

DARD Quarterly Disease Report

Bovine brucellosis (BR), bovine tuberculosis (TB) and bovine spongiform encephalopathy (BSE)

Quarterly Update: October-December 2009

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Executive Summary

Bovine Brucellosis (BR)

The fall in **brucellosis incidence** from its peak (annual herd incidence of 1.43%) at the start of 2003 reached its lowest point in October 2005 (0.34%). The rise in herd incidence since October 2005 peaked in October 2006 (0.6%) and then has stayed relatively level until the autumn of 2007 where there was another rise in incidence which peaked in September 2008 (1.06%). Since then, there has been a decreasing annual herd incidence. The **annual herd incidence is now 0.35%** while the **annual animal incidence is 0.012%**. The annual herd incidence where BR infection is confirmed by bacteriological culture remained similar from October 2006 to June 2008. Since then there has been a steady decline in confirmed annual herd incidence (0.27% to 0.05% in October 2009).

A decrease in the herd incidence of BR was observed in eight Divisional Veterinary Offices (DVOs) with only Newry DVO (0.74%) and Armagh DVO (0.68%) having an annual herd incidence of greater than 0.5%. Annual animal incidence fell in nine DVOs.

The number of **new BR herd breakdowns** during the current quarter was 19, which was a 32% decrease over that observed during the same period last year (n = 28). The number of **BR reactors also showed a decrease of 31%** (31 cf. 45) over this period. The change in incidence over the last year was mainly due to the reduction in the number of BR breakdowns in Armagh and Newry DVOs. Newry DVO accounted for 32% of all BR reactors. The number of **BR negative-in-contact (NICs)** animals taken during the current quarter (652 animals) **showing a 98% increase** on the number removed during the same quarter in 2008 (299 animals). The median **BR reactor removal time** to October 2009 was **13 working days** (cf. 14.4 days during 2008) with 83% of reactors being removed within the 15 working day target (cf. 73% in 2008).

The introduction of the **premovement testing requirement** in December 2004 has detected **57 BR reactors** from **834,280 animal tests** with a further **6,757 inconclusive** BR reactors.

Bovine Tuberculosis (TB)

The incidence of **TB has remained relatively level over the last three years**. The peak incidence occurred during the spring of 2003 when the annual herd incidence was 10.2%. The **annual herd incidence is now 5.61%** while the **annual animal incidence is 0.512%**. A decreasing level of TB was observed in six of the ten Divisional Veterinary Offices (DVOs). Newtownards DVO has the highest current annual TB herd incidence of 7.93% while Larne DVO has the lowest herd incidence (2.90%).

The number of **TB reactor** animals taken during the current quarter (**2,157 animals**) was **17% lower** than the number removed during the same quarter in 2008 (2,595 reactors). This difference was mainly due to a number of

outbreaks in Armagh DVO that disclosed large numbers of reactors during 2008. The median **TB reactor removal time** for the year to October was **11.6 working days** (cf. 11.6 days over 2008) with **81%** being removed within the 15 working day target (cf. 84% over 2008).

The number of **new TB herd breakdowns** during the current quarter was 6% higher (382 cf. 359 new TB herd breakdowns) relative to the same quarter in 2008 with the 12-month moving average being 108 new breakdown herds per month (cf. 106 in December 2008).

Forty-five percent of the province's 1.6 million cattle (held in 23,031 herds) were tested during this quarter.

Bovine Spongiform Encephalopathy (BSE)

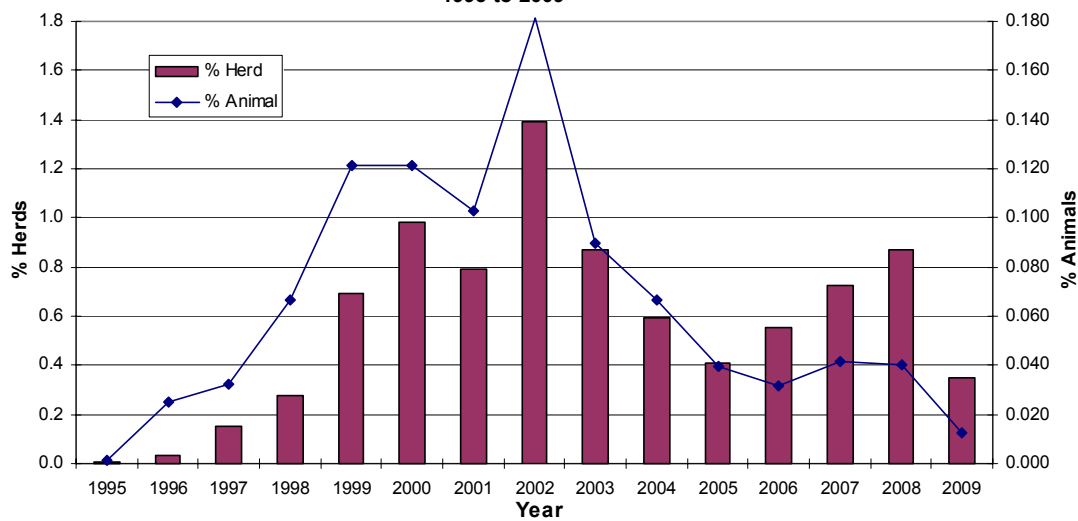
The number of cases has declined to small number in recent years but 2007 saw an increase in the number of cases (14 cases cf. 10 cases in 2006). However, only four cases were confirmed during 2008 with a further three cases being disclosed during 2009. The vast majority of cases are now found through the active surveillance programme, particularly in the over 48-month fallen animal surveillance. To date, there have been **2,186 confirmed cases** of BSE from 1,514 farms in the province. None of the 48 clinical suspect cases since the start of 2006 have been confirmed as having BSE.

1. Bovine Brucellosis (BR)

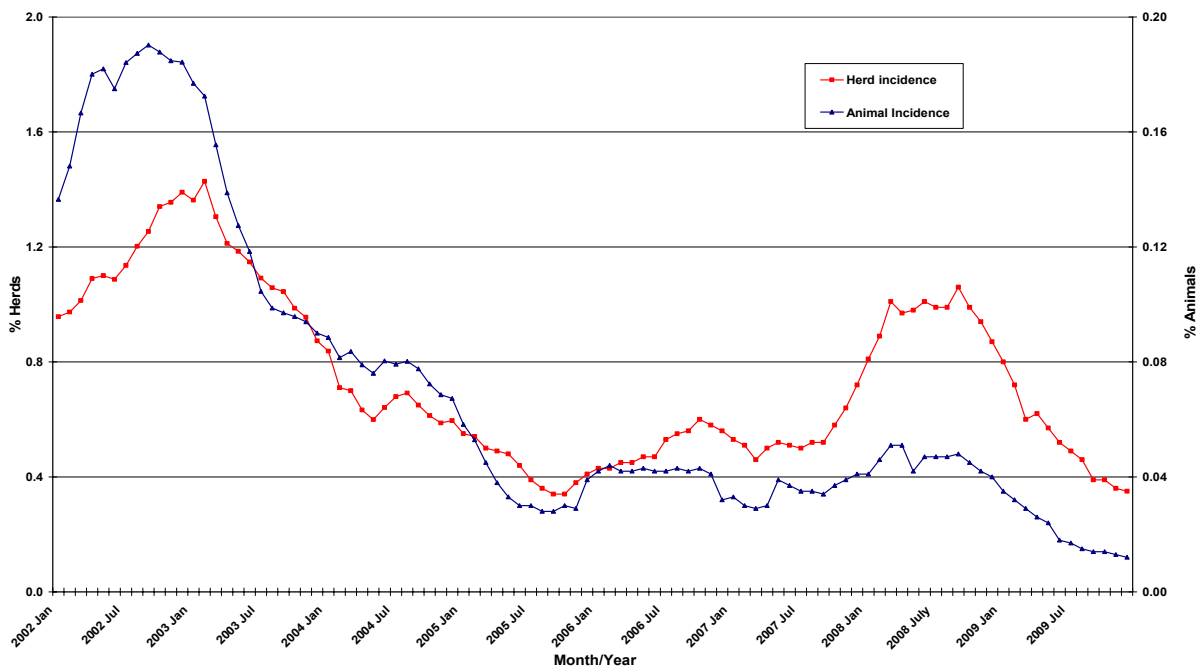
1.1 Disease trends

Of the 20,181 herds (936,670 cattle) within Northern Ireland that were actively monitored for Brucellosis by blood or bulk milk sampling, there were 71 new breakdown herds over the last 12 month period (116 Br reactor animals). This was 60% lower than in the previous 13-24 months (177 new herd breakdowns). The current annual herd incidence was 0.35% with an animal incidence of 0.012%. For the last 13-24 months, annual herd incidence was 0.87% and animal incidence was 0.040%. Peak herd incidence (1.43%) occurred in early 2003.

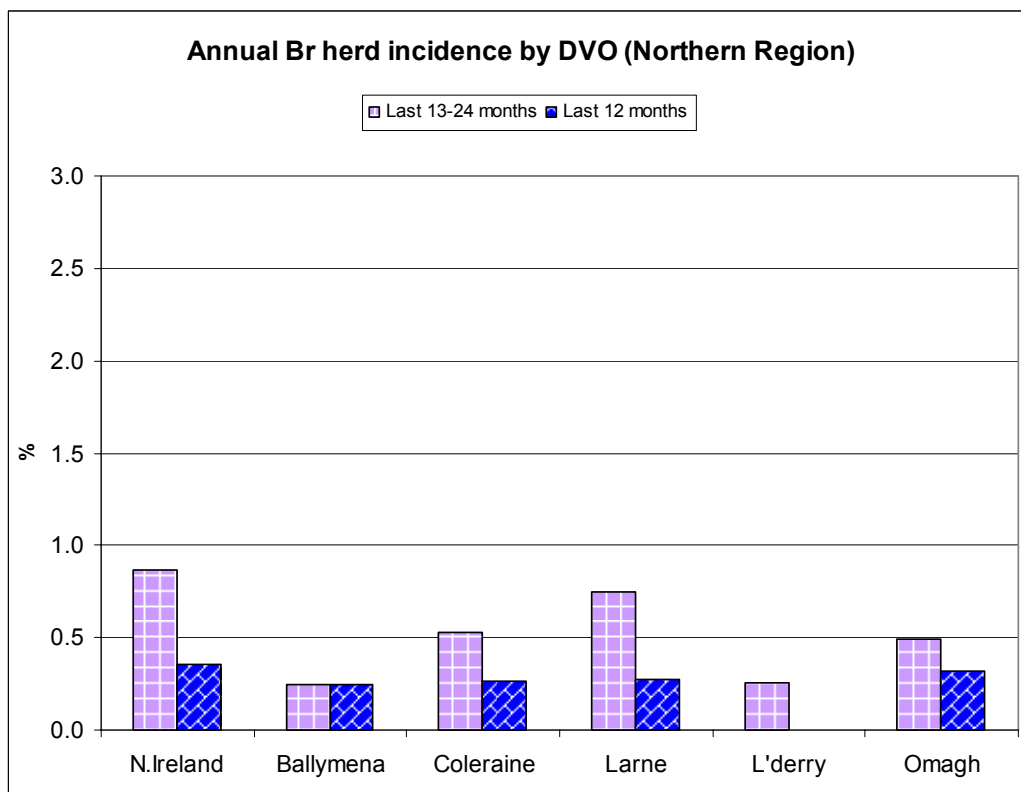
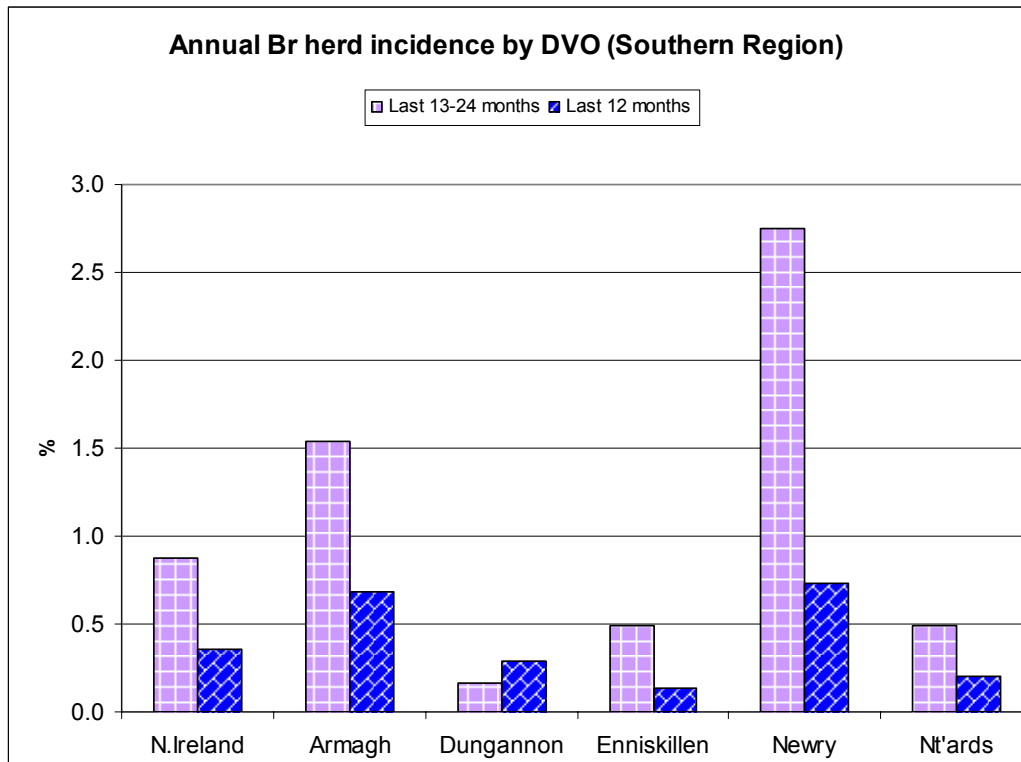
**BR annual herd and animal incidence:
1995 to 2009**



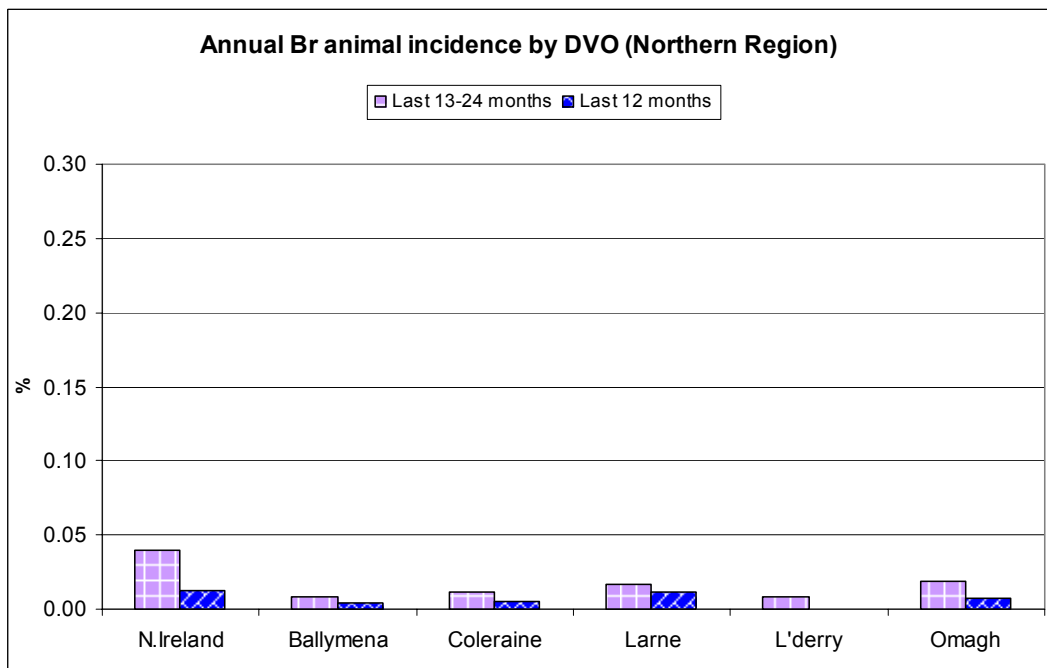
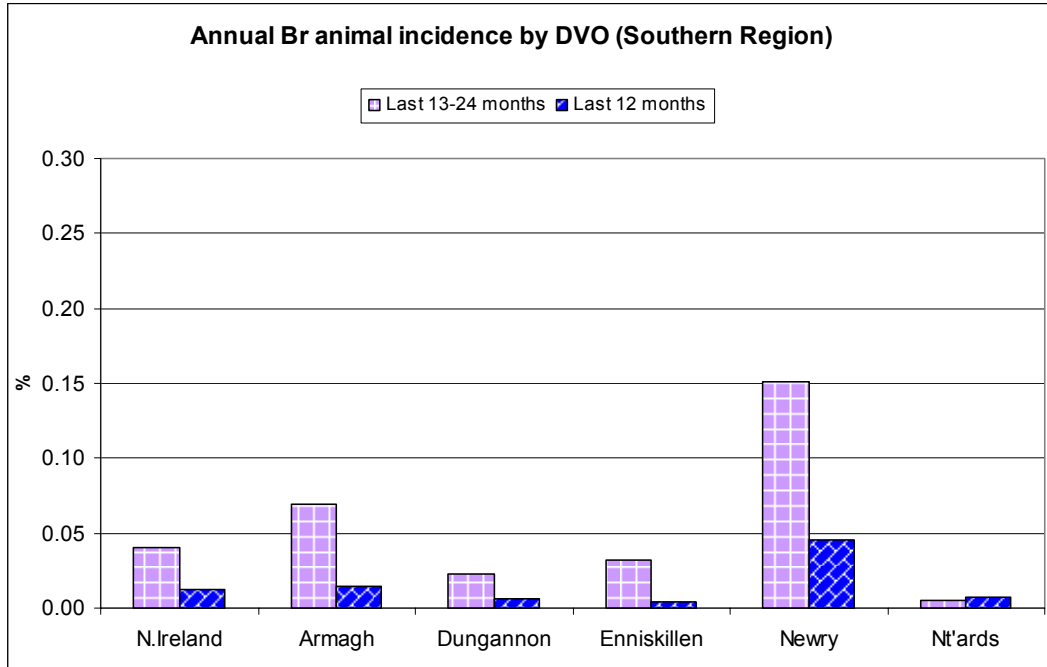
**BR Herd and Animal Incidence
(12 month moving average: January 2002 to December 2009)**



The annual herd incidence fell in eight DVOs. Current annual herd incidence is 0.35% compared with 0.87% in the previous 13-24 month period. Two DVOs have a herd incidence of over 0.5% (Newry DVO = 0.74%; Armagh DVO = 0.68%). There have been no BR breakdown herds in Londonderry DVO since March 2008.



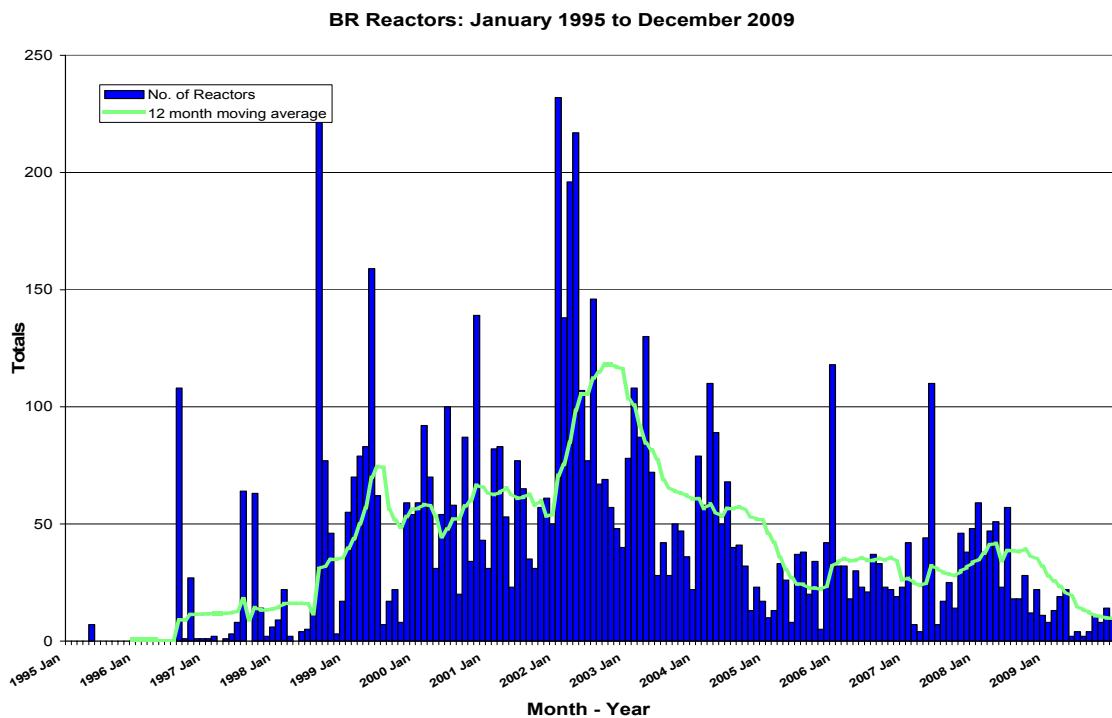
There was a fall in annual animal incidence in nine DVOs. Current annual animal incidence is running at 0.012% which is lower than the rate observed in the previous 13-24 month period (0.040%). Newry (0.045%) has contributed to one-third of the reactors (32%).



1.2 Reactor animals

There was a rise (98%) in the number of reactors and negative in contact animals during this quarter compared to the same quarter last year (683 cf. 344) although the number of BR reactors decreased by 31% (31 cf. 45). The 12-month rolling average number of brucellosis reactors is currently 10 per month (cf. 32 brucellosis reactors in December 2008).

	No. reactors	No. NICs	Total
Current quarter	31	652	683
Matched quarter in previous year	45	299	344
% change	-31.1	118.1	98.5



1.3 Reactor removal times

The median for reactor removal time was 13.0 working days for the year to October (cf. 14.4 days for 2008) with 75 of the 90 BR reactors (83%) being removed within 15 working days (cf. 73% in 2008).

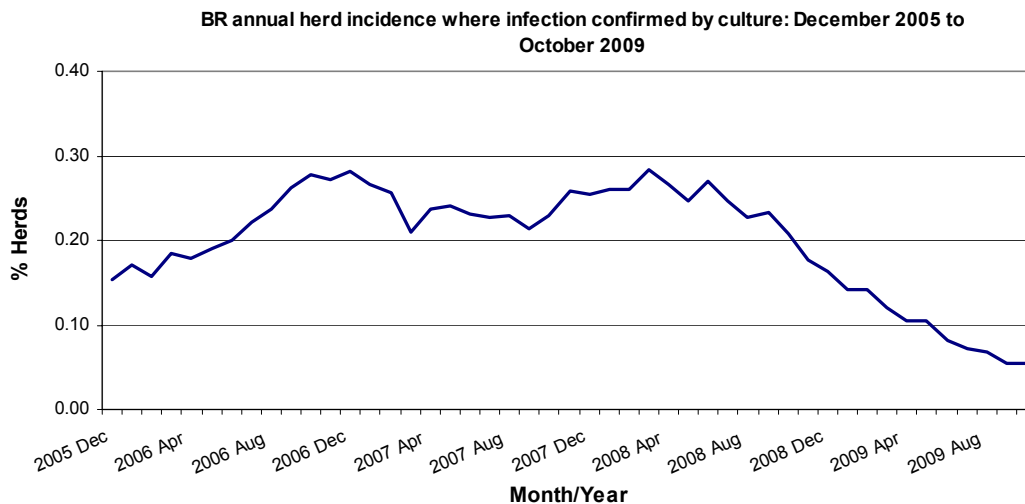
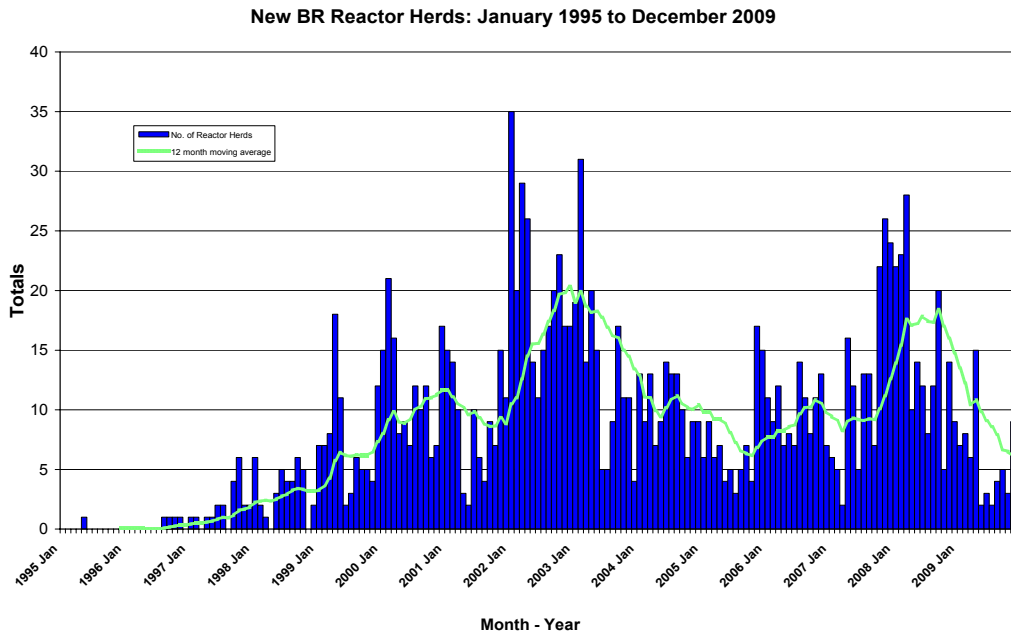
YEAR	Median	Lower Quartile	Upper Quartile
2009 [^]	13.0	10.3	14.4
2008	14.4	10.3	15.8
2007	12.3	10.3	15.8
2006	12.3	10.3	15.1
2005	14.4	11.6	19.9

[^] Period monitored was to October 2009

1.4 New herd breakdowns

There was a decrease (32%) in the number of new herd breakdowns due to brucellosis during this quarter compared to the same quarter in 2008 (19 cf. 28). The 12-month moving average is currently 6 new breakdown herds per month (cf. 15 breakdown herds in December 2008). The culture confirmation rate for new herd breakdowns was low at 19% for the year to date (cf. 23% during 2008, 37% during 2007 and 54% during 2006). Moreover, the annual herd incidence where infection has been confirmed by culture has shown a steady reduction since June 2008 (0.27% to 0.05% in October 2009).

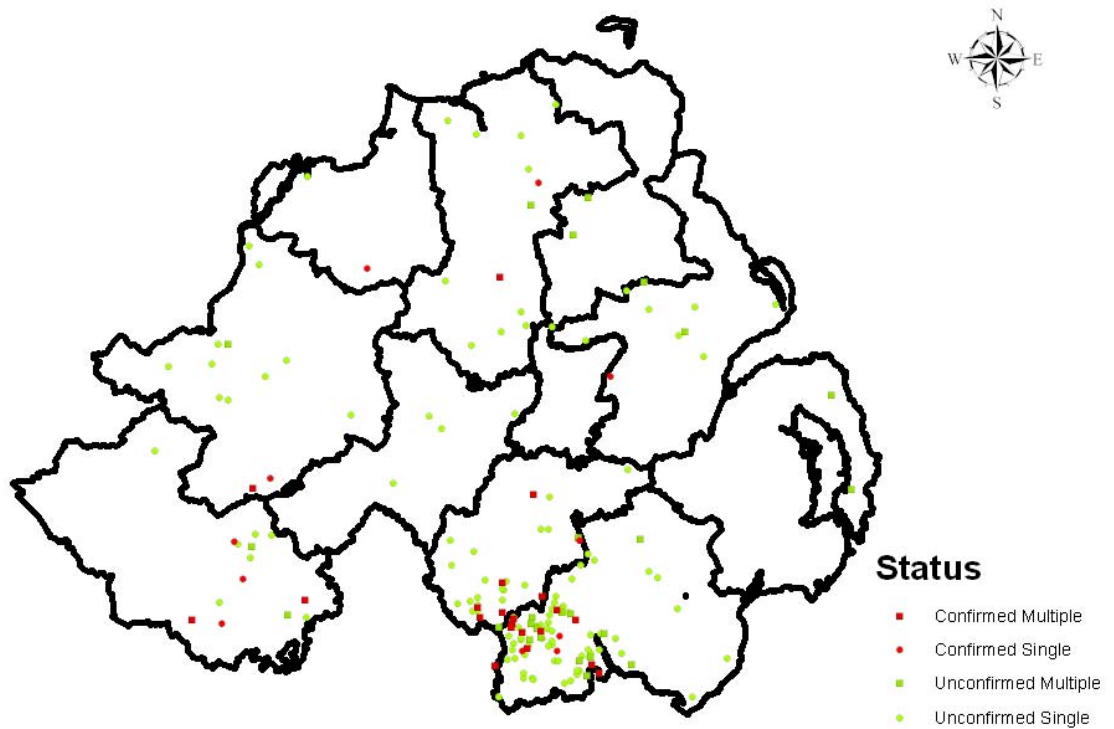
	No. new herd breakdowns
Current quarter	19
Matched quarter in previous year	28
% change	-32.1



1.5 BR herd breakdowns in 2008

The figure below shows the location of the new BR herd breakdowns recorded in Northern Ireland during 2008 and whether the breakdown was confirmed by culture. Multiple reactor breakdowns are also indicated as are the DVO boundaries. The figure highlights the fact that the vast majority of confirmed breakdowns occurred in the south Armagh and Newry area.

New Brucellosis Herd Breakdowns 2008

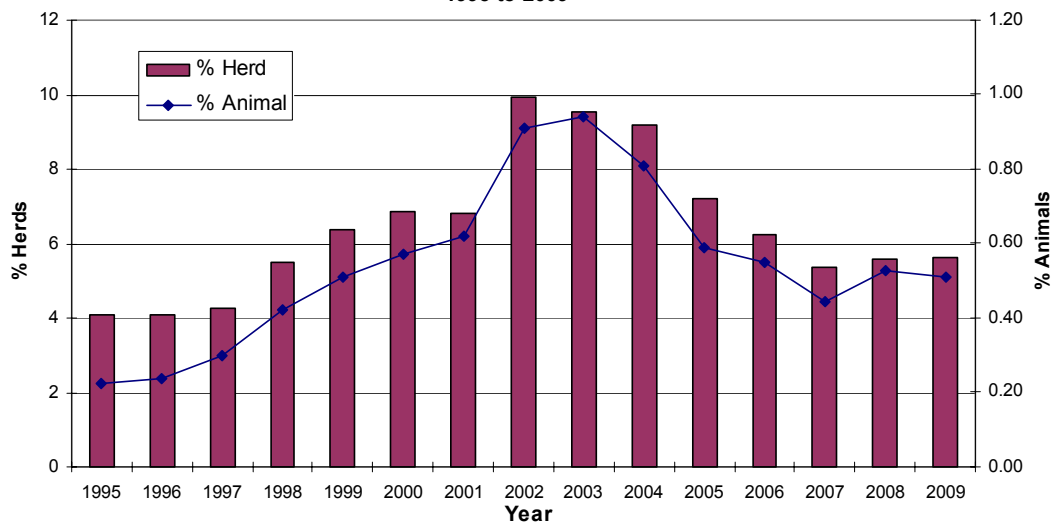


2. Bovine Tuberculosis (TB)

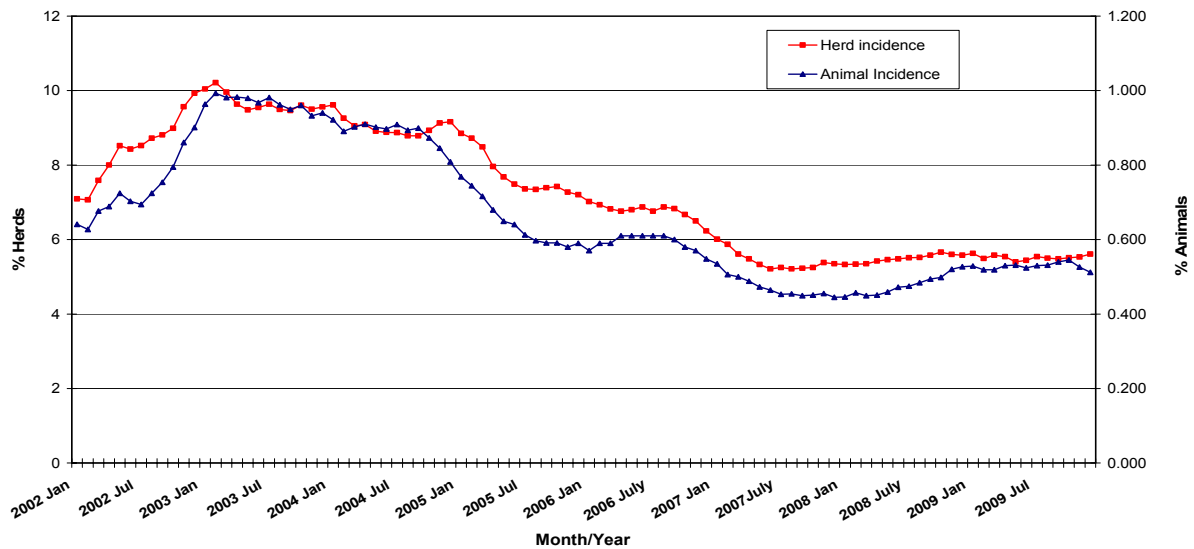
2.1 Disease trends

Approximately 23,031 herds were tuberculin tested over the last 12 months (1.6 million cattle). The herd and animal incidence of TB has remained relatively level over the last year with the current levels running at 5.61% and 0.512%, respectively (previous 13-24 months, herd incidence = 5.57%, animal incidence = 0.527%). Peak incidence occurred during the spring of 2003 (herd incidence = 10.2%; animal incidence = 0.99%).

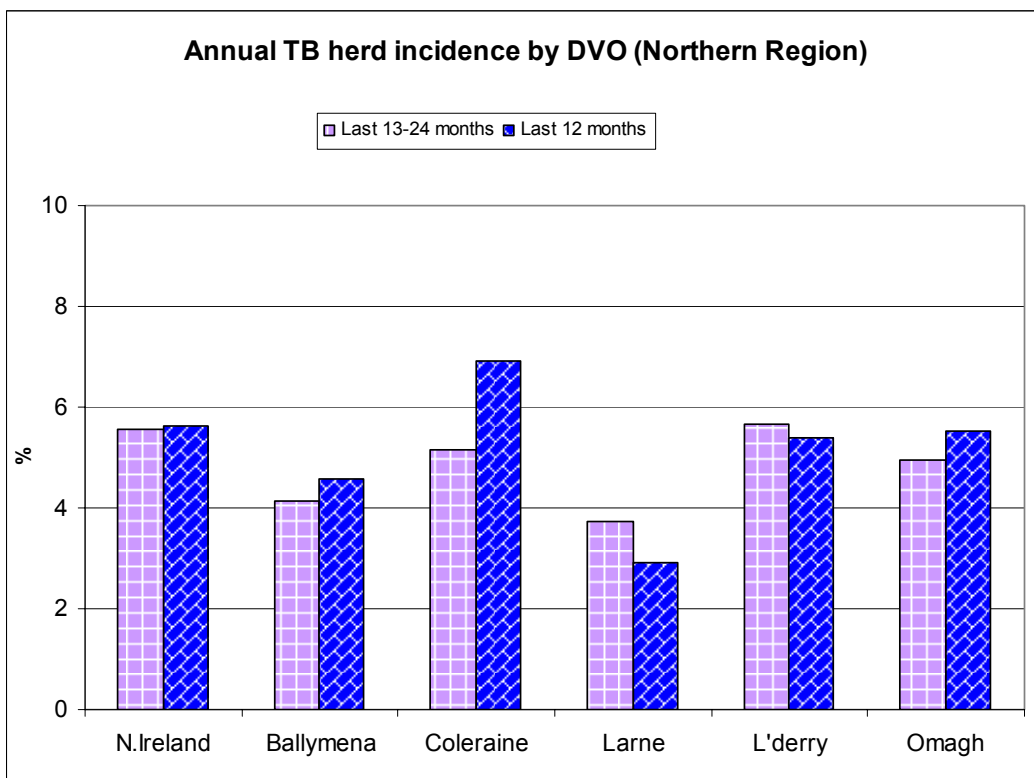
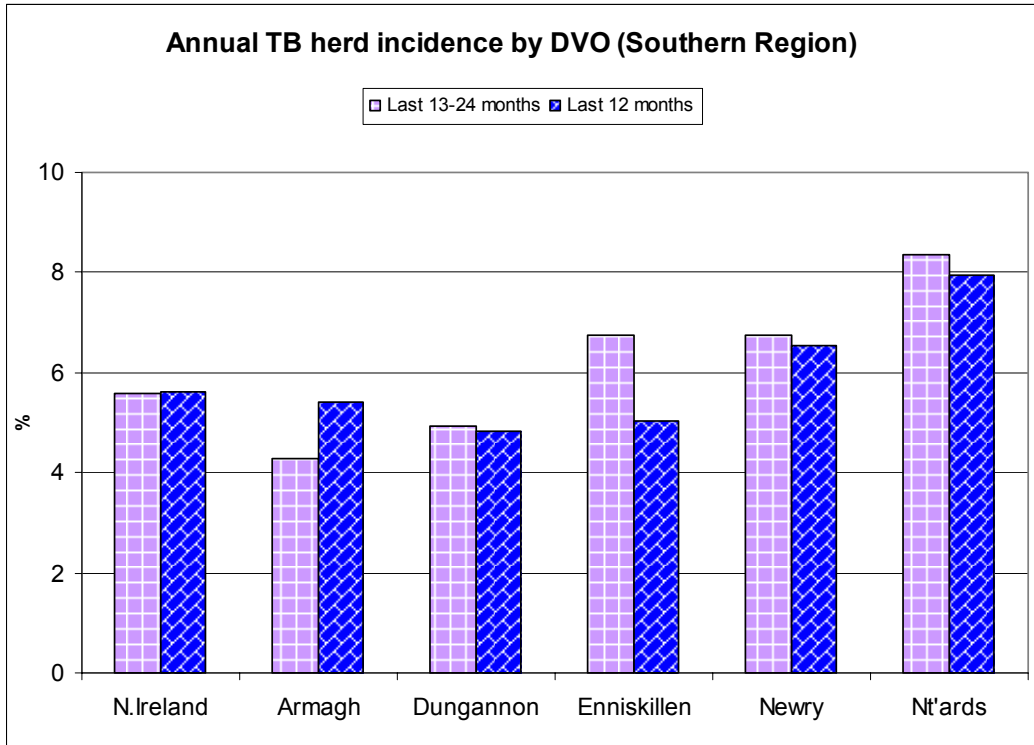
**TB herd and animal incidence:
1995 to 2009**



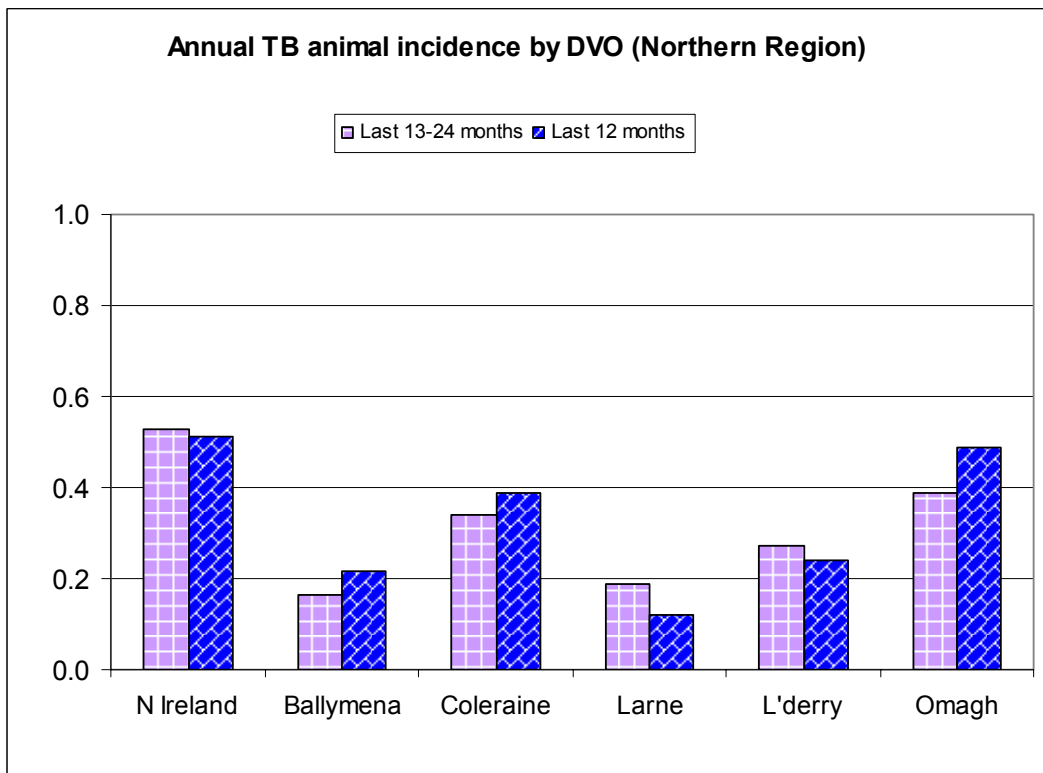
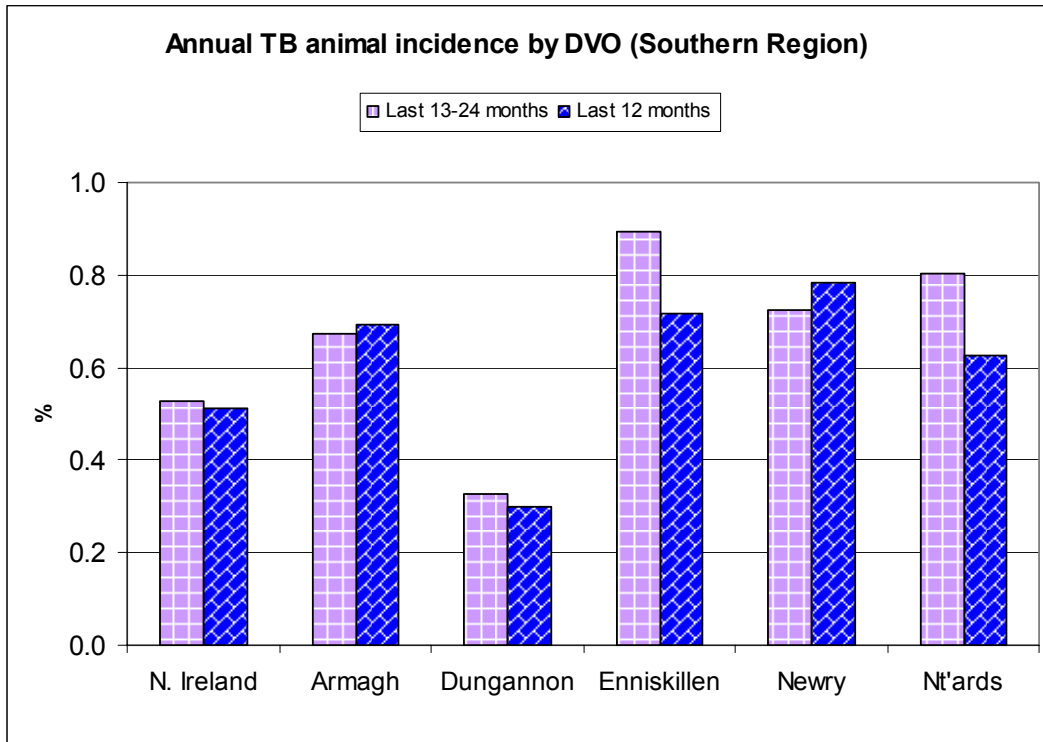
**TB Herd and Animal Incidence:
(12 month moving average: January 2002 to December 2009)**



Six of the ten DVOs demonstrated a decrease in the current annual herd incidence compared to the previous 13-24 months. Newtownards DVO had the highest herd incidence (7.93%) with the national herd incidence currently running at 5.61% (cf. 5.57% in last 13-24 months). Lowest herd incidence was observed in Larne DVO (2.90%).



Five DVOs have shown a decrease in the annual animal incidence compared to the previous 13-24 month period. Newry DVO had the highest incidence (0.784%) while Larne DVO had the lowest annual animal incidence at 0.120%. The national annual animal incidence is currently 0.512% (cf. 0.527% in last 13-24 months).

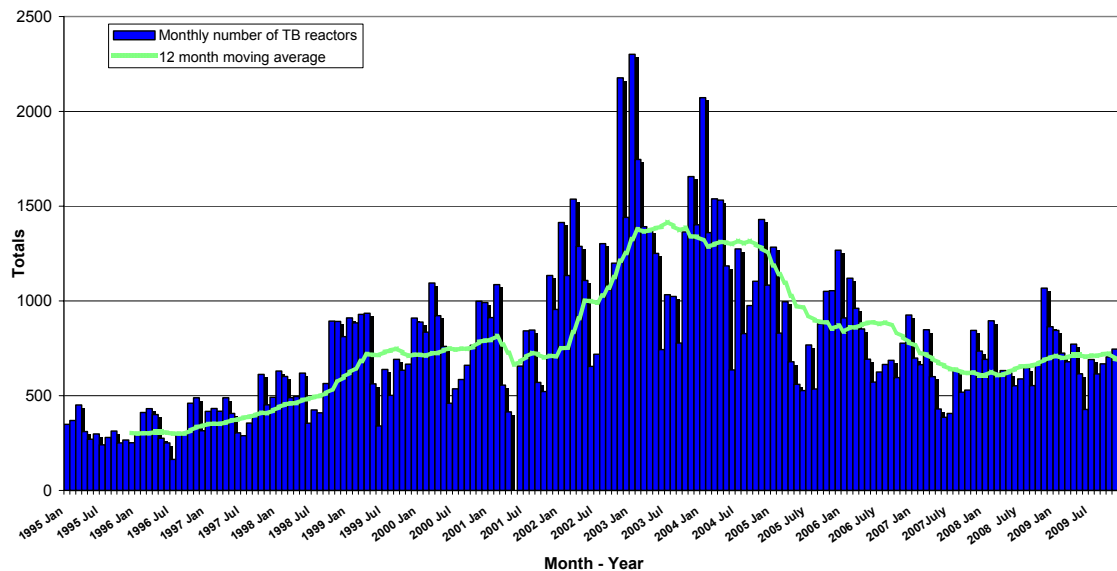


2.2 Reactor animals

During the current quarter, there has been a 17% decrease in the number of TB reactors (2,157 TB reactors cf. 2,595 during the same period in 2008). This difference was mainly due to a number of very large outbreaks in Armagh DVO during 2008. The 12-month moving average for TB reactors is currently 683 per month (cf. 700 in December 2008).

	No. reactors	No. NICs	Total
Current quarter	2157	160	2317
Matched quarter in previous year	2595	120	2715
% change	-16.9	33.3	-14.7

TB Reactors: January 1995 to December 2009



2.3 Reactor removal times

The median for reactor removal time was 11.6 working days for the year to October (cf. 11.6 days for 2008) with 5,441 of the 6,697 TB reactors (81%) being removed within 15 working days (cf. 84% in 2008).

YEAR	Median	Lower Quartile	Upper Quartile
2009 [^]	11.6	8.2	14.4
2008	11.6	8.2	13.7
2007	12.3	8.9	14.4
2006	13.0	9.6	17.1
2005	13.0	8.9	16.4

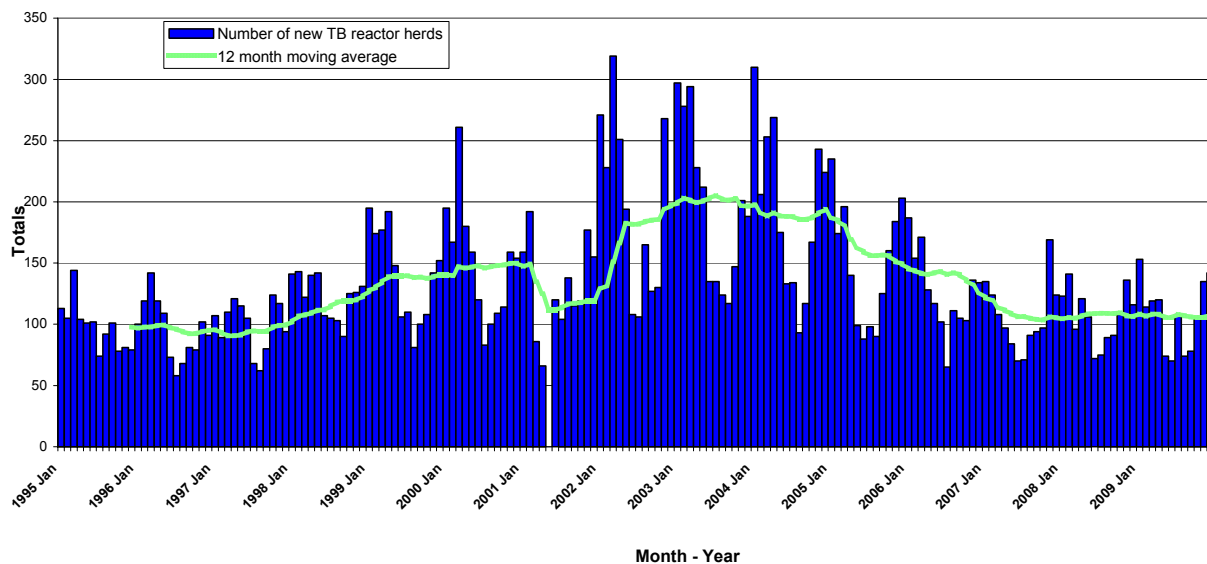
[^] Period monitored was to October 2009

2.4 New herd breakdowns

The number of new TB herd breakdowns was 6% higher for the current month compared to the same quarter in 2008 (382 cf. 359). The 12-month moving average for new TB herd breakdowns is currently 108 herds per month (cf. 106 in December 2008).

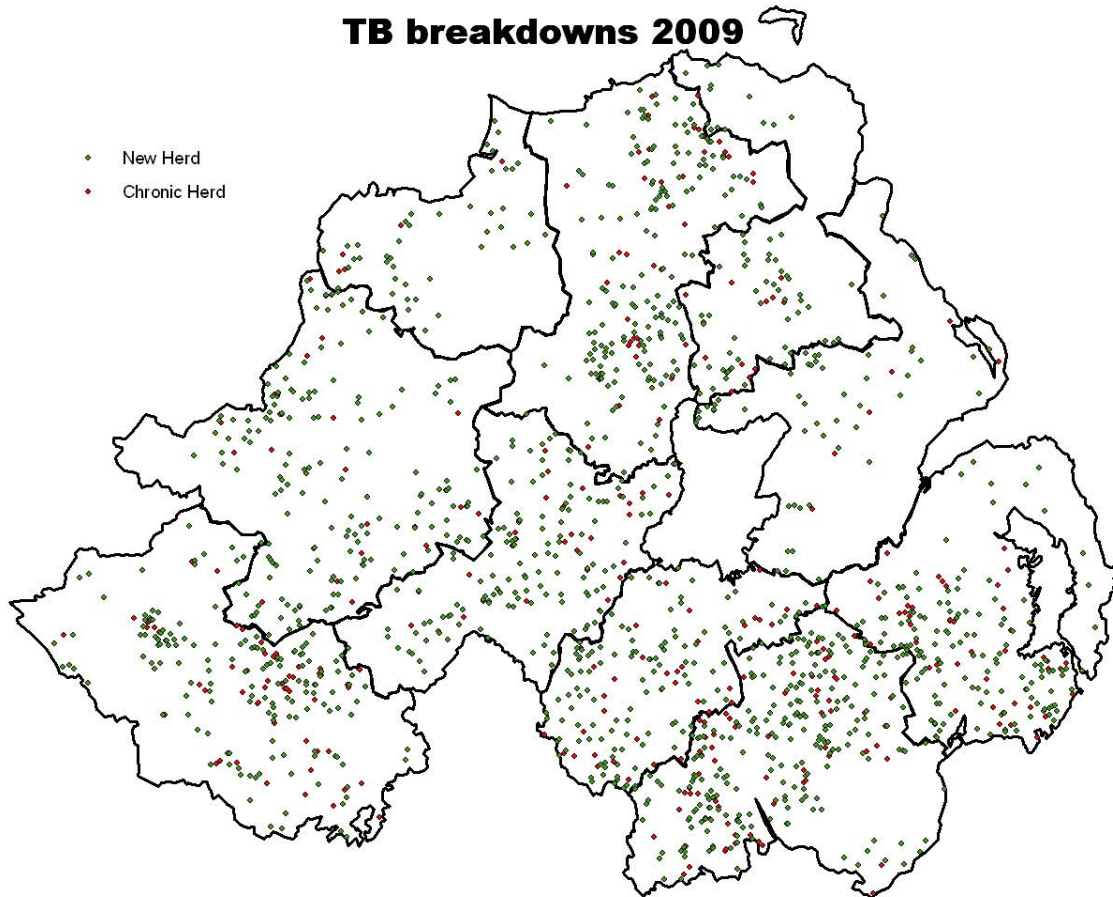
	No. new reactor herds
Current quarter	382
Matched quarter in previous year	359
% change	6.4

New TB Reactor Herds: January 1995 to December 2009



2.5 TB herd breakdowns in 2009

The figure below shows the location of TB herd breakdowns recorded during 2009. New TB herd breakdowns are herds with at least one reactor animal where the herd had no other reactor animals during the previous 12 months. Chronic herds are all other herds that have had at least one other TB reactor during 2009.



3. Bovine Spongiform Encephalopathy (BSE)

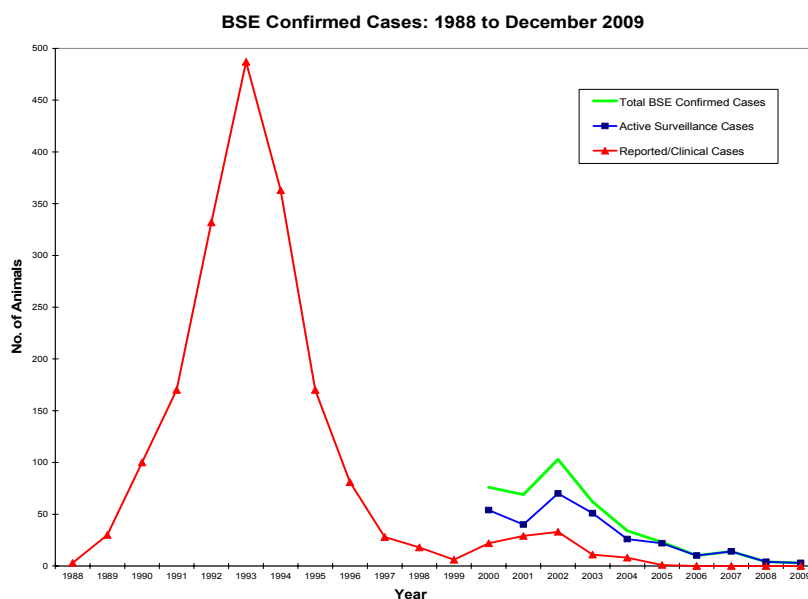
(supplied by TSE Branch)

3.1 Disease trends

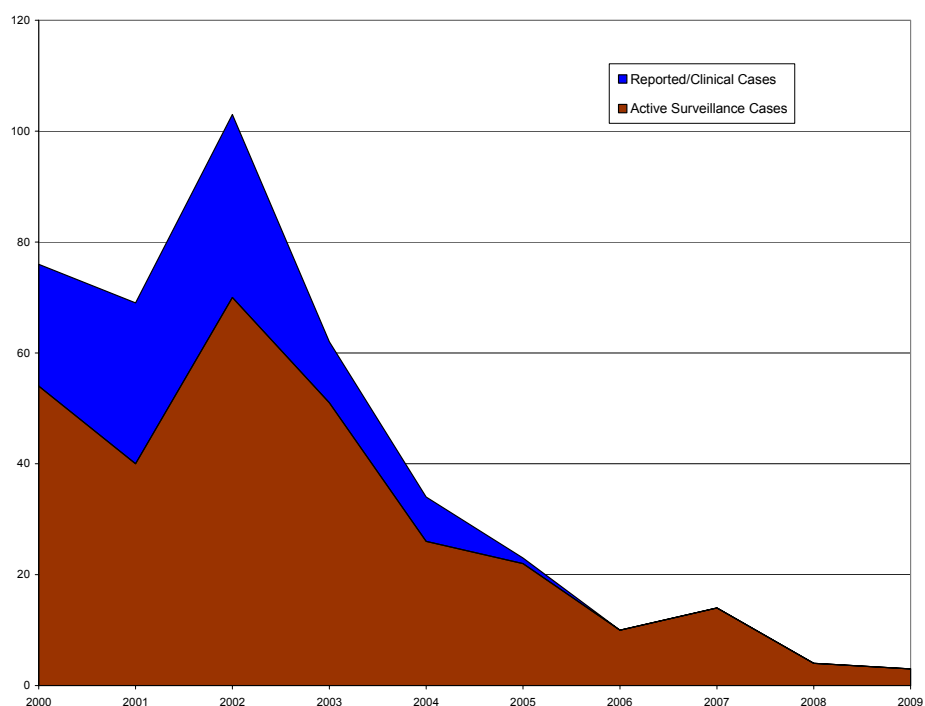
Since the first cases of BSE were reported in Northern Ireland during 1988, there have been a total of 2,186 cases in the province from 1,514 farms. The peak incidence year was 1993 with 487 cases. 54% of all cases occurred during the years 1992-1994, inclusive.

The proportion of clinical suspect cases that were confirmed as having BSE has steadily fallen to 6% in 2005 compared to a confirmation rate of 77% in 1995. None of the 20 suspect cases in 2006, 11 suspect cases in 2007, 10 cases in 2008 or 7 cases in 2009 were confirmed as BSE. There has also been a steady increase in the age profile of cases since 1999 with only 10% of cases in 2003 being in cattle under six years of age and only 6% confirmed in 2004. Two of the 23 cases (8.7%) confirmed in 2005 were less than six years of age. None of the 10 confirmed cases in 2006 were under six years old. However, 2 of the 14 confirmed cases in 2007 (14.3%), 1 of the 4 cases confirmed in 2008 (25%) and 2 of the 3 cases confirmed in 2009 (66.7%) were under 6 years old. There has been a 50% fall in the number of confirmed cases during the current quarter compared to the same quarter of 2008 (1 cf. 2).

Active surveillance of over 48 month fallen animals (over 24 months prior to 2009) is now the main source of confirmed cases accounting for 100% of cases in 2008 and 66.7% of cases in 2009 (64.3% of cases in 2007 and 70% of cases in 2006). In previous years, active surveillance through over thirty months casualty slaughter has been the main source (69% of cases in 2003; 62% of cases during 2004; 65% of cases in 2005). This shift is due to the changes in the criteria required for a casualty animal to be accepted into the Older Cattle Disposal Scheme.



BSE Confirmed cases: January 2000 to December 2009



3.2 Cases by category

Confirmed cases of BSE: 2003 – 2009

Type	Category	2004 Cases	2005 Cases	2006 Cases	2007 Cases	2008 Cases	2009 Cases
Passive Surveillance	On farm suspects	8	1	0	0	0	0
	Abattoir suspects	0	0	0	0	0	0
Active Surveillance	Fallen animals	1	5	7	9	4	2
	Cohorts of BSE Cases	0	2	0	0	0	0
	Over 48 months ante-mortem failure animals	-	-	-	-	-	0
	Over 48 months human consumption	-	-	-	-	-	1
	OTM Casualty animals	21	15	3	3	0	-
	OTM Random animals	1	0	0	-	-	-
	OTM Ante-Mortem failure animals	2	0	0	1	0	-
	Over 42/30 months survey (including 1996/97 cohort)	1	0	0	-	-	-
	OTM Human Consumption	0	0	0	1	0	-
Total		34	23	10	14	4	3

4. Definitions

Term	Definition
Animal incidence	Number of reactors divided by the number of animals tested over a specified period of time expressed as a percentage (i.e. one animal with multiple tests is only counted once)
BR	Bovine brucellosis
BSE	Bovine spongiform encephalopathy
Coverage	Number of tests completed during the quarter divided by the number of due tests expressed as a percentage
Herd incidence	Number of new herd breakdowns divided by the number of herds with a herd level test over a specified period of time expressed as a percentage (i.e. one herd with multiple tests is only counted once)
Lower quartile	The value of the observation which splits the number of observations into a $\frac{1}{4}$ part and a $\frac{3}{4}$ part when they are ranked in order of value e.g. if there were 99 observations then the value of the 25 th observation equals the lower quartile
Median	The value of the observation which splits the number of observations into two equal parts when they are ranked in order of value e.g. if there were 99 observations then the value of the 50 th observation equals the median
New herd breakdown	A herd with at least one reactor animal where the herd had no other reactor animals during the previous 12 months. NB – within TB, herds with confirmed TB from lesions found at routine slaughter are not currently included.
OTM	Over thirty months disposal scheme
PVPs	Private Veterinary Practitioners
Reactor removal times	Number of working days between the test revealing the reactor animal and the death of that animal. Figures given are median values for working days estimated from calendar days (calendar days multiplied by 0.685).
Total tests due	Number of tests which had a test due during the quarter or which had a test due prior to the quarter that had not been completed prior to the commencement of the quarter.
TB	Bovine tuberculosis
TSE	Transmissible spongiform encephalopathy
Upper quartile	The value of the observation which splits the number of observations into a $\frac{3}{4}$ part and a $\frac{1}{4}$ part when they are ranked in order of value e.g. if there were 99 observations then the value of the 75 th observation equals the upper quartile