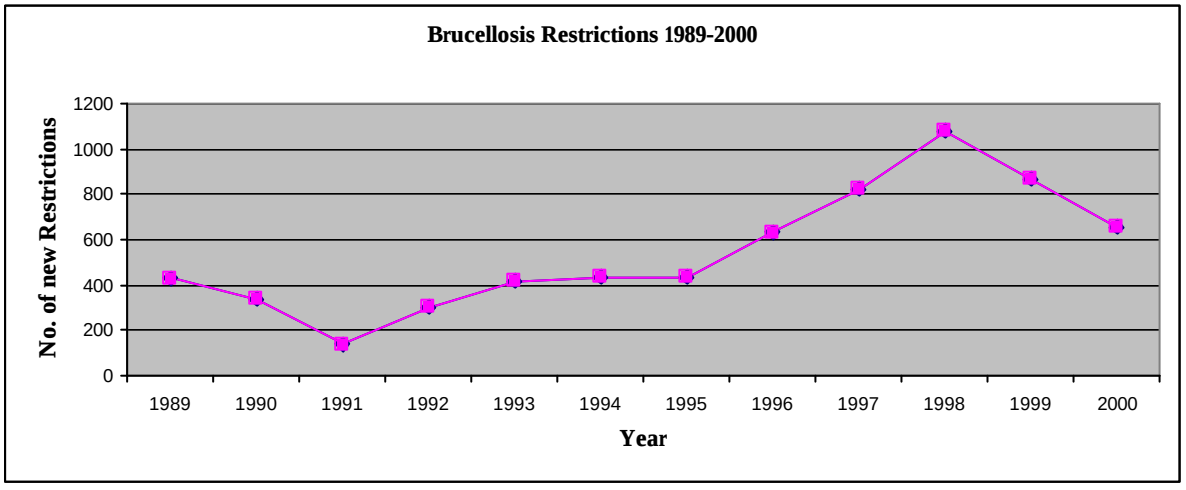
Prior to the launch of the TB eradication scheme in 1954 Bovine TB was widespread with an estimated *80%* of herds, and *17%* of animals being infected. Rapid progress was achieved in reducing the incidence of disease in the first 10 years so that by 1965 the level of infection was reduced to 0.*5%* of animals. However, since then progress in further reducing the levels of disease has been slow and somewhat erratic so that more than 30 years on disease levels still remain stubbornly high at *2.9%* of herds and *0.3%* of animals.



The figures portrayed in the graph above do not include animals with disease detected by inspection of carcasses at Meat Plants.



Note 1975/1976 –No testing due to dispute with Irish Veterinary Union



The campaign to eradicate brucellosis commenced in 1966, when the incidence of disease was estimated to have been 12% of herds. Good progress was made in reducing the incidence of the disease, which by 1986 had been reduced to *0.19%* or 100 herds, and the country was declared to be "officially Brucellosis free". However in subsequent years the incidence of the disease again increased, reaching a peak in 1998. In 1999 and 2000 the incidence reduced and that downward trend is continuing in 2001, as illustrated in the graph below.

There were 236 herds restricted as at May 2001**.**

Objectives and Scope of Audit

The objectives of the audit were to:

- Review and evaluate the procedures put in place by the Department of Agriculture, Food and Rural Development (the Department) over the years to manage and operate the programmes
- To review the degree to which the programmes have achieved their objectives

- To review issues and concerns raised in the past on the operation of the programmes and the steps taken to address them
- To ascertain policy in relation to the contribution to costs made by farmers and to review procedures for the collection of such contributions.

The policies, strategies and practices adopted by the Department in operating the programme were ascertained and their implementation reviewed, including the objectives of the schemes and the extent to which they were achieved. A number of reports of investigations into the operation of the schemes over the years were examined and the response of the Department to their findings reviewed. The procedures in relation to the collection of the farmer levy were also reviewed.

Audit Findings

Policies and Strategies

Tuberculosis

The initial policy when the scheme was introduced in 1954 was to eradicate Bovine TB from cattle herds and officially this remains the objective. However, given the experience in the past thirty years when there has been little improvement in reducing the incidence of the disease despite the expenditure of substantial sums, there is a recognition that the best to be hoped for in the short to medium term is to contain the incidence of the disease to an acceptable minimum so that markets, in particular export markets, are not jeopardised and so that there is no serious threat to human health.

The main strategies pursued since the scheme's inception has been the annual testing of all animals in the national herd, and the slaughter of all animals tested positive for the disease (reactors), as well as other animals in the herd. The main variations in the policy pursued are additional mandatory testing in certain circumstances such as when cattle are sold or are located in designated "black spots" or in contiguous herds, and the technical standard applied in judging whether animals have the disease or not.

Slaughtered animals are physically inspected by Veterinary personnel at Meat Factories for signs of the disease and the results of these checks are also taken into account in estimating and pinpointing the incidence of the disease. Also, in infected herds blood testing for TB may be conducted in addition to the routine tuberculin test. In addition, research into the persistent levels of tuberculosis is a significant aspect of the programme.

Of the total of 42,354 reactor animals removed in 2000, 39,847 were detected as a result of testing live animals on farms, and 2,507 were detected through inspection of carcasses at Meat Factories.

The EU have set down Regulations in relation to measures to be taken in Member States to combat TB and Brucellosis, which vary depending on the incidence of the disease. In Ireland, in addition to these measures, strategic testing of contiguous herds, herds in blackspot areas and follow-up test checks of derestricted herds six months after derestriction are also carried out. Other measures over and above EU requirements include a reactor collection service, a requirement to disinfect the holding and an epidemiological investigation into infective type breakdowns.

A separate executive agency, known as ERAD was set up within the Department in 1988 to eradicate Bovine TB, with an initial objective of halving the prevailing bovine TB levels within four years. Authority to determine policy and strategy and to manage the programme within an allocated budget was devolved by the

Minister to a Board comprising a chief executive and representatives from the Department, farmers, and the Veterinary profession. The core strategy pursued by ERAD was to intensify the level of testing so that more reactors were detected and removed from the national herd, which it was hoped would in time lower the incidence of the disease. In 1989 and 1990, 11million and 13million tests, respectively, were carried out. This resulted in the removal of 43,500 reactors in 1989 and 41,500 reactors in 1990 compared to an average of 30,000 reactors per annum over the previous 20 years. The testing programme was curtailed in 1991 due to a lack of Exchequer funding but a further 36,527 reactors were identified in 1992 from 10.9 million tests.

There was increased emphasis put by ERAD on scientific method in operating the programme, through acquiring and analysing information and data on the disease, and using this knowledge in planning and deciding the operational measures to be put in place. A research programme was initiated, and there was increased contact with some other leading agricultural nations in relation to research into the disease and the measures put in place to combat it. ERAD also proposed the establishment of TB clearance zones by setting up different regions within the country based on disease levels with varying disease eradication enforcement measures, but the measure was not proceeded with due to opposition from farmers.

It was concluded that there was little evidence that the exhaustive testing programme pursued by ERAD was having the expected impact on the prevailing bovine TB levels, and in 1992 the level of testing was cut back to pre 1988 levels. It was also concluded that the target set for ERAD of halving the prevailing bovine TB levels was unrealistic, and that further progress in reducing or eradicating the disease would only come from additional measures based on research, knowledge and insights gained on the epidemiology of the disease. ERAD was disbanded in 1992 and authority for determining policy and strategy and for managing the programme was again assumed by the Minister and his Department.

In 1996 an Animal Health Forum was set up comprising representatives from farmers, the Veterinary profession and Department, whose functions were to advise the Minister on policy, strategy and operational matters. Pre-movement tests, which had been introduced in 1988, were discontinued in conjunction with revised arrangements whereby farmers undertook greater responsibility for ensuring the health status of their herds including payment for the first test of their herd each year. A computerised cattle movement monitoring system was introduced to provide a system to record animal movements.

In 2000 the Department were keen to reintroduce a pre-movement test but this was opposed by the farming bodies and negotiations are still continuing on the matter.

While the Department's objectives included, inter alia, a moderation in costs to the Exchequer and farmers, and a reduction in disease levels in the period 1996 to 1999, in fact disease levels significantly increased, and costs to the Exchequer also substantially increased. The increase in disease levels is attributed by the Department to the cyclical nature of the disease, higher cattle numbers, and possibly an increase in the irregular movement of animals.

The Department pointed out that disease levels also increased in Great Britain and Northern Ireland for reasons that have not been definitively established.

The Department's objectives for the planning period 2000 to 2003 are similar to those of the previous four years, and targets for reduction in the incidence of TB have been included in the Programme for Prosperity and Fairness (PPF). However, agreement has not yet been reached on the measures necessary to achieve these targets.

Brucellosis

Good progress was made in eradicating Brucellosis in the initial 20 years of the programme up to 1986, but there were setbacks in the programme over the next decade. This was attributed to a relaxation of the measures to combat the disease including the discontinuance of a pre-movement test, a dispute with Veterinary practitioners in 1991 over fees, and the introduction of a suckler cow scheme which resulted in a retention of old beef cows in herds in an effort by farmers to establish quotas. The programme to combat the disease was stepped up in 1997 and the PPF commits all parties involved to making significant progress towards eradicating Brucellosis within four years. Current arrangements provide for a statutory pre-movement, one sale, test, a voluntary post-movement test, a comprehensive contiguous herd testing programme, restriction of positive herds until a full calving cycle has elapsed and a slurry treatment programme.

Cost of Schemes

Up to the end of 2000 expenditure on TB and Brucellosis Eradication Schemes totalled £954m excluding administration costs of £391m. Some £340m has been collected from farmers through disease levies, and further amounts of £56m and £33m, respectively, have been received from the sale of reactors and from the EU. Expressed at current money values cumulative expenditure is estimated at £2.5 billion with receipts totalling £500m. The costs (excluding administration) incurred in 2000 on the schemes were £78m of which £29m was borne by farmers.

Funding of Schemes

Up to 1979 the Department assumed full responsibility for the funding of the schemes. However since 1979 farmers have been contributing towards the programme costs by way of a levy on milk sales to creameries, on cattle slaughtered at meat plants and on bovine animals exported live from the State.

In 1996 the rates of the levies were reduced in return for which responsibility for arranging and paying for annual herd tests, estimated to cost £14m, was devolved to farmers. It was intended that the amended rate of levy would produce a reduced annual Exchequer receipt equivalent to the greater of £10m per annum or 50% of the cost of compensation payments. This target was not achieved due to the almost doubling of compensation payments since 1996. Notwithstanding the failure to achieve the financial target the levy rates were further reduced with effect from July 1998 to take account of the cost to farmers of an additional test for Brucellosis. The costs of the revised arrangements are shown in Table 33. While the cost to farmers has remained stable, the overall cost to the Exchequer has increased steadily from £36.1m in 1995 to £70.6m in 2000. Excluding administration costs, the cost to the Exchequer has increased from £15.1m to £47m over the period. The significant increase in compensation amounts paid since 1996 resulted from the significant increase in the levels of disease and the number of animals removed as reactors

A cost/benefit analysis of the Bovine Tuberculosis Eradication Scheme undertaken in the early 1990s concluded that the benefits of the eradication scheme substantially outweighed costs.

Table 33 Cost of Schemes (£millions)

Departmental Costs	1995	1996	1997	1998	1999	2000
Reactor Compensation[1]	20.9	21.7	26.1	32.0	41.6	36.8
Testing Fees[2]	19.4	11.8	5.9	9.2	12.8	11.0
Other Payments[3]	6.6	6.8	6.8	8.8	9.9	10.8
Administration Costs[4]	21.0	21.5	22.3	22.3	22.8	23.6
Gross Departmental Costs	67.9	61.8	61.1	72.3	87.1	82.2
Farmer Costs						
Disease Levies[5]	28.7	15.9	10.6	9.2	9.8	9.2
Testing Fees[6]	-	14.0	18.0	18.5	19.0	19.4
Total Farmer Costs	28.7	29.9	28.6	27.7	28.8	28.6
EU Funding[7]	3.1	2.7	8.5	2.6	0.8	2.4
Net Departmental Costs[8]	**36.1**	**43.2**	**42.0**	**60.5**	**76.5**	**70.6**

Employment of Veterinary Inspectors

There was concern in the past that since Private Veterinary Practitioners (PVPs) were testing cattle mostly belonging to their own clients, their independence was compromised and there might be some reluctance to find that cattle had reacted, and as a consequence animals infected with TB would be left in herds. A PAC Report[16] completed in 1994 recommended that the Department should nominate the PVPs to carry out the tests.

Under arrangements agreed in 1996 responsibility for paying PVPs for the annual test was devolved from the Department to farmers. The arrangements that subsequently emerged during that year and which were implemented in 1996 were intended to give farmers and their practitioners greater responsibility for eradicating TB from herds. However, arguably this also had the effect of diluting the independence of the PVPs further.

The Department keeps detailed computerised records of TB tests conducted by PVPs for quality assurance purposes. These are analysed and aberrant cases isolated for follow up action. As a result about two PVPs per annum are struck off the Department's panel of authorised testers. Departmental personnel inspect PVPs who perform tests annually to ensure that they are competent and carry out the procedures correctly. Wholetime Temporary Veterinary Inspectors who carry out tests are inspected twice yearly.

The method of testing for Brucellosis is by analysis of blood samples in the Department's laboratory. Since the PVP's only task is to extract a blood sample from the animal being tested, conflict of interest concerns do

[1] This represents the compensation paid to farmers arising from the detection of TB and Brucellosis in their herds.
[2] This represents the fees paid by the Department to Private Veterinary Practitioners for carrying out tests on its behalf.
[3] This represents expenditure on supplies, equipment, services and research.
[4] This is an estimated figure and represents the expenditure on payroll and other administration overheads incurred by the Department in operating the schemes.
[5] This represents the levies collected by the Department from farmers to defray the costs of operating the schemes.
[6] This represents the estimated costs incurred by farmers in respect of the annual herd tests, responsibility for which was devolved to them in 1996.
[7] This represents amounts contributed by the EU towards the costs of operating the schemes.
[8] This represents the net costs to the Department and Exchequer of operating the schemes when account is taken of the contributions received from farmers and the EU.
[16] Dáil Eireann Committee of Public Accounts – Special Report on Bovine Tuberculosis Eradication 1994

not arise for Brucellosis testing.

International Co-Operation and Comparisons

According to the Department there is a high degree of co-operation and sharing of information among Veterinarians and Academic personnel carrying out research on the epidemiology of the diseases, the search for a TB vaccine, and measures to combat the diseases. In the late 1980s ERAD undertook a study tour of countries which had similar programmes to Ireland, and the contacts then made facilitated the setting up of an international research forum which comprises representatives from Ireland, New Zealand, UK, USA and Australia. The forum, which meets once every five years, includes both programme managers and research scientists, and discusses general programme strategies and determines the direction and support for the various scientific research areas. All data at both the scientific and programme management levels is shared.

The Department were also instrumental in getting the EU Commission to set up working sub-committees of the Standing Veterinary Committees to review the programmes being operated in the different countries. These groups visit the member countries and examine the programmes with a view to recommending best practice and ensuring that lessons are learned and mistakes are not repeated by other states.

The Department indicated that these international contacts are extremely valuable and provide very useful insights into the varying levels of TB in different countries and how best to manage the bovine TB disease eradication programme. However the audit findings suggested that lessons learned and insights gained from these contacts were not well documented or recorded within the Department, which could mean that valuable knowledge might be lost to the Department in the event of key veterinary personnel leaving. Better documentation of the information would also make it more accessible to a wider number of people within the Department, and provide evidence and assurance as to its value.

Research

Research has a key role to play in the effort to eliminate bovine TB. Prior to 1989 little research on the incidence of TB was carried out by the Department. However in May 1989 a programme of research was commenced by ERAD. Expenditure on research has ranged from about £0.5m per annum in the early 1990s to an estimated £1m annually at present.

A Tuberculosis Investigation Unit was established by ERAD in co-operation with Teagasc in May 1989, as part of the National Strategic Plan for the Eradication of TB in cattle. Its purpose is to investigate the factors, which militate against the eradication of TB in cattle at national or regional levels, and to identify means of improving the rate of eradication. The Unit is located in the Veterinary College in Ballsbridge, Dublin. A Tuberculosis laboratory has also been expanded in the Central Veterinary Laboratory in Abbotstown.

The main focus of the Research Programme is on the development of a badger vaccine, genetic resistance and badger removal programmes in designated areas.

Collaboration between universities is a major part of the research programme. Significant initiatives include zoological consultancy on a permanent basis from UCG, development of DNA probes and ancillary tests with UCG, and development of a novel probe with UCD to further delineate TB strain types.

Influence of Badgers on Disease Incidence

A badger removal programme has operated in East Offaly from 1989, and the number of reactors in the area

declined from 326 in 1988 to 30 in 1995 representing a reduction from 3.9% to 0.46% in the number of reactors detected per 1,000 animals tested. This project indicated that a reservoir of infection in badgers was a significant constraint to eradication and that a wildlife element was an essential component of the programme.

Similar programmes commenced in four other areas in 1997. It is understood that results to date are broadly similar to those obtained in the East Offaly Project. The removal programmes are operated under licence from Duchas and are carried out by Farm Relief Service Operatives employed under strict supervision by Departmental staff. The Department, under the PPF is committed to carrying out further investigative work into the issue with a view to removing all sources of infection in the 20% of the country, which currently yields some 50% of TB reactors. Additional staff are being recruited to progress these objectives.

A feasibility study carried out by the Department in collaboration with the Department of Agriculture in Northern Ireland in 1994 indicated that vaccination of wildlife against tuberculosis was a viable strategy. This finding was supported by a subsequent international meeting in Geneva.

In 1998 experts in microbacteriology, immunology, zoology and pathology were engaged by the Department and the Universities in Dublin and Cork to advance a badger vaccine development project. International experts were also consulted.

The wildlife research programme has also provided useful knowledge about badger ecology. Details of their preferred environment and the interactions within and between groups have contributed to the development of strategies to minimise contact between the infectious badger and the susceptible bovine.

Collection of Levies

In accordance with Section 4(2) of the Bovine Diseases (Levies) Act, 1979 meat plants, small abattoirs, creameries, and direct sellers are required to furnish to the Department each month an accurate return, on the prescribed form, of the amount of the levies payable, and the appropriate remittances. The current rates of levies in operation are:

- 0.4p per gallon of milk.
- £2.00 per bovine animal slaughtered or exported.

The audit findings indicated that the majority of clients, particularly the larger ones submitted their Returns and paid their levies on time. However, there were a small number of clients who were in arrears and have been for prolonged periods. In the event of clients in arrears failing to respond to requests for payment, the Department usually agree instalment arrangements. Legal action is taken for persistent non-payment over a prolonged period, and court judgments obtained.

Listings of legal actions in train and outstanding court judgments were not maintained which would facilitate monitoring.

The level of arrears owing to the Department at 31 December 2000 was £737,903. No aged analysis was available on the arrears which go back as far as 1986.

The audit also disclosed a case in which a company was dissolved on 3 May 1996 which owed levies totalling £247,508 dating from November 1994 to May 1996. The Chief State Solicitor's Office (CSSO) informed the

Department in May 1997 that the company was liquidated. In July 1997 the Liquidator's solicitor informed the CSSO that the Minister's claim would be adjudicated upon by the Examiner of the High Court, and that in accordance with company law an application would have to be made to the High Court. The CSSO was uncertain as to the correct procedure and chose to obtain the advice of the Attorney General's Office regarding this application.

Despite reminders by the Department to the CSSO in 1997, 1998 and more recently in 2000 and 2001, the Department has not received confirmation from the CSSO as to the advice of the Attorney General's Office or if the Department's liquidation claim was or can be processed.

Conclusions

As is evidenced by the expenditure, substantial resources have been applied to combating Bovine TB and Brucellosis over the past forty years or so. While the Department are reasonably optimistic about the chances of eradicating Brucellosis, the objective of eradicating TB has not been achieved, and is unlikely to be in the foreseeable future. However the incidence of both diseases has been kept to sufficiently low levels so as not to be perceived as a significant threat to human health. Consumer confidence has been maintained, and markets, in particular export markets, preserved.

It would seem unlikely that there will be any appreciable reduction in TB costs within the next 10 years. However the Department is hopeful that the expenditure on Brucellosis eradication will decrease particularly in the longer term if the objective of eradicating the disease within five years is successful.

In the longer run there would appear to be grounds for cautious optimism in relation to TB eradication in that research, on a badger vaccine and gene resistance, may yield fruitful results. In addition the measures being put in place to control the badger population should enable TB disease levels within the cattle population to be further lowered.

The competencies and procedures developed and put in place to combat TB and Brucellosis, and the development of a more sophisticated cattle movement monitoring system, should also be of significant benefit to the Department in combating other diseases, and in providing assurance to consumers, and food suppliers and processors, in relation to the sources and quality of meat and dairy products, at a time when there is increasing concern about these issues.

It is accepted that the participation of Departmental personnel in the International forum and EU working subcommittee, as well as other international contacts makes an extremely valuable contribution as to how best to manage the disease eradication programmes. However it is important that the results of research and comparative studies are comprehensively documented and disseminated.

Given that the TB eradication programme has existed for such a protracted period of time there is a real danger that the problem will be perceived as being insoluble and a permanent feature of Irish Agriculture. This in turn could result in the programme drifting and lacking focus. Accordingly it is vital that the objectives set for the programme, both medium and short term, are realistic, well thought out and vigorously pursued. There is some evidence that this has not always been the case. For instance the objectives set for the 1996 to 1999 programme of both reducing disease levels and at the same time moderating the costs to farmers and the Exchequer, would seem to have been inconsistent and unrealistic, and perhaps not surprisingly were not achieved. Even though the Department is now almost half way into the 2000 to 2003 programme, specific measures to achieve these targets have not yet been agreed with the farming bodies. A

more focussed approach to setting and achieving objectives is warranted.

Arguments and compromises over the years about funding and levels of testing would appear to have been somewhat of a distraction from the substantive task of eliminating or reducing the incidence of the diseases. Discussions between the Department and the farming bodies seem to have given rise to compromises on the operation of the TB scheme contrary to what a strictly scientific approach would have suggested. These compromises may well have impacted adversely on the effectiveness of the programmes. Efforts should be made to devise long-term agreement between farmers and the Department on these and other issues. Such agreement should contribute to better teamwork between farmers and the Department, and more consistency and coherence in the operation of the programme as a whole. Structures to determine and resolve policy and strategic issues, and to address operational procedures and funding, were radically changed with the setting up of ERAD. These decisions were subsequently reversed but it may well be that the issues should be revisited.

Research into bovine TB which did not commence in any coherent way until the late 1980s, would appear to be yielding some promising results. The possibility of developing an effective badger vaccine, gene technology, and the information provided on the effect of badgers carrying the disease are the prime examples. The level of investment in research, which would appear to be running at about £1m per annum or about 1% of gross costs, might usefully be reviewed to ascertain if further investment would be likely to yield significantly greater benefits.

The procedures in place in relation to the collection of farmer levies appeared to be generally satisfactory and effective. However firmer action would appear to be warranted in relation to clients who are persistently late in paying the levy, not least in the interest of fairness and equity to the majority of clients who pay on time. In the specific case referred to in the report the evidence suggests a lack of diligence in following up legal measures for recovery. Listings of outstanding court actions should be maintained to facilitate monitoring and review. Old arrears should be reviewed and written off if considered to be uncollectible.

28. FEOGA Operations

The EU makes monthly advances to the Department of Agriculture, Food and Rural Development, refunding payments made to farmers and others who are eligible to receive support under the Common Agricultural Policy. The accounting year for FEOGA operations ends on 15 October. By the following 10 February, the Department submits a detailed claim to the EU itemising all expenditure incurred and amounts received on behalf of the FEOGA Guarantee Fund. The claim is certified by a private firm of accountants (certifying accountants) appointed by the Department in accordance with EU regulations.

During 2000, ,1,316m was incurred on FEOGA expenditure as shown in Table 34.

Table 34 FEOGA Expenditure in 2000

	, m
Export Refunds	381
Intervention Costs	(38)
Production Aid	85
Premia Schemes	573
Other support measures	315
Total	**1,316**