

Monthly Report:
Surveillance Project SB4008
IFN γ tests for bovine tuberculosis
(TC0651 and TC0751)

Number: 40

Report Period: 1st – 31st January 2010

[REDACTED]
[REDACTED]

VLA Weybridge

Issued 26th February 2010

Operational notes on terminology, definitions, re-test and re-samples test outcomes:

- **“Samples”** refers to an individual tube of blood taken from an individual animal which is subsequently submitted for testing. It is generally assumed that the number of samples and the number of animals are analogous as any duplicate sample blood tube from the same animal will not be tested. However, minor discrepancies may occur where the same animal is tested more than once due to a request for a resample or the animal is tested twice under different categories (for example, as a PAR-RAPID and then as part of a PAR-HERD-S).
- **“Submissions”** refers to an individual batch or set of samples received for testing. Submissions may comprise 1 or more samples (for example, if an entire herd is being tested it is usually sent as 1 submission). It is generally assumed that the number of submissions and the number of herds are analogous.
- **Retests** are samples where the first ELISA assay fails and the same sample is retested on a new ELISA plate. Each sample can be retested only once. A retest is not a reportable test outcome.
- **Resamples** are where a sample has been retested and failed a second time, so that the lab requests a new sample. This is a reportable test outcome.
- **Rejects** are samples that are not tested by the lab for one of the following reasons: blood collected into wrong type of vacutainer, **samples that have not been maintained at the appropriate temperature range (16- 37°C)** or if the package has been refrigerated and the samples are known to have cooled significantly, unlabelled samples, broken or cracked tubes, blood that is extensively clotted (small clots are OK), samples received after 4pm on the day after sample collection.
- **SEB** (staphylococcal enterotoxin B) is a sample positive control reagent which provides a measure of the quality/viability of the blood sample. A SEB fail (< 0.45 optical density reading) may indicate compromised blood quality as a result of collection/transportation conditions or due to the animal having an unusually low/suppressed cellular immune response.
- **NAC** (no-antigen control) is a sample negative control which provides a measure of the background antigen-independent IFN- γ responses. A NAC fail (> 0.3 optical density reading) may indicate a laboratory procedures problem (normally resolved during re-test) or that an animal has unusually high background levels of IFN- γ .

Table 1. Monthly Totals for 1st - 31st January 2010

		1 st – 31 st January 2010		Total 2010		Total since 23/10/06	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Submissions		71	100.00	71	100.00	5012	100.00
Samples	Total (%):	1826	100.00	1826	100.00	90707	100.00
	England	1160	63.53	1160	63.53	62303	68.69
	Scotland	23	1.26	23	1.26	12520	13.80
	Wales	643	35.21	643	35.21	15884	17.51
Parallel Tests		1826	100.00	1826	100.00	89933	99.15
	Total (% of all tests):	1826	100.00	1826	100.00	89933	99.15
	Possible Herd Slaughter (PAR-HERD-S)	0	0.00	0	0.00	4013	4.42
	Confirmed New Incident 3/4y PTI (PAR-TB-YR)	1560	85.43	1560	85.43	68985	76.05
	Persistent Incident 1/2yr PTI (PAR-P-CONF)	122	6.68	122	6.68	9024	9.95
	Rapid resolution of twice I.R.s (PAR-RAPID)	136	7.45	136	7.45	6454	7.12
	Other (PAR-OTHER)	8	0.44	8	0.44	1457	1.61
Serial Tests		0	0.00	0	0.00	774	0.85
	Total (% of all tests):	0	0.00	0	0.00	774	0.85
	'NSR' Herds (SER-NSR)	0	0.00	0	0.00	184	0.20
	Suspected fraud (SER-FRAUD)	0	0.00	0	0.00	558	0.62
	Other (SER-OTHER)	0	0.00	0	0.00	32	0.04
Retests *		440	24.10	440	24.10	9175	10.11
	Total (% of all tests):	440	24.10	440	24.10	9175	10.11
	England	240	13.14	240	13.14	5851	6.45
	Scotland	4	0.22	4	0.22	1289	1.42
	Wales	196	10.73	196	10.73	2035	2.24
Resamples **		371	20.32	371	20.32	5907	6.51
	Total (% of all tests):	371	20.32	371	20.32	5907	6.51
	England	196	10.73	196	10.73	3681	4.06
	Scotland	3	0.16	3	0.16	812	0.90
	Wales	172	9.42	172	9.42	1414	1.56
Rejects ***		37	2.03	37	2.03	928	1.02
	Total (% of all tests):	37	2.03	37	2.03	928	1.02
	England	13	0.71	13	0.71	469	0.52
	Scotland	0	0.00	0	0.00	167	0.18
	Wales	24	1.31	24	1.31	292	0.32

Figure 1. Number of samples submitted in each category during January 2010.

Breakdown of Reason for Submission

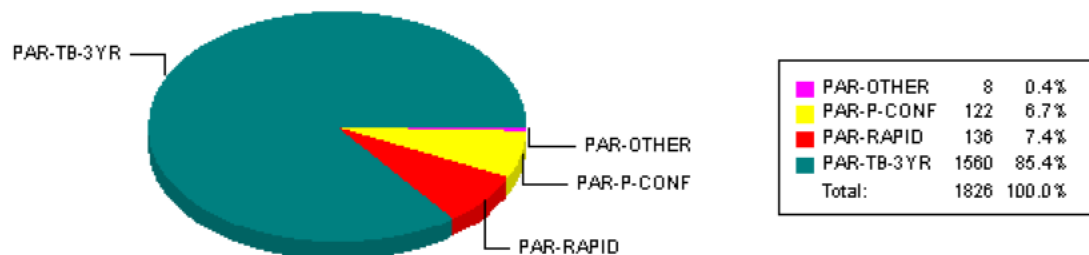


Figure 2. Number of samples submitted in each category by AHDO during January 2010.

Breakdown of Samples submitted by AHDO

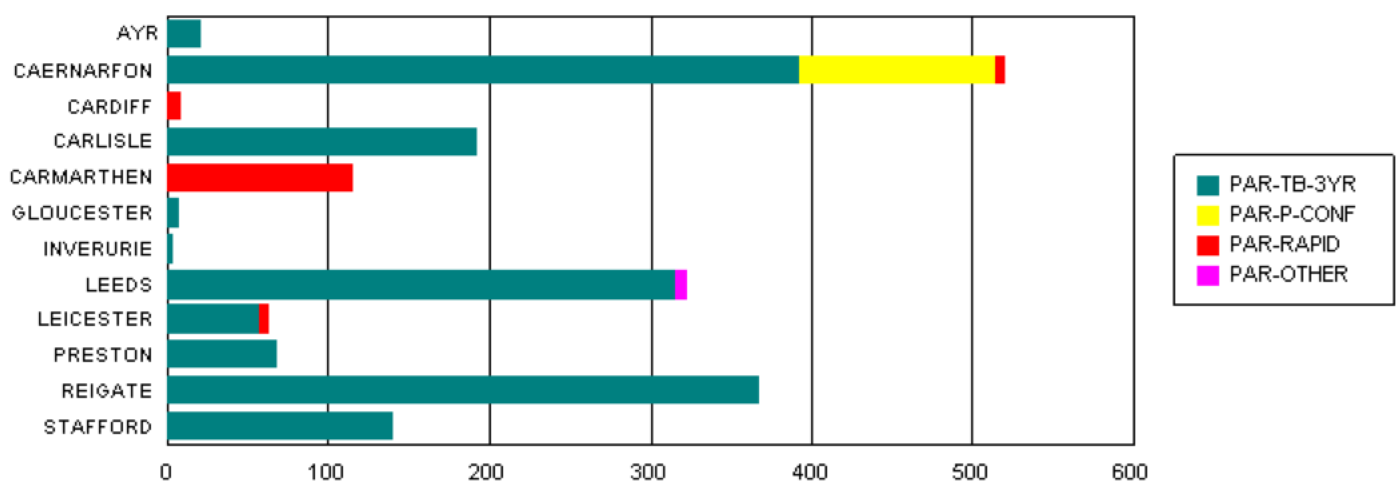


Figure 3. Number of samples submitted in each category by AHDO during 2010.

Breakdown of Samples submitted by AHDO

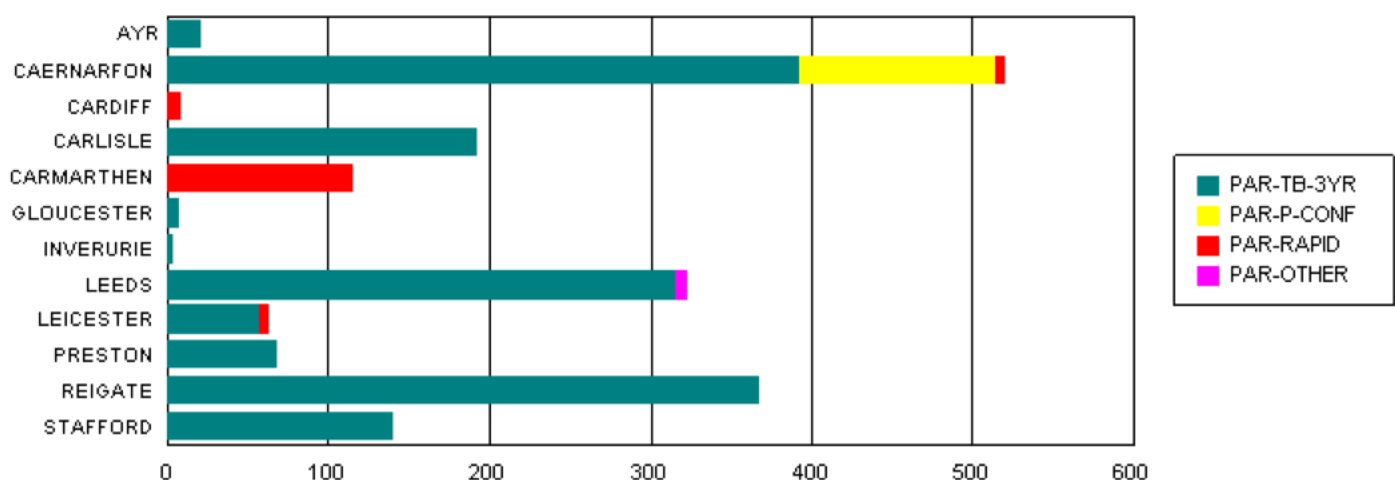


Table 2. Summary by AHDO for January 2010.

Country	AHDO	Submission Reason	No Submissions	Samples (% of total)		Gamma Positive (%)		Gamma Negative (%)		Retest* (%)		Resample (%)		Reject (%)	
ENGLAND	CARLISLE	PAR-TB-3YR	2	192	10.51	9	4.69	164	85.42	33	17.19	18	9.38	1	0.52
ENGLAND	GLOUCESTER	PAR-TB-3YR	1	7	0.38	0	0.00	7	100.00	0	0.00	0	0.00	0	0.00
ENGLAND	LEEDS	PAR-OTHER	1	8	0.44	0	0.00	6	75.00	2	25.00	2	25.00	0	0.00
ENGLAND	LEEDS	PAR-TB-3YR	2	315	17.25	1	0.32	274	86.98	47	14.92	40	12.70	0	0.00
ENGLAND	LEICESTER	PAR-RAPID	4	6	0.33	3	50.00	1	16.67	2	33.33	2	33.33	0	0.00
ENGLAND	LEICESTER	PAR-TB-3YR	2	57	3.12	0	0.00	53	92.98	6	10.53	4	7.02	0	0.00
ENGLAND	PRESTON	PAR-RAPID	1	1	0.05	1	100.00	0	0.00	1	100.00	0	0.00	0	0.00
ENGLAND	PRESTON	PAR-TB-3YR	2	67	3.67	4	5.97	45	67.16	18	26.87	13	19.40	5	7.46
ENGLAND	REIGATE	PAR-TB-3YR	4	367	20.10	8	2.18	260	70.84	102	27.79	92	25.07	7	1.91
ENGLAND	STAFFORD	PAR-TB-3YR	1	140	7.67	15	10.71	100	71.43	29	20.71	25	17.86	0	0.00
SCOTLAND	AYR	PAR-TB-3YR	1	20	1.10	2	10.00	16	80.00	3	15.00	2	10.00	0	0.00
SCOTLAND	INVERURIE	PAR-TB-3YR	1	3	0.16	0	0.00	2	66.67	1	33.33	1	33.33	0	0.00
WALES	CAERNARFON	PAR-P-CONF	2	122	6.68	5	4.10	77	63.11	44	36.07	37	30.33	3	2.46
WALES	CAERNARFON	PAR-RAPID	2	6	0.33	1	16.67	4	66.67	1	16.67	1	16.67	0	0.00
WALES	CAERNARFON	PAR-TB-3YR	2	392	21.47	5	1.28	263	67.09	139	35.46	124	31.63	0	0.00
WALES	CARDIFF	PAR-RAPID	3	8	0.44	3	37.50	5	62.50	0	0.00	0	0.00	0	0.00
WALES	CARMARTHEN	PAR-RAPID	40	115	6.30	37	32.17	47	40.87	12	10.43	10	8.70	21	18.26
		Totals	71	1826	100.00	94	5.15	1324	72.51	440	24.10	371	20.32	37	2.03

* Sufficient plasma supernatant is collected and stored following the overnight culture stage of the assay such that if the sample fails any of the QC criteria, it is possible for the laboratory to 're-test' the original sample. Depending on the outcome of a retest, a resample (if QC criteria fail to be met), a positive or a negative result will be reported. Therefore, the total number of samples = the sum of positive, negative, resample and reject samples only.

Table 3a. Summary of IFN γ results by country and protocol (January 2010)

Country	Protocol	No Submissions	Samples tested		Positive		Negative		Retest		Resample		Rejected	
			n	%	N	%	n	%	n	%	n	%	n	%
ENGLAND	Parallel	20	1160	100.0	41	3.5	910	78.4	240	20.7	196	16.9	13	1.1
	Serial	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Total	20	1160	100.0	41	3.5	910	78.4	240	20.7	196	16.9	13	1.1
SCOTLAND	Parallel	2	23	100.0	2	8.7	18	78.3	4	17.4	3	13.0	0	0.0
	Serial	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Total	2	23	100.0	2	8.7	18	78.3	4	17.4	3	13.0	0	0.0
WALES	Parallel	49	643	100.0	51	7.9	396	61.6	196	30.5	172	26.7	24	3.7
	Serial	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Total	49	643	100.0	51	7.9	396	61.6	196	30.5	172	26.7	24	3.7
GB	Parallel	71	1826	100.0	94	5.1	1324	72.5	440	24.1	371	20.3	37	2.0
	Serial	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Total	71	1826	100.0	94	5.1	1324	72.5	440	24.1	371	20.3	37	2.0

Table 3b. Summary of IFN_γ results by country protocol (Total 2010).

Country	Protocol	No Submissions	Samples tested		Positive		Negative		Retest		Resample		Rejected	
			n	%	N	%	n	%	n	%	n	%	n	%
ENGLAND	Parallel	20	1160	100.0	41	3.5	910	78.4	240	20.7	196	16.9	13	1.1
	Serial	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Total	20	1160	100.0	41	3.5	910	78.4	240	20.7	196	16.9	13	1.1
SCOTLAND	Parallel	2	23	100.0	2	8.7	18	78.3	4	17.4	3	13.0	0	0.0
	Serial	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Total	2	23	100.0	2	8.7	18	78.3	4	17.4	3	13.0	0	0.0
WALES	Parallel	49	643	100.0	51	7.9	396	61.6	196	30.5	172	26.7	24	3.7
	Serial	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Total	49	643	100.0	51	7.9	396	61.6	196	30.5	172	26.7	24	3.7
GB	Parallel	71	1826	100.0	94	5.1	1324	72.5	440	24.1	371	20.3	37	2.0
	Serial	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Total	71	1826	100.0	94	5.1	1324	72.5	440	24.1	371	20.3	37	2.0

Table 3c. Summary of IFN_y results by country protocol (Total since test roll out).

Country	Protocol	No Submissions	Samples tested		Positive		Negative		Retest		Resample		Rejected	
			n	%	N	%	n	%	n	%	n	%	n	%
ENGLAND	Parallel	3114	62115	99.7	6848	11.0	51128	82.3	5838	9.4	3670	5.9	469	0.8
	Serial	14	188	0.3	5	2.7	172	91.5	13	6.9	11	5.9	0	0.0
	Total	3128	62303	100.0	6853	11.0	51300	82.3	5851	9.4	3681	5.9	469	0.8
SCOTLAND	Parallel	173	12514	100.0	723	5.8	10812	86.4	1289	10.3	812	6.5	167	1.3
	Serial	1	6	0.0	0	0.0	6	100.0	0	0.0	0	0.0	0	0.0
	Total	174	12520	100.0	723	5.8	10818	86.4	1289	10.3	812	6.5	167	1.3
WALES	Parallel	1684	15304	96.3	3006	19.6	10653	69.6	1948	12.7	1366	8.9	279	1.8
	Serial	26	580	3.7	5	0.9	514	88.6	87	15.0	48	8.3	13	2.2
	Total	1710	15884	100.0	3011	19.0	11167	70.3	2035	12.8	1414	8.9	292	1.8
GB	Parallel	4971	89933	99.1	10577	11.8	72593	80.7	9075	10.1	5848	6.5	915	1.0
	Serial	41	774	0.9	10	1.3	692	89.4	100	12.9	59	7.6	13	1.7
	Total	5012	90707	100.0	10587	11.7	73285	80.8	9175	10.1	5907	6.5	928	1.0

Table 4a. Summary of IFN_γ results by submission reason (January 2010).

SUBMISSION REASON	No Submissions	Samples tested		Positive		Negative		Retest		Resample		Rejected	
		n	%	n	%	n	%	n	%	n	%	n	%
Parallel Other	1	8	0.4	0	0.0	6	75.0	2	25.0	2	25.0	0	0.0
Persistent Confirmed Incidents 1-2yr	2	122	6.7	5	4.1	77	63.1	44	36.1	37	30.3	3	2.5
Rapid Testing of twice IR's	50	136	7.4	45	33.1	57	41.9	16	11.8	13	9.6	21	15.4
Confirmed New Incident 3-4yr	18	1560	85.4	44	2.8	1184	75.9	378	24.2	319	20.4	13	0.8
Total	71	1826	100.0	94	5.1	1324	72.5	440	24.1	371	20.3	37	2.0

Table 4b. Summary of IFN_γ results by submission reason (Total 2010).

SUBMISSION REASON	No Submissions	Samples tested		Positive		Negative		Retest		Resample		Rejected	
		n	%	n	%	n	%	n	%	n	%	n	%
Parallel Other	1	8	0.4	0	0.0	6	75.0	2	25.0	2	25.0	0	0.0
Persistent Confirmed Incidents 1-2yr	2	122	6.7	5	4.1	77	63.1	44	36.1	37	30.3	3	2.5
Rapid Testing of twice IR's	50	136	7.4	45	33.1	57	41.9	16	11.8	13	9.6	21	15.4
Confirmed New Incident 3-4yr	18	1560	85.4	44	2.8	1184	75.9	378	24.2	319	20.4	13	0.8
Total	71	1826	100.0	94	5.1	1324	72.5	440	24.1	371	20.3	37	2.0

Table 4c. Summary of IFN_γ results by submission reason (Total since test roll out).

SUBMISSION REASON	No Submissions	Samples tested		Positive		Negative		Retest		Resample		Rejected	
		n	%	n	%	n	%	n	%	n	%	n	%
Possible Herd Slaughter	92	4013	4.4	669	16.7	2955	73.6	369	9.2	279	7.0	110	2.7
Parallel Other	53	1457	1.6	174	11.9	1133	77.8	173	11.9	129	8.9	21	1.4
Persistent Confirmed Incidents 1-2yr	185	9024	9.9	1221	13.5	6994	77.5	980	10.9	633	7.0	176	2.0
Rapid Testing of twice IR's	3676	6454	7.1	3413	52.9	2675	41.4	468	7.3	301	4.7	65	1.0
Confirmed New Incident 3-4yr	965	68985	76.1	5100	7.4	58836	85.3	7085	10.3	4506	6.5	543	0.8
Suspected Fraud	19	558	0.6	3	0.5	494	88.5	88	15.8	48	8.6	13	2.3
"NSR" Herds	19	184	0.2	6	3.3	168	91.3	10	5.4	10	5.4	0	0.0
Serial Other	3	32	0.0	1	3.1	30	93.8	2	6.3	1	3.1	0	0.0
Total	5012	90707	100.0	10587	11.7	73285	80.8	9175	10.1	5907	6.5	928	1.0

Table 5. Summary of PM and culture results for IFN γ positive animals.

Period	Herds sampled	Samples tested	Herds with positives	IFN γ + samples	Wrong Eartags	NoPM/ NoCult	NoPM/ CultPend	NoPM/ CultNeg	NoPM/ CultMb	NoPM/ CultOther	VL/ NoCult	VL/ CultPend	VL/ CultNeg	VL/ CultMb	VL/ CultOther	NVL/ NoCult	NVL/ CultPend	NVL/ CultNeg	NVL/ CultMb	NVL/ CultOther
Jan - 2009	196	2296	150	487	14	25	0	0	1	0	59	0	1	19	0	160	2	203	3	0
Feb - 2009	155	3387	112	435	30	5	0	0	0	0	18	0	2	19	0	255	1	103	2	0
Mar - 2009	146	3050	98	366	13	18	0	1	1	0	19	0	2	6	0	231	0	75	0	0
Apr - 2009	187	4109	130	383	18	4	0	4	0	0	9	0	3	9	0	255	0	80	1	0
May - 2009	160	1553	89	209	9	2	0	1	0	0	14	0	1	5	0	104	2	70	0	1
Jun - 2009	171	1578	92	180	25	1	0	2	0	0	6	0	0	9	0	51	1	83	1	1
Jul - 2009	162	909	94	155	18	0	0	1	0	0	7	0	2	16	0	48	1	61	0	1
Aug - 2009	111	1981	63	183	16	5	0	0	0	0	37	0	0	11	0	99	0	15	0	0
Sep - 2009	94	3622	61	236	81	1	0	0	0	0	17	1	0	9	0	104	0	21	1	1
Oct - 2009	121	2667	81	216	26	12	0	0	0	0	4	1	0	7	0	149	0	17	0	0
Nov - 2009	104	2899	63	315	21	20	0	0	0	0	7	2	1	5	0	246	4	9	0	0
Dec - 2009	104	2572	56	96	7	16	0	0	0	0	8	6	0	0	0	36	23	0	0	0
Jan - 2010	71	1826	37	94	24	49	0	0	0	0	2	0	0	0	0	18	1	0	0	0
Total	5010	90705	3171	10587	875	244	0	62	6	0	457	11	76	456	1	4985	37	3301	54	22

Key: NoPM= no PME performed/recorded on Vet Net.

No Cult=*M. bovis* culture not performed, CultPend= *M. bovis* culture pending, CultNeg= *M. bovis* culture negative, CultMtb= *M. bovis* culture positive, CultOther= Organism other than *M. bovis* cultured.

N.B. Discrepancies may arise between Gamma statistics in Table 5 and other tables in the report as a consequence of data in Table 5 being derived from Vet Net rather than the VLA managed LIMS database.

Figure 4a. Number of herds sampled for IFN γ and numbers of herds with any positive IFN γ results.

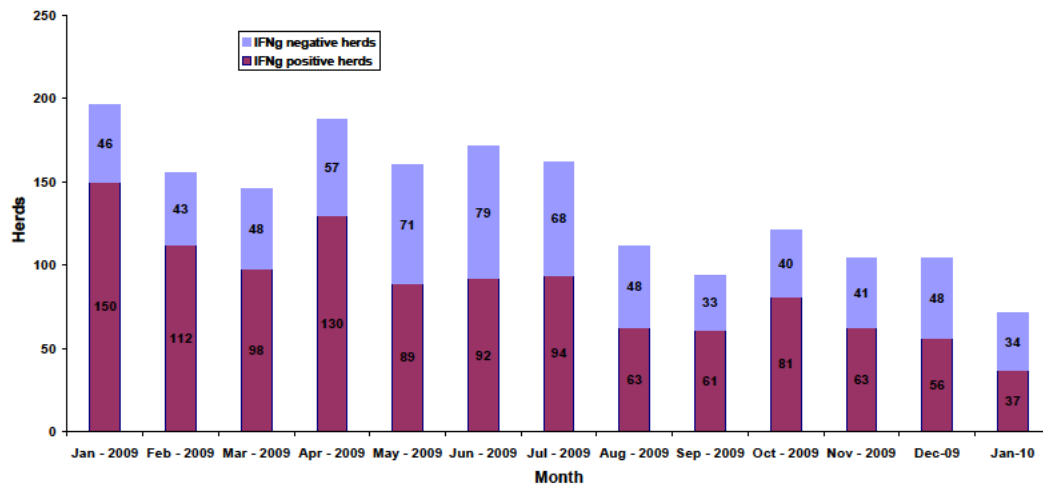


Figure 4b. Number of animals sampled for IFN γ and numbers of animals with positive IFN γ results.

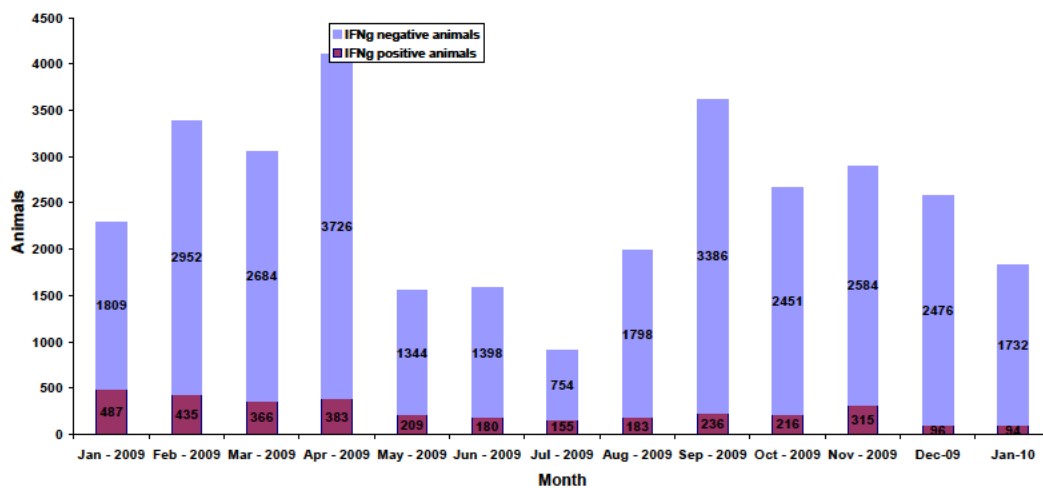


Figure 4c. Percentage of animals tested with IFN γ giving a positive response.

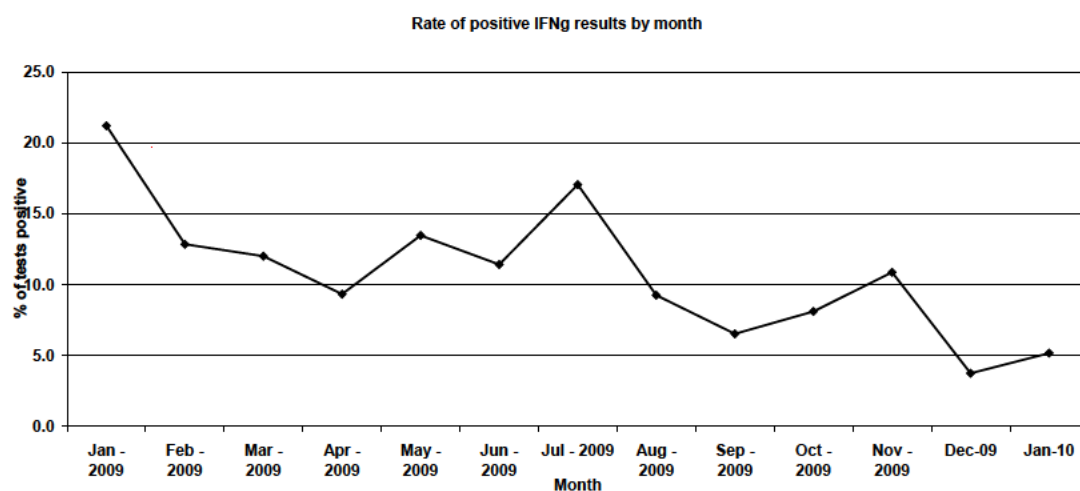


Figure 5. Rates of retests and resamples including the fail rates broken down for positive (SEB) and negative (NAC) controls.

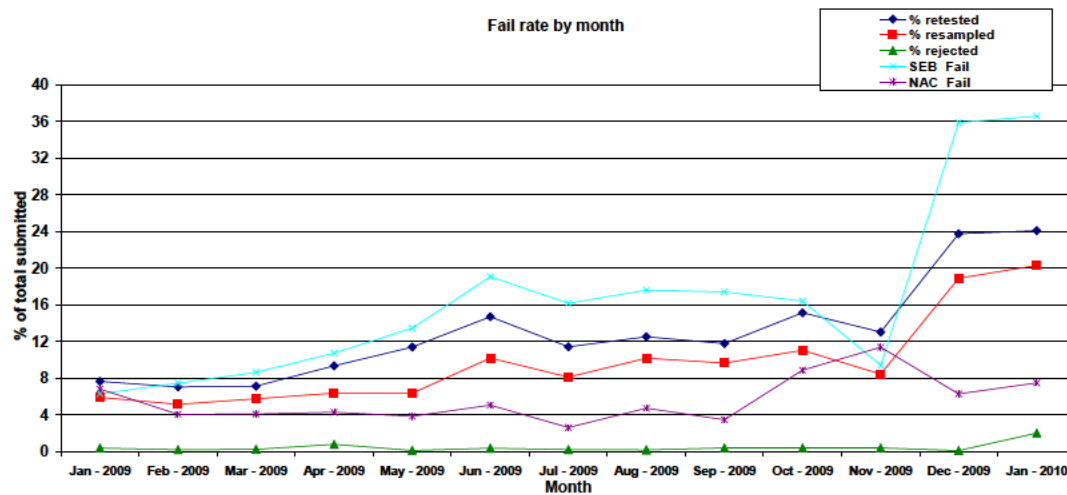


Figure 6. Proportion of samples retested, or requiring a resample, during January 2010 (% of submission per AHDO).

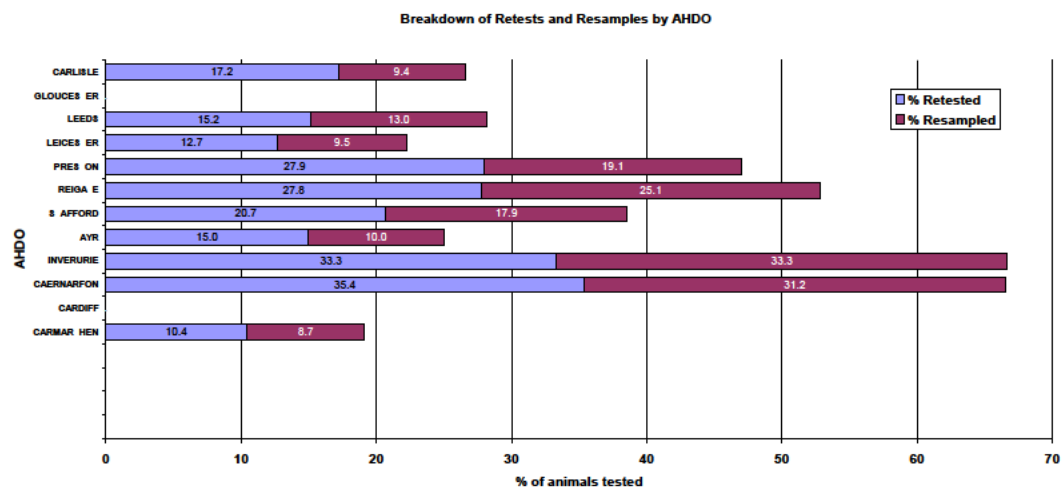


Table 6a. Number of animals and submissions tested in January 2010

Country	No. Animals	No of IFN γ + Animals	% Positive Animals	No. Samples	No of IFN γ + Samples	% Positive Samples
ENGLAND	1136	41	3.6	1160	41	3.5
SCOTLAND	23	2	8.7	23	2	8.7
WALES	617	51	8.3	643	51	7.9
GB	1776	94	5.3	1826	94	5.1

Table 6b. Number of animals and submissions tested in 2010

Country	No. Animals	No of IFN γ + Animals	% Positive Animals	No. Samples	No of IFN γ + Samples	% Positive Samples
ENGLAND	1136	41	3.6	1160	41	3.5
SCOTLAND	23	2	8.7	23	2	8.7
WALES	617	51	8.3	643	51	7.9
GB	1776	94	5.3	1826	94	5.1

Table 6c. Number of animals and submissions tested since test rollout

Country	No. Animals	No of IFN γ + Animals	% Positive Animals	No. Samples	No of IFN γ + Samples	% Positive Samples
ENGLAND	54166	6851	12.6	62303	6853	11.0
SCOTLAND	10805	723	6.7	12520	723	5.8
WALES	14435	3009	20.8	15884	3011	19.0
GB	79406	10583	13.3	90707	10587	11.7