

Monthly Report: Surveillance Project SB4008 IFNg tests for bovine tuberculosis

(TC0651 and TC0751)

Number 140

Report Period 1st - 30th April 2018

Issued 10 May 2018

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 ($22\pm5^{\circ}\text{C}$), 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. Such samples are reported separately in the tables and in figure 5.
- POS (pokeweed mitogen) is a sample positive control reagent which provides a measure of the quality/viability of the blood sample. A POS 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.
- NEG (no-antigen control) is a sample negative control which provides a measure of the background antigen-independent IFN- responses. A NEG 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-g.

Test Criteria

Submission Reason	Explanation	Mandatory?
Possible Herd Slaughter (PAR-HERD-S)	Parallel interferon-gamma blood testing of skin test negative cattle to inform whole or partial herd slaughters decisions	YES, if APHA are contemplating a herd slaughter
Persistent TB breakdowns (OTF status withdrawn) (PAR-P-CONF) N.B. PAR-PERSIS from 1st April 2017	Parallel blood testing of skin test-negative cattle in persistently infected herds that have failed to resolve by repeated short-interval skin testing and fulfill a minimum of biosecurity standards.	NO (APHA discretion)
Parallel - Low Incidence (PAR-LOW-IN) N.B. PAR-NEW-IN from 1st April 2017	Parallel blood testing to maximise the probability of removing all infected cattle in a new herd breakdown as soon as possible after confirmation of TB.	YES in Area of Low Incidence
Rapid Testing of twice IR's (PAR-RAPID)	Parallel blood testing of two-times IRs identified under the severe interpretation of the skin test used in Wales.	YES (Wales only)
PAR-CUL-N	Parallel blood testing to maximise the probability of removing all infected cattle in a new breakdown as soon as possible after confirmation of TB where herd is situated in badger control areas of England that have completed at least 2 effective culls.	YES (in eligible badger control areas of England)
PAR-CUL-P	Parallel blood testing to maximise the probability of removing all infected cattle in a persistent confirmed breakdown where herd is situated within badger control areas of England that have completed at least 2 effective culls	NO (APHA discretion)
Parallel Other (PAR-OTHER)	Other parallel blood testing not covered in any of the other scenarios	NO (APHA discretion)
'NSR' Herds (SER-NSR)	Modified serial blood testing of individual skin test reactors and/or IRs in unconfirmed TB breakdown herds to clarify their infection status where there is evidence of non-specific sensitisation to bovine tuberculin (the "non-specific reactor" procedure)	NO (APHA discretion)
Suspected Fraud (SER-FRAUD)	Modified serial blood test of suspected fraudulent reactors to the skin test (animals with abnormal skin swellings), in confirmed or unconfirmed TB incidents.	NO (APHA discretion to firm up or rule out any suspicion of fraud and support any investigations)
Serial Other (SER-OTHER)	Serial test – other reasons	NO (APHA Discretion)
SER-FLEXI	Extended blood test to provide flexible test readout in a confirmed M. bovis-infected herd where Johne's (M. a. paratuberculosis) infection or vaccination is suspected to be interfering with M. bovis infection detection	NO (APHA discretion)

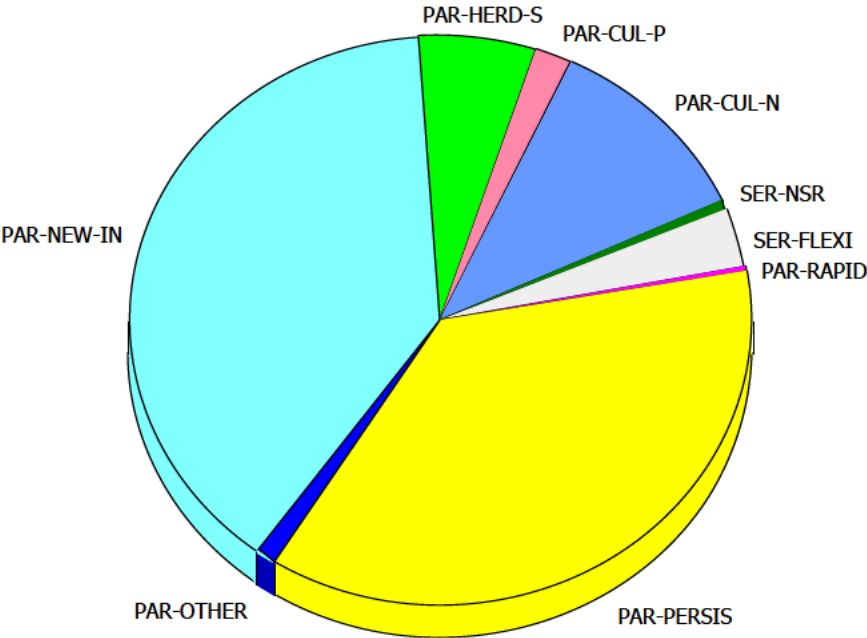
Table 1. Monthly Totals for April 2018

		Num samples April 2018	%	Total 2018	%
Submissions		195		797	
Samples	Total (%)	20517	100.00 %	78278	100.00 %
	England	14251	69.46 %	57768	73.80 %
	Wales	6195	30.19 %	19257	24.60 %
	Scotland	71	0.35 %	1253	1.60 %
Parallel Tests	PAR-CUL-N	2239	10.91 %	6088	7.78 %
	PAR-CUL-P	435	2.12 %	3421	4.37 %
	PAR-HERD-S	1243	6.06 %	1763	2.25 %
	PAR-NEW-IN	7951	38.75 %	41205	52.64 %
	PAR-OTHER	267	1.30 %	1065	1.36 %
	PAR-PERSIS	7489	36.50 %	20670	26.41 %
	PAR-RAPID	80	0.39 %	509	0.65 %
	Total(% of all samples)	19704	96.04 %	74721	95.46 %
Serial/Extended Tests	SER-FLEXI	686	3.34 %	3266	4.17 %
	SER-FRAUD	0	0.00 %	158	0.20 %
	SER-NSR	127	0.62 %	133	0.17 %
	SER-OTHER	0	0.00 %		
	Total(% of all samples)	813	3.96 %	3557	4.54 %
	Total	20517	100.00 %	78278	100.00 %
Retests	Total (% of all samples)	1257	6.13 %	5029	6.42 %
	England	897	4.37 %	3775	4.82 %
	Wales	358	1.74 %	1177	1.50 %
	Scotland	2	0.01 %	77	0.10 %
Resamples	Total (% of all samples)	956	4.66 %	3790	4.84 %
	England	671	3.27 %	2831	3.62 %
	Wales	284	1.38 %	909	1.16 %
	Scotland	1	0.00 %	50	0.06 %
Rejects	Total (% of all samples)	888	4.33 %	1759	2.25 %
	England	24	0.12 %	716	0.91 %
	Wales	864	4.21 %	1043	1.33 %
	Scotland	0	0.00 %		

PAR-HERD-S: potential herd slaughter, PAR-P-CONF (PAR-PERSIS from 1 April 2017): persistent TB breakdown OTFW, PAR-LOW-IN (PAR-NEW-IN from 1 April 2017): parallel low incidence, PAR-RAPID: rapid testing of twice IRs, PAR-CUL-N: new infection in cull area, PAR-CUL-P: persistent infection in cull area, PAR-OTHER: parallel other, SER-FLEXI: flexible extended test in confirmed herds with concurrent Johne's infection/vaccination, SER-NSR: serial non-specific reactor, SER-FRAUD: serial potential fraud, SER-OTHER: serial other

Figure 1. Number of samples submitted in each category during April 2018

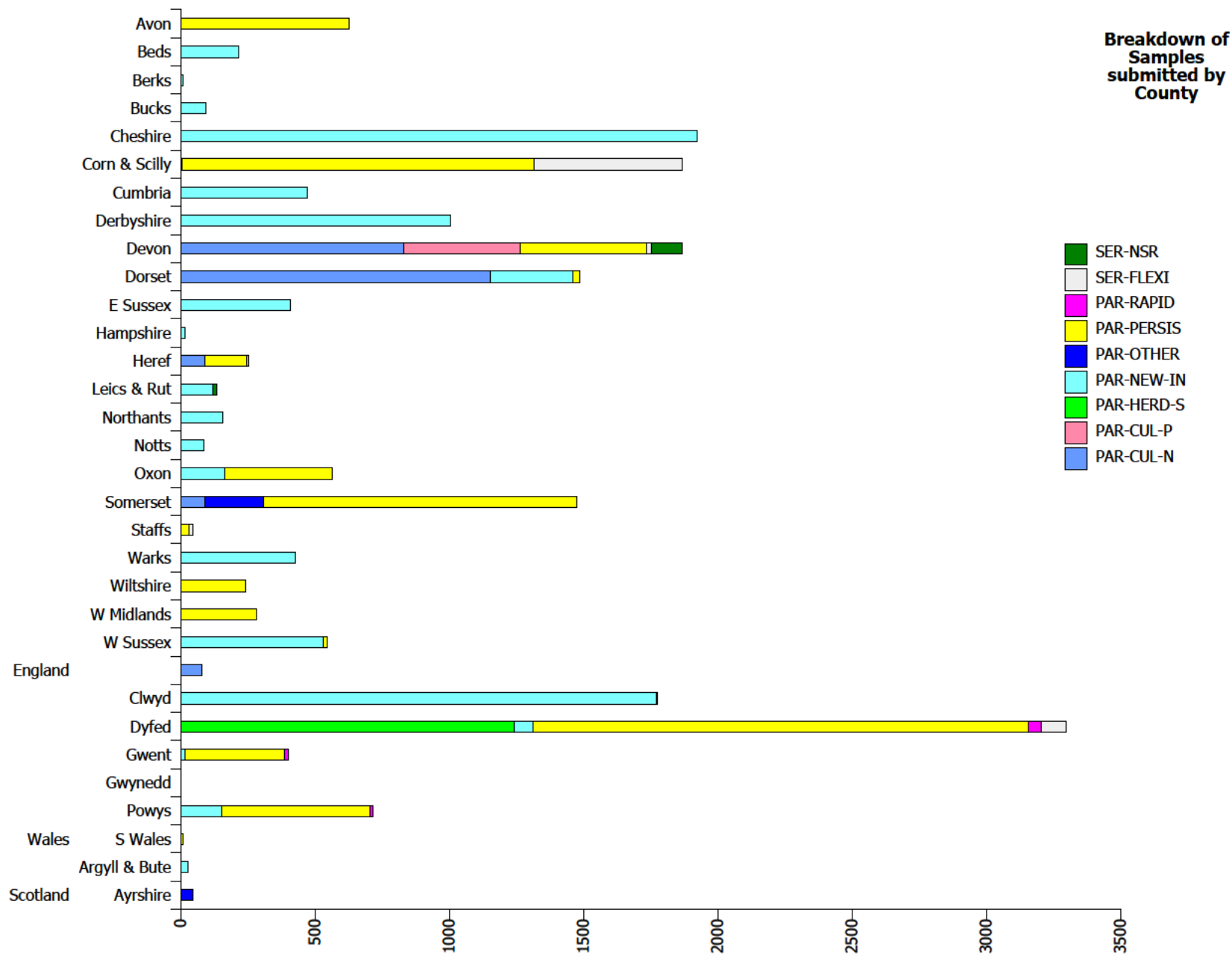
Breakdown of Reason for submission



PAR-CUL-N	2239	10.9 %
PAR-CUL-P	435	2.1 %
PAR-HERD-S	1243	6.1 %
PAR-NEW-IN	7951	38.8 %
PAR-OTHER	267	1.3 %
PAR-PERSIS	7489	36.5 %
PAR-RAPID	80	0.4 %
SER-FLEXI	686	3.3 %
SER-NSR	127	0.6 %
Total	20517	100.00 %

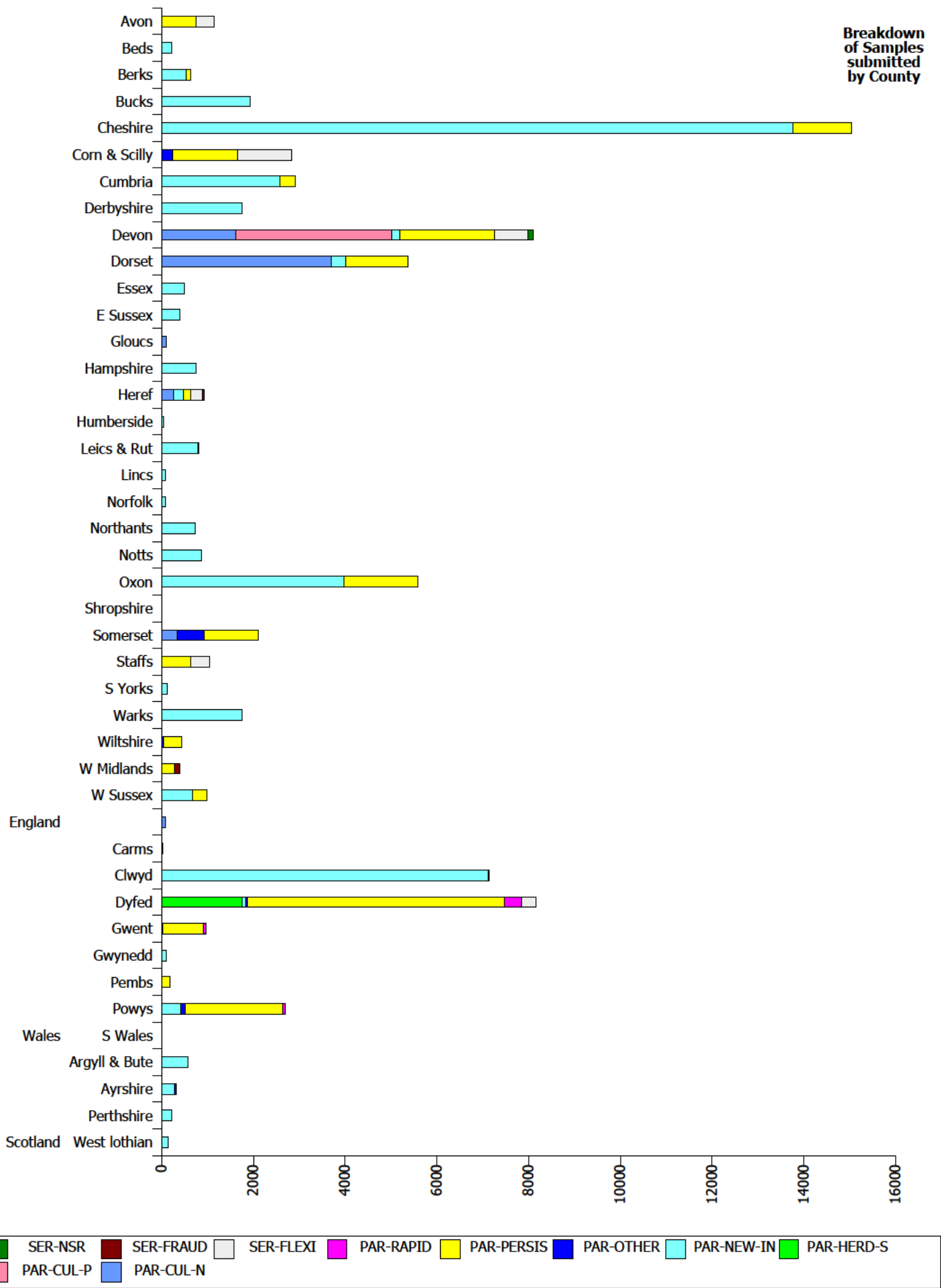
PAR-HERD-S: potential herd slaughter, PAR-P-CONF (PAR-PERSIS from 1 April 2017): persistent TB breakdown OTFW, PAR-LOW-IN (PAR-NEW-IN from 1 April 2017): parallel low incidence, PAR-RAPID: rapid testing of twice IRs, PAR-CUL-N: new infection in cull area, PAR-CUL-P: persistent infection in cull area, PAR-OTHER: parallel other, SER-FLEXI: flexible extended test in confirmed herds with concurrent Johne's infection/vaccination, SER-NSR: serial non-specific reactor, SER-FRAUD: serial potential fraud, SER-OTHER: serial other

Figure 2. Number of samples submitted in each category by County during April 2018



PAR-HERD-S: potential herd slaughter, PAR-P-CONF (PAR-PERSIS from 1 April 2017): persistent TB breakdown OTFW, PAR-LOW-IN (PAR-NEW-IN from 1 April 2017): parallel low incidence, PAR-RAPID: rapid testing of twice IRs, PAR-CUL-N: new infection in cull area, PAR-CUL-P: persistent infection in cull area, PAR-OTHER: parallel other, SER-FLEXI: flexible extended test in confirmed herds with concurrent Johne's infection/vaccination, SER-NSR: serial non-specific reactor, SER-FRAUD: serial potential fraud, SER-OTHER: serial other

Figure 3. Number of samples submitted in each category by County during 2018



PAR-HERD-S: potential herd slaughter, PAR-P-CONF (PAR-PERSIS from 1 April 2017): persistent TB breakdown OTFW, PAR-LOW-IN (PAR-NEW-IN from 1 April 2017): parallel low incidence, PAR-RAPID: rapid testing of twice IRs, PAR-CUL-N: new infection in cull area, PAR-CUL-P: persistent infection in cull area, PAR-OTHER: parallel other, SER-FLEXI: flexible extended test in confirmed herds with concurrent Johne's infection/vaccination, SER-NSR: serial non-specific reactor, SER-FRAUD: serial potential fraud, SER-OTHER: serial other

Table 2a. Summary by County for April 2018

Country	County	Submission Reasons*	No. subs	Samples		Gamma Positive		Gamma Negatives		Retest*		Resample		Reject	
				n	% of total	n	%	n	%	n	%				
England - HRA	Avon	PAR-PERSIS	2	626	3.05 %	30	4.79 %	539	86.10 %	67	10.70 %	56	8.95 %	1	0.16 %
	Corn & Scilly	PAR-OTHER	1	2	0.01 %	0	0.00 %	2	100.00 %	0	0.00 %	0	0.00 %	0	0.00 %
		PAR-PERSIS	5	1,314	6.40 %	46	3.50 %	1221	92.92 %	56	4.26 %	47	3.58 %	0	0.00 %
		SER-FLEXI	1	551	2.69 %	64	11.62 %	466	84.57 %	28	5.08 %	13	2.36 %	8	1.45 %
	Devon	PAR-CUL-N	6	829	4.04 %	39	4.70 %	764	92.16 %	38	4.58 %	26	3.14 %	0	0.00 %
		PAR-CUL-P	2	435	2.12 %	17	3.91 %	404	92.87 %	16	3.68 %	14	3.22 %	0	0.00 %
		PAR-PERSIS	3	469	2.29 %	35	7.46 %	416	88.70 %	20	4.26 %	18	3.84 %	0	0.00 %
		SER-FLEXI	1	18	0.09 %	1	5.56 %	17	94.44 %	0	0.00 %	0	0.00 %	0	0.00 %
		SER-NSR	1	114	0.56 %	5	4.39 %	99	86.84 %	10	8.77 %	10	8.77 %	0	0.00 %
	Dorset	PAR-CUL-N	9	1,151	5.61 %	72	6.26 %	1031	89.57 %	65	5.65 %	47	4.08 %	1	0.09 %
		PAR-NEW-IN	1	307	1.50 %	2	0.65 %	292	95.11 %	13	4.23 %	13	4.23 %	0	0.00 %
		PAR-PERSIS	1	28	0.14 %	1	3.57 %	25	89.29 %	2	7.14 %	2	7.14 %	0	0.00 %
	Heref	PAR-CUL-N	1	90	0.44 %	27	30.00 %	63	70.00 %	0	0.00 %	0	0.00 %	0	0.00 %
		PAR-PERSIS	1	153	0.75 %	2	1.31 %	145	94.77 %	6	3.92 %	5	3.27 %	1	0.65 %
		SER-FLEXI	1	9	0.04 %	0	0.00 %	7	77.78 %	3	33.33 %	2	22.22 %	0	0.00 %
	Somerset	PAR-CUL-N	1	90	0.44 %	0	0.00 %	89	98.89 %	1	1.11 %	1	1.11 %	0	0.00 %
		PAR-OTHER	1	218	1.06 %	10	4.59 %	196	89.91 %	13	5.96 %	12	5.50 %	0	0.00 %
		PAR-PERSIS	5	1,165	5.68 %	148	12.70 %	964	82.75 %	62	5.32 %	53	4.55 %	0	0.00 %
	Staffs	PAR-PERSIS	1	28	0.14 %	3	10.71 %	19	67.86 %	6	21.43 %	6	21.43 %	0	0.00 %
		SER-FLEXI	1	16	0.08 %	2	12.50 %	8	50.00 %	6	37.50 %	6	37.50 %	0	0.00 %
	Wiltshire	PAR-PERSIS	2	239	1.16 %	5	2.09 %	226	94.56 %	8	3.35 %	8	3.35 %	0	0.00 %
	W Midlands	PAR-PERSIS	1	281	1.37 %	1	0.36 %	265	94.31 %	16	5.69 %	14	4.98 %	1	0.36 %
		PAR-CUL-N	1	79	0.39 %	5	6.33 %	73	92.41 %	1	1.27 %	1	1.27 %	0	0.00 %
England - Edge	Berks	PAR-NEW-IN	2	7	0.03 %	0	0.00 %	6	85.71 %	1	14.29 %	1	14.29 %	0	0.00 %
	Bucks	PAR-NEW-IN	2	94	0.46 %	4	4.26 %	87	92.55 %	5	5.32 %	3	3.19 %	0	0.00 %
	Cheshire	PAR-NEW-IN	9	1,924	9.38 %	63	3.27 %	1737	90.28 %	186	9.67 %	123	6.39 %	1	0.05 %
		Derbyshire	7	1,003	4.89 %	24	2.39 %	942	93.92 %	46	4.59 %	37	3.69 %	0	0.00 %
	E Sussex	PAR-NEW-IN	2	406	1.98 %	27	6.65 %	357	87.93 %	41	10.10 %	21	5.17 %	1	0.25 %
	Hampshire	PAR-NEW-IN	1	15	0.07 %	0	0.00 %	14	93.33 %	1	6.67 %	1	6.67 %	0	0.00 %
		Leics & Rut	3	120	0.58 %	4	3.33 %	112	93.33 %	9	7.50 %	4	3.33 %	0	0.00 %
		SER-NSR	1	13	0.06 %	0	0.00 %	13	100.00 %	0	0.00 %	0	0.00 %	0	0.00 %
	Northants	PAR-NEW-IN	2	155	0.76 %	7	4.52 %	141	90.97 %	12	7.74 %	7	4.52 %	0	0.00 %
		Notts	1	84	0.41 %	1	1.19 %	77	91.67 %	6	7.14 %	6	7.14 %	0	0.00 %
		PAR-OTHER	1	1	0.00 %	0	0.00 %	1	100.00 %	0	0.00 %	0	0.00 %	0	0.00 %
	Oxon	PAR-NEW-IN	4	162	0.79 %	9	5.56 %	139	85.80 %	10	6.17 %	5	3.09 %	9	5.56 %
		PAR-PERSIS	2	400	1.95 %	14	3.50 %	366	91.50 %	27	6.75 %	20	5.00 %	0	0.00 %
	Warks	PAR-NEW-IN	9	427	2.08 %	34	7.96 %	356	83.37 %	43	10.07 %	36	8.43 %	1	0.23 %
England - LRA	Beds	PAR-NEW-IN	1	214	1.04 %	4	1.87 %	201	93.93 %	12	5.61 %	9	4.21 %	0	0.00 %
	Cumbria	PAR-NEW-IN	3	471	2.30 %	4	0.85 %	453	96.18 %	19	4.03 %	14	2.97 %	0	0.00 %
	W Sussex	PAR-NEW-IN	2	531	2.59 %	27	5.08 %	478	90.02 %	38	7.16 %	26	4.90 %	0	0.00 %
		PAR-PERSIS	1	12	0.06 %	1	8.33 %	7	58.33 %	4	33.33 %	4	33.33 %	0	0.00 %
England			102	14251	69.46 %	738	5.18 %	12818	89.94 %	897	6.29 %	671	4.71 %	24	0.17 %
Wales - High TB	Dyfed	PAR-HERD-S	6	1,241	6.05 %	7	0.56 %	850	68.49 %	31	2.50 %	24	1.93 %	360	29.01 %
		PAR-PERSIS	14	1,758	8.57 %	32	1.82 %	1414	80.43 %	95	5.40 %	78	4.44 %	234	13.31 %
		PAR-RAPID	10	29	0.14 %	6	20.69 %	20	68.97 %	6	20.69 %	3	10.34 %	0	0.00 %
		SER-FLEXI	3	92	0.45 %	2	2.17 %	24	26.09 %	2	2.17 %	2	2.17 %	64	69.57 %
	Gwent	PAR-NEW-IN	1	14	0.07 %	1	7.14 %	10	71.43 %	4	28.57 %	3	21.43 %	0	0.00 %
		PAR-PERSIS	5	372	1.81 %	24	6.45 %	337	90.59 %	22	5.91 %	11	2.96 %	0	0.00 %
		PAR-RAPID	4	14	0.07 %	3	21.43 %	11	78.57 %	0	0.00 %	0	0.00 %	0	0.00 %
	Powys	PAR-NEW-IN	1	153	0.75 %	2	1.31 %	138	90.20 %	18	11.76 %	13	8.50 %	0	0.00 %
		PAR-PERSIS	7	550	2.68 %	8	1.45 %	342	62.18 %	41	7.45 %	35	6.36 %	165	30.00 %
		PAR-RAPID	6	13	0.06 %	1	7.69 %	10	76.92 %	1	7.69 %	1	7.69 %	1	7.69 %
	S Wales	PAR-PERSIS	2	7	0.03 %	1	14.29 %	4	57.14 %	2	28.57 %	2	28.57 %	0	0.00 %
		PAR-RAPID	1	1	0.00 %	0	0.00 %	1	100.00 %	0	0.00 %	0	0.00 %	0	0.00 %
Wales - Intermediate TB	Clwyd	PAR-HERD-S	1	1	0.00 %	0	0.00 %	0	0.00 %	0	0.00 %	0	0.00 %	1	100.00 %
		PAR-NEW-IN	15	1,088	5.30 %	23	2.11 %	984	90.44 %	56	5.15 %	43	3.95 %	38	3.49 %
		PAR-RAPID	2	2	0.01 %	1	50.00 %	0	0.00 %	0	0.00 %	0	0.00 %	1	50.00 %
	Dyfed	PAR-HERD-S	1	1	0.00 %	0	0.00 %	1	100.00 %	0	0.00 %	0	0.00 %	0	0.00 %
		PAR-NEW-IN	1	68	0.33 %	4	5.88 %	63	92.65 %	3	4.41 %	1	1.47 %	0	0.00 %
		PAR-PERSIS	1	87	0.42 %	21	24.14 %	66	75.86 %	1	1.15 %	0	0.00 %	0	0.00 %
		PAR-RAPID	2	20	0.10 %	3	15.00 %	16	80.00 %	2	10.00 %	1	5.00 %	0	0.00 %
Wales - Low TB	Clwyd	PAR-NEW-IN	5	683	3.33 %	23	3.37 %	593	86.82 %	74	10.83 %	67	9.81 %	0	0.00 %
	Gwynedd	PAR-RAPID	1	1	0.00 %	0	0.00 %	1	100.00 %	0	0.00 %	0	0.00 %	0	0.00 %
Wales			89	6195	30.19 %	162	2.62 %	4885	78.85 %	358	5.78 %	284	4.58 %	864	13.95 %
Sco land - Scotland	Argyll & Bute	PAR-NEW-IN	3	25	0.12 %	2	8.00 %	22	88.00 %	1	4.00 %	1	4.00 %	0	0.00 %
	Ayrshire	PAR-OTHER	1	46	0.22 %	39	84.78 %	7	15.22 %	1	2.17 %	0	0.00 %	0	0.00 %
Scotland			4	71	0.35 %	41	57.75 %	28	40.85 %	2	2.82 %	1	1.41 %	0	0.00 %
Grand Total		Sum:	195	20517		941		17732		1257		956		888	

*For test criteria please refer to Operational notes.

* 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.

PAR-HERD-S: potential herd slaughter, PAR-P-CONF (PAR-PERSIS from 1 April 2017): persistent TB breakdown OTFW, PAR-LOW-IN (PAR-NEW-IN from 1 April 2017): parallel low incidence, PAR-RAPID: rapid testing of twice (Rs), PAR-CUL-N: new infection in cull area, PAR-CUL-P: persistent infection in cull area, PAR-OTHER: parallel other, SER-FLEXI: flexible extended test in confirmed herds with concurrent Johne's infection/vaccination, SER-NSR: serial non-specific reactor, SER-FRAUD: serial potential fraud, SER-OTHER: serial other

England: HRA (High Risk Area), LRA (Low Risk Area), Edge (Edge Area) Wales: High TB (Area), Low TB (Area), Int. TB (Intermediate TB Area)

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Table 3a. Summary of IFN Gamma results by country and protocol April 2018

Country	Protocol	No submissions	Samples		Positive		Negatives		Retest*		Resample		Reject	
			n	% of total	n	%	n	%	n	%	n	%	n	%
England	Parallel	96	13530	94.9%	666	4.9%	12208	90.2%	850	6.3%	640	4.7%	16	0.1%
	Serial/Extended	6	721	5.1%	72	10.0%	610	84.6%	47	6.5%	31	4.3%	8	1.1%
	Total	102	14251	100.0%	738	5.2%	12818	89.9%	897	6.3%	671	4.7%	24	0.2%
Scotland	Parallel	4	71	100.0%	41	57.7%	29	40.8%	2	2.8%	1	1.4%	0	0.0 %
	Serial/Extended	0	0	0.0 %	0	0.0 %	0	0.0 %	0	0.0 %	0	0.0 %	0	0.0 %
	Total	4	71	100.0%	41	57.7%	29	40.8%	2	2.8%	1	1.4%	0	0.0 %
Wales	Parallel	86	6103	98.5%	160	2.6%	4861	79.6%	356	5.8%	282	4.6%	800	13.1%
	Serial/Extended	3	92	1.5%	2	2.2%	24	26.1%	2	2.2%	2	2.2%	64	69.6%
	Total	89	6195	100.0%	162	2.6%	4885	78.9%	358	5.8%	284	4.6%	864	13.9%
GB	Parallel	186	19704	96.0%	867	4.4%	17098	86.8%	1208	6.1%	923	4.7%	816	4.1%
	Serial/Extended	9	813	4.0%	74	9.1%	634	78.0%	49	6.0%	33	4.1%	72	8.9%
	Total	195	20517	100.0%	941	4.6%	17732	86.4%	1257	6.1%	956	4.7%	888	4.3%

* 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 3b. Summary of IFN Gamma results by country and protocol (Total 2018)

Country	Protocol	No submissions	Samples		Positive		Negatives		Retest*		Resample		Reject	
			n	% of total	n	%	n	%	n	%	n	%	n	%
England	Parallel	398	54522	94.4%	3036	5.6%	48102	88.2%	3568	6.5%	2679	4.9%	705	1.3%
	Serial/Extended	32	3246	5.6%	322	9.9%	2761	85.1%	207	6.4%	152	4.7%	11	0.3%
	Total	430	57768	100.0%	3358	5.8%	50863	88.0%	3775	6.5%	2831	4.9%	716	1.2%
Scotland	Parallel	17	1253	100.0%	134	10.7%	1069	85.3%	77	6.1%	50	4.0%	0	0.0 %
	Serial/Extended	0	0	0.0 %	0	0.0 %	0	0.0 %	0	0.0 %	0	0.0 %	0	0.0 %
	Total	17	1253	100.0%	134	10.7%	1069	85.3%	77	6.1%	50	4.0%	0	0.0 %
Wales	Parallel	343	18946	98.4%	822	4.3%	16255	85.8%	1154	6.1%	893	4.7%	976	5.2%
	Serial/Extended	7	311	1.6%	24	7.7%	204	65.6%	23	7.4%	16	5.1%	67	21.5%
	Total	350	19257	100.0%	846	4.4%	16459	85.5%	1177	6.1%	909	4.7%	1043	5.4%
GB	Parallel	758	74721	95.5%	3992	5.3%	65426	87.6%	4799	6.4%	3622	4.8%	1681	2.2%
	Serial/Extended	39	3557	4.5%	346	9.7%	2965	83.4%	230	6.5%	168	4.7%	78	2.2%
	Total	797	78278	100.0%	4338	5.5%	68391	87.4%	5029	6.4%	3790	4.8%	1759	2.2%

* 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 4a. Summary of IFN Gamma results by submission reason (April 2018)

	Submission Reason	No submissions	Samples		Gamma Positive		Gamma Negatives		Retest		Resample		Reject	
			n	% of total	n	%	n	%	n	%	n	%	n	%
GB														
	Extended Flexible IFN-GAMMA test	7	686	3.3%	69	10.1%	522	76.1%	39	5.7 %	23	3.4 %	72	10.5 %
	Parallel - Herd or Group Slaughter	8	1243	6.1%	7	0.6%	851	68.5%	31	2.5 %	24	1.9 %	361	29.0 %
	Parallel New Infection	75	7951	38.8%	265	3.3%	7202	90.6%	598	7.5 %	434	5.5 %	50	0.6 %
	Parallel - new infection cull area	18	2239	10.9%	143	6.4%	2020	90.2%	105	4.7 %	75	3.3 %	1	0.0 %
	Parallel - Other	4	267	1.3%	49	18.4%	206	77.2%	14	5.2 %	12	4.5 %	0	
	Parallel Persistent Infection	53	7489	36.5%	372	5.0%	6356	84.9%	435	5.8 %	359	4.8 %	402	5.4 %
	Parallel - persistent infection cull area	2	435	2.1%	17	3.9%	404	92.9%	16	3.7 %	14	3.2 %	0	
	Parallel - Rapid Testing Two-times IRs	26	80	0.4%	14	17.5%	59	73.8%	9	11.3 %	5	6.3 %	2	2.5 %
	Serial - Suspected NSR Herd	2	127	0.6%	5	3.9%	112	88.2%	10	7.9 %	10	7.9 %	0	
	Total	195	20517	100.0%	941	4.6%	17732	86.4%	1257	6.1 %	956	4.7 %	888	4.3 %
England - HRA	Extended Flexible IFN-GAMMA test	4	594	2.9%	67	11.3%	498	83.8%	37	6.2 %	21	3.5 %	8	1.3 %
	Parallel New Infection	1	307	1.5%	2	0.7%	292	95.1%	13	4.2 %	13	4.2 %	0	
	Parallel - new infection cull area	18	2239	10.9%	143	6.4%	2020	90.2%	105	4.7 %	75	3.3 %	1	0.0 %
	Parallel - Other	2	220	1.1%	10	4.5%	198	90.0%	13	5.9 %	12	5.5 %	0	
	Parallel Persistent Infection	21	4303	21.0%	271	6.3%	3820	88.8%	243	5.6 %	209	4.9 %	3	0.1 %
	Parallel - persistent infection cull area	2	435	2.1%	17	3.9%	404	92.9%	16	3.7 %	14	3.2 %	0	
	Serial - Suspected NSR Herd	1	114	0.6%	5	4.4%	99	86.8%	10	8.8 %	10	8.8 %	0	
England - HRA		49	8212	40.0%	515	6.3%	7331	89.3%	437	5.3 %	354	4.3 %	12	0.1 %
England - Edge	Parallel New Infection	42	4397	21.4%	173	3.9%	3968	90.2%	360	8.2 %	244	5.5 %	12	0.3 %
	Parallel - Other	1	1	0.0%	0	0.0 %	1	100.0%	0		0		0	
	Parallel Persistent Infection	2	400	1.9%	14	3.5%	366	91.5%	27	6.8 %	20	5.0 %	0	
	Serial - Suspected NSR Herd	1	13	0.1%	0	0.0 %	13	100.0%	0		0		0	
England - Edge		46	4811	23.4%	187	3.9%	4348	90.4%	387	8.0 %	264	5.5 %	12	0.2 %
England - LRA	Parallel New Infection	6	1216	5.9%	35	2.9%	1132	93.1%	69	5.7 %	49	4.0 %	0	
	Parallel Persistent Infection	1	12	0.1%	1	8.3%	7	58.3%	4	33.3 %	4	33.3 %	0	
England - LRA		7	1228	6.0%	36	2.9%	1139	92.8%	73	5.9 %	53	4.3 %	0	
Wales - High TB	Extended Flexible IFN-GAMMA test	3	92	0.4%	2	2.2%	24	26.1%	2	2.2 %	2	2.2 %	64	69.6 %
	Parallel - Herd or Group Slaughter	6	1241	6.0%	7	0.6%	850	68.5%	31	2.5 %	24	1.9 %	360	29.0 %
	Parallel New Infection	2	167	0.8%	3	1.8%	148	88.6%	22	13.2 %	16	9.6 %	0	
	Parallel Persistent Infection	28	2687	13.1%	65	2.4%	2097	78.0%	160	6.0 %	126	4.7 %	399	14.8 %
	Parallel - Rapid Testing Two-times IRs	21	57	0.3%	10	17.5%	42	73.7%	7	12.3 %	4	7.0 %	1	1.8 %
Wales - High TB		60	4244	20.7%	87	2.0%	3161	74.5%	222	5.2 %	172	4.1 %	824	19.4 %
Wales - Intermediate TB	Parallel - Herd or Group Slaughter	2	2	0.0%	0	0.0 %	1	50.0%	0		0		1	50.0 %
	Parallel New Infection	16	1156	5.6%	27	2.3%	1047	90.6%	59	5.1 %	44	3.8 %	38	3.3 %
	Parallel Persistent Infection	1	87	0.4%	21	24.1%	66	75.9%	1	1.1 %	0		0	
	Parallel - Rapid Testing Two-times IRs	4	22	0.1%	4	18.2%	16	72.7%	2	9.1 %	1	4.5 %	1	4.5 %
Wales - Intermediate TB		23	1267	6.2%	52	4.1%	1130	89.2%	62	4.9 %	45	3.6 %	40	3.2 %
Wales - Low TB	Parallel New Infection	5	683	3.3%	23	3.4%	593	86.8%	74	10.8 %	67	9.8 %	0	
	Parallel - Rapid Testing Two-times IRs	1	1	0.0%	0	0.0 %	1	100.0%	0		0		0	
Wales - Low TB		6	684	3.3%	23	3.4%	594	86.8%	74	10.8 %	67	9.8 %	0	
Scotland - Scotland	Parallel New Infection	3	25	0.1%	2	8.0%	22	88.0%	1	4.0 %	1	4.0 %	0	
	Parallel - Other	1	46	0.2%	39	84.8%	7	15.2%	1	2.2 %	0		0	
Scotland - Scotland		4	71	0.3%	41	57.7%	29	40.8%	2	2.8 %	1	1.4 %	0	

Table 4b. Summary of IFN Gamma results by submission reason (Total 2018)

	Submission Reason	No submissions	Samples		Gamma Positive		Gamma Negatives		Retest		Resample		Reject	
			n	% of total	n	%	n	%	n	%	n	%	n	%
GB														
	Extended Flexible IFN-GAMMA test	30	3266	4.2%	338	10.3%	2700	82.7%	208	6.4 %	150	4.6 %	78	2.4 %
	Parallel - Herd or Group Slaughter	23	1763	2.3%	47	2.7%	1304	74.0%	65	3.7 %	49	2.8 %	363	20.6 %
	Parallel New Infection	345	41205	52.6%	1853	4.5%	36881	89.5%	2853	6.9 %	2056	5.0 %	415	1.0 %
	Parallel - new infection cull area	58	6088	7.8%	430	7.1%	5238	86.0%	334	5.5 %	269	4.4 %	151	2.5 %
	Parallel - Other	22	1065	1.4%	112	10.5%	805	75.6%	52	4.9 %	40	3.8 %	108	10.1 %
	Parallel Persistent Infection	155	20670	26.4%	1174	5.7%	17872	86.5%	1313	6.4 %	1082	5.2 %	542	2.6 %
	Parallel - persistent infection cull area	13	3421	4.4%	244	7.1%	2977	87.0%	146	4.3 %	100	2.9 %	100	2.9 %
	Parallel - Rapid Testing Two-times IRs	142	509	0.7%	132	25.9%	349	68.6%	36	7.1 %	26	5.1 %	2	0.4 %
	Serial - Anomalous Reaction	5	158	0.2%	3	1.9%	147	93.0%	12	7.6 %	8	5.1 %	0	
	Serial - Suspected NSR Herd	4	133	0.2%	5	3.8%	118	88.7%	10	7.5 %	10	7.5 %	0	
	Total	797	78278	100.0%	4338	5.5%	68391	87.4%	5029	6.4 %	3790	4.8 %	1759	2.2 %
England - HRA	Extended Flexible IFN-GAMMA test	23	2955	3.8%	314	10.6%	2496	84.5%	185	6.3 %	134	4.5 %	11	0.4 %
	Parallel New Infection	7	906	1.2%	51	5.6%	801	88.4%	49	5.4 %	42	4.6 %	12	1.3 %
	Parallel - new infection cull area	58	6088	7.8%	430	7.1%	5238	86.0%	334	5.5 %	269	4.4 %	151	2.5 %
	Parallel - Other	10	868	1.1%	59	6.8%	664	76.5%	47	5.4 %	37	4.3 %	108	12.4 %
	Parallel Persistent Infection	39	8247	10.5%	535	6.5%	7300	88.5%	480	5.8 %	386	4.7 %	26	0.3 %
	Parallel - persistent infection cull area	13	3421	4.4%	244	7.1%	2977	87.0%	146	4.3 %	100	2.9 %	100	2.9 %
	Serial - Anomalous Reaction	5	158	0.2%	3	1.9%	147	93.0%	12	7.6 %	8	5.1 %	0	
	Serial - Suspected NSR Herd	1	114	0.1%	5	4.4%	99	86.8%	10	8.8 %	10	8.8 %	0	
England - Edge	Parallel New Infection	211	27052	34.6%	1346	5.0%	24091	89.1%	1987	7.3 %	1410	5.2 %	205	0.8 %
	Parallel - Other	2	2	0.0%	0	0.0 %	1	50.0%	1	50.0 %	1	50.0 %	0	
	Parallel Persistent Infection	19	2988	3.8%	192	6.4%	2487	83.2%	231	7.7 %	209	7.0 %	100	3.3 %
	Serial - Suspected NSR Herd	3	19	0.0%	0	0.0 %	19	100.0%	0		0		0	
England - LRA	Parallel New Infection	36	4323	5.5%	162	3.7%	3962	91.6%	260	6.0 %	196	4.5 %	3	0.1 %
	Parallel Persistent Infection	3	627	0.8%	17	2.7%	581	92.7%	33	5.3 %	29	4.6 %	0	
England		430	57768	73.8%	3358	5.8%	50863	88.0%	3775	6.5 %	2831	4.9 %	716	1.2 %
Wales - High TB	Extended Flexible IFN-GAMMA test	7	311	0.4%	24	7.7%	204	65.6%	23	7.4 %	16	5.1 %	67	21.5 %
	Parallel - Herd or Group Slaughter	21	1761	2.2%	47	2.7%	1303	74.0%	65	3.7 %	49	2.8 %	362	20.6 %
	Parallel New Infection	8	351	0.4%	7	2.0%	324	92.3%	28	8.0 %	20	5.7 %	0	
	Parallel - Other	8	147	0.2%	13	8.8%	132	89.8%	3	2.0 %	2	1.4 %	0	
	Parallel Persistent Infection	93	8721	11.1%	409	4.7%	7438	85.3%	568	6.5 %	458	5.3 %	416	4.8 %
	Parallel - Rapid Testing Two-times IRs	125	446	0.6%	114	25.6%	306	68.6%	34	7.6 %	25	5.6 %	1	0.2 %
Wales - Intermediate TB	Parallel - Herd or Group Slaughter	2	2	0.0%	0	0.0 %	1	50.0%	0		0		1	50.0 %
	Parallel New Infection	48	4826	6.2%	122	2.5%	4474	92.7%	266	5.5 %	186	3.9 %	44	0.9 %
	Parallel Persistent Infection	1	87	0.1%	21	24.1%	66	75.9%	1	1.1 %	0		0	
	Parallel - Rapid Testing Two-times IRs	15	60	0.1%	18	30.0%	40	66.7%	2	3.3 %	1	1.7 %	1	1.7 %
Wales - Low TB	Parallel New Infection	19	2540	3.2%	70	2.8%	2167	85.3%	187	7.4 %	152	6.0 %	151	5.9 %
	Parallel - Other	1	2	0.0%	1	50.0%	1	50.0%	0		0		0	
	Parallel - Rapid Testing Two-times IRs	2	3	0.0%	0	0.0 %	3	100.0%	0		0		0	
Wales		350	19257	24.6%	846	4.4%	16459	85.5%	1177	6.1 %	909	4.7 %	1043	5.4 %
Scotland - Scotland	Parallel New Infection	16	1207	1.5%	95	7.9%	1062	88.0%	76	6.3 %	50	4.1 %	0	
	Parallel - Other	1	46	0.1%	39	84.8%	7	15.2%	1	2.2 %	0		0	
Scotland		17	1253	1.6%	134	10.7%	1069	85.3%	77	6.1 %	50	4.0 %	0	

Table 5a. Summary of PM and culture results for IFNg positive animals.

Year	Month	Herds sampled	Samples tested	Herds with positives	IFNg+ samples	Wrong Eartags	No PM No Cult	No PM Cult Pend	No PM Cult Neg	No PM Cult Mb	No PM Cult Other	VL No Cult	VL Cult Neg	VL Cult Pend	VL Cult Mb	VL Cult Other	NVL No Cult	NVL Cult Pend	NVL Cult Neg	NVL Cult Mb	NVL Cult Other
2017	May	177	14751	103	615		4	0	0	0	0	37	1	0	8	1	507	2	53	0	1
	June	126	12263	72	419	1	0	0	0	0	0	9	5	0	0	0	359	2	43	0	0
	July	162	11556	81	437		1	0	0	0	0	33	3	0	2	0	324	0	70	0	3
	August	150	10915	97	560		1	0	0	0	0	23	0	0	5	0	439	1	74	0	3
	September	150	10922	94	664	2	10	0	0	0	0	30	1	0	1	0	564	0	56	0	0
	October	148	14754	96	971	7	8	0	0	0	0	50	1	0	4	0	862	0	38	0	0
	November	157	10666	108	961	2	24	0	0	0	0	87	2	0	8	1	800	0	31	1	0
	December	114	9478	81	668		43	0	0	0	0	29	1	1	1	0	562	0	28	1	1
2018	January	207	19678	140	969	5	3	0	0	0	0	81	0	13	0	2	756	50	58	0	0
	February	206	20791	130	1229	2	24	0	0	0	0	73	0	6	5	4	1075	27	10	0	3
	March	189	17292	131	1199	2	23	0	0	0	0	121	0	8	0	0	987	57	0	0	0
	April	195	20517	118	941	135	260	0	0	0	0	41	0	1	0	0	355	30	0	0	0
	Totals (last 12 months)	1981	173583	1251	9633	156	401	0	0	0	0	614	14	29	34	8	7590	169	461	2	11

Table 5b. Summary of culture results for IFNg positive animals (Samples received in last 12 months)

Country	Herds sampled	Samples tested	Herds with positives	IFNg+ samples	No PM No Cult	No PM Cult Pend	No PM Cult Neg	No PM Cult Mb	No PM Cult Other	VL No Cult	VL Cult Neg	VL Cult Pend	VL Cult Mb	VL Cult Other	NVL No Cult	NVL Cult Pend	NVL Cult Neg	NVL Cult Mb	NVL Cult Other
England	938	124976	702	6967	274	0	0	0	0	541	9	13	24	6	5830	10	33	0	3
Scotland	35	3219	23	329	54	0	0	0	0	11	0	10	0	0	162	43	1	1	1
Wales	1008	45388	526	2337	73	0	0	0	0	62	5	6	10	2	1598	116	427	1	7
Totals	1981	173583	1251	9633	401	0	0	0	0	614	14	29	34	8	7590	169	461	2	11

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

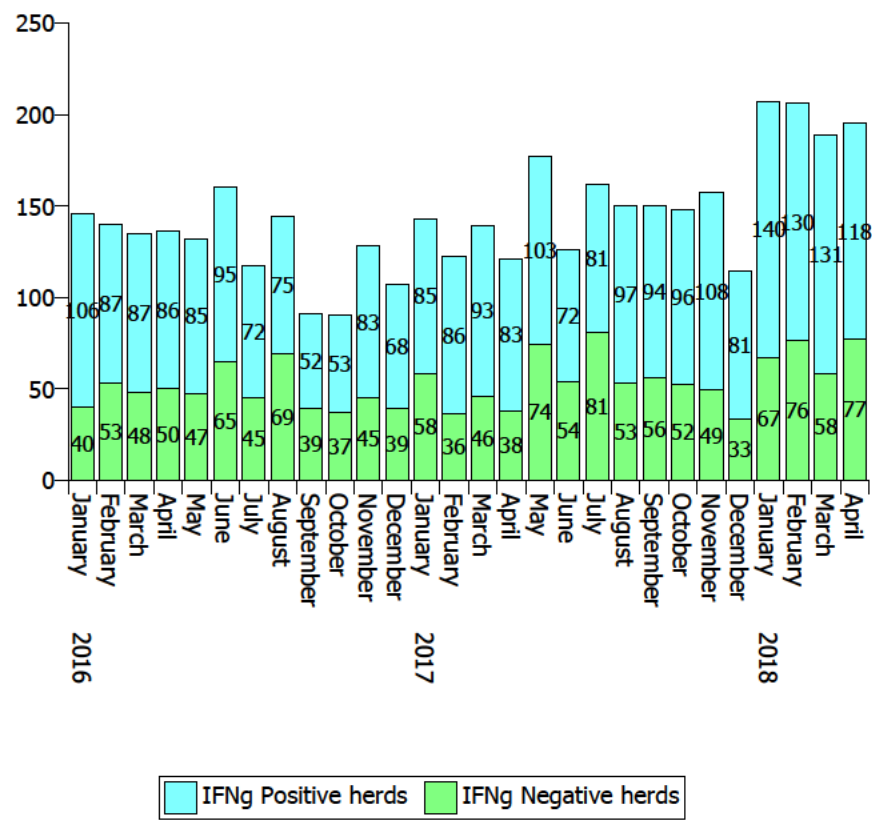
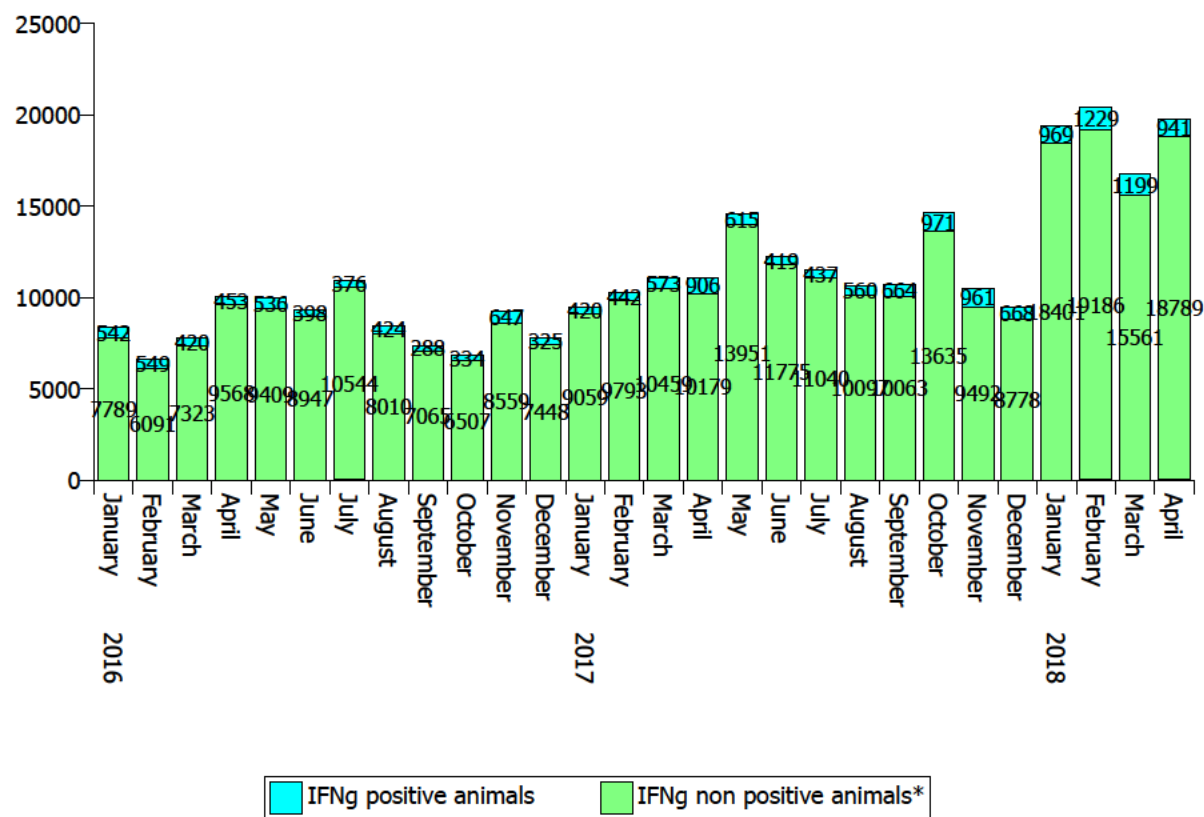


Figure 4b. Number of animals sampled for IFNg and numbers of animals with positive IFNg results.



*Includes all animals with IFNg test negative, resample and reject outcomes

Figure 5. Rates of resamples including the fail rates broken down for positive (POS) and negative (NEG) controls.

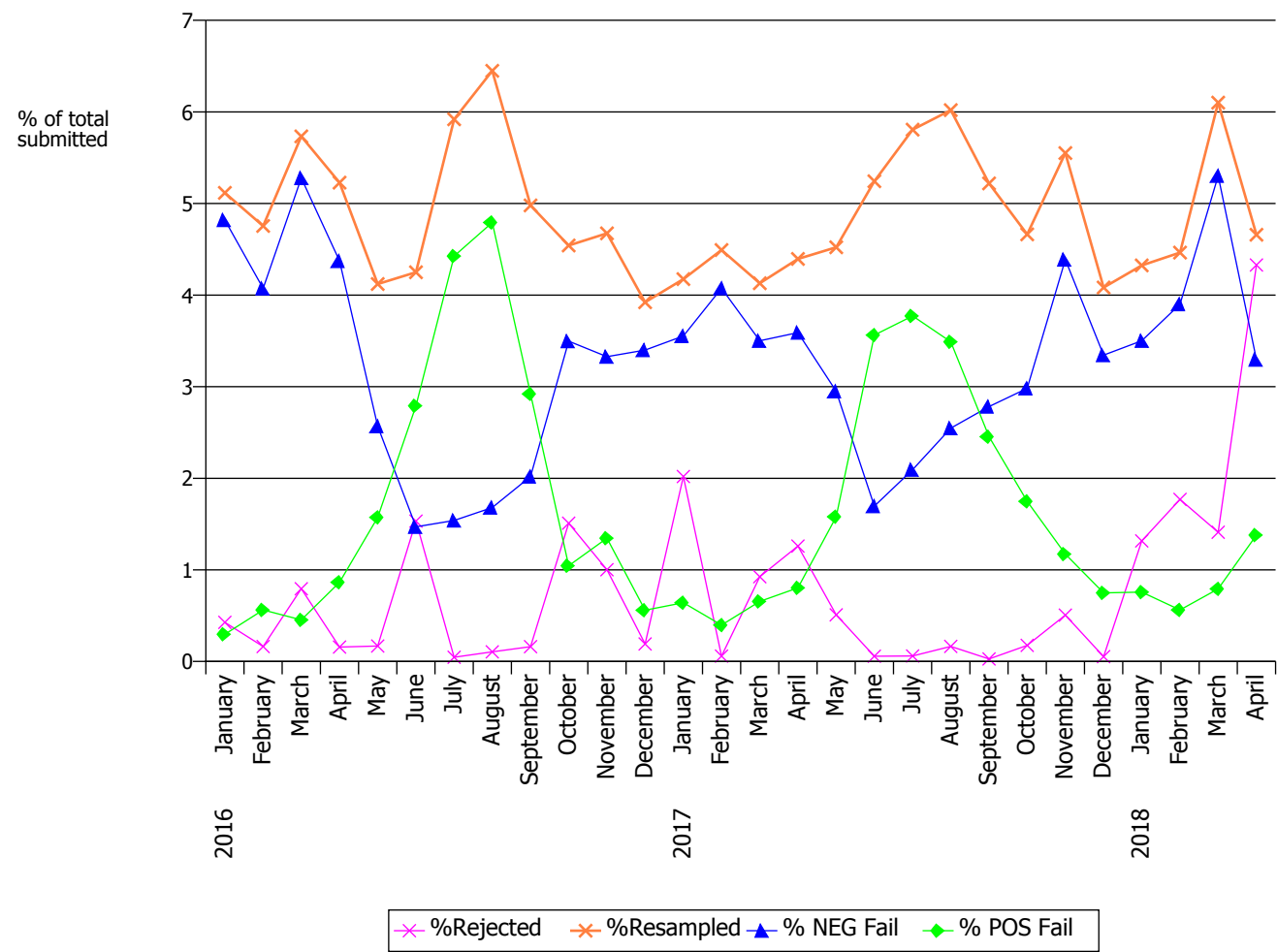
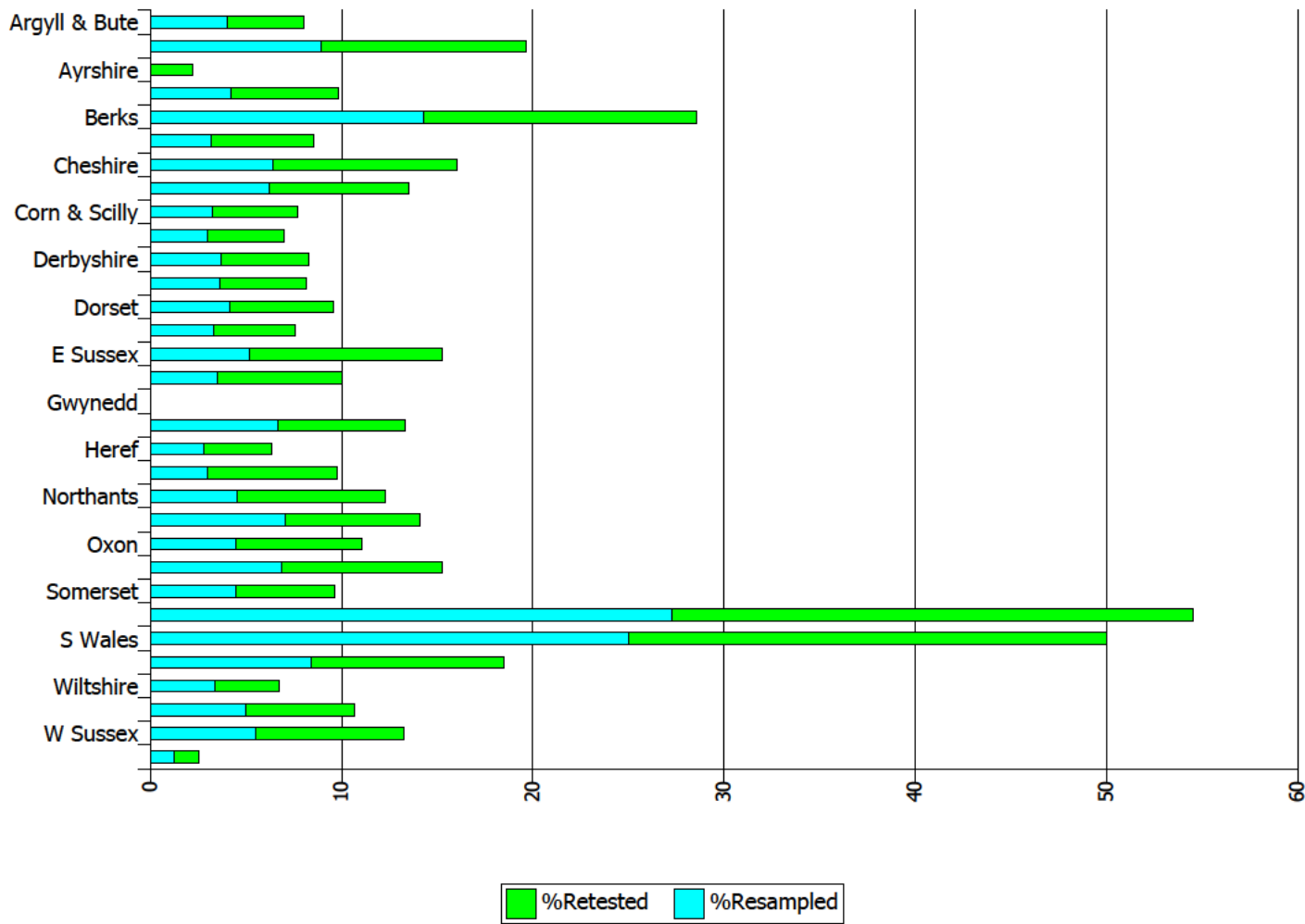


Figure 6. Proportion of samples retested, or requiring a resample, during April 2018 (% submission per County)



County	%Resampled	%Retested
Argyll & Bute	4.00 %	4.00 %
Avon	8.95 %	10.70 %
Ayrshire		2.17 %
Beds	4.21 %	5.61 %
Berks	14.29 %	14.29 %
Bucks	3.19 %	5.32 %
Cheshire	6.39 %	9.67 %
Corn & Scilly	3.21 %	4.50 %
Cumbria	2.97 %	4.03 %
Derbyshire	3.69 %	4.59 %
Devon	3.65 %	4.50 %
Dorset	4.17 %	5.38 %
Dyfed	3.31 %	4.25 %
E Sussex	5.17 %	10.10 %
Gwent	3.50 %	6.50 %
Gwynedd		
Hampshire	6.67 %	6.67 %
Heref	2.78 %	3.57 %
Leics & Rut	3.01 %	6.77 %
Northants	4.52 %	7.74 %
Notts	7.06 %	7.06 %
Oxon	4.45 %	6.58 %
Powys	6.84 %	8.38 %
Somerset	4.48 %	5.16 %
Staffs	27.27 %	27.27 %
S Wales	25.00 %	25.00 %
Warks	8.43 %	10.07 %
Wiltshire	3.35 %	3.35 %
W Midlands	4.98 %	5.69 %
W Sussex	5.52 %	7.73 %
	1.27 %	1.27 %

Table 6a (i): Number of animals and submissions tested in April 2018

Country	No. animals	No of IFHg+ animals	% Positive animals	No. samples	No of IFHg+ samples	% Positive samples
England	14120	738	5.2%	14251	738	5.2%
Wales	5539	162	2.9%	6195	162	2.6%
Scotland	71	41	57.7%	71	41	57.7%
GB	19730	941	4.8%	20517	941	4.6%

Table 6a (ii): Number of animals and submissions tested in April 2017

Country	No. animals	No of IFHg+ animals	% Positive animals	No. samples	No of IFHg+ samples	% Positive samples
England	7850	586	7.5%	7897	586	7.4%
Wales	3216	320	10.0%	3280	320	9.8%
Scotland	19	0	0.0 %	19		0.0 %
GB	11085	906	8.2%	11196	906	8.1%

Table 6b (i): Number of animals and submissions tested in 2018 Up to end of April

Country	No. animals	No of IFHg+ animals	% Positive animals	No. samples	No of IFHg+ samples	% Positive samples
England	53944	3358	6.2%	57768	3358	5.8%
Wales	17759	846	4.8%	19257	846	4.4%
Scotland	1167	134	11.5%	1253	134	10.7%
GB	72869	4338	6.0%	78278	4338	5.5%

Table 6b (ii): Number of animals and submissions tested in 2017 Up to end of April

Country	No. animals	No of IFHg+ animals	% Positive animals	No. samples	No of IFHg+ samples	% Positive samples
England	27377	1485	5.4%	31321	1485	4.7%
Wales	8673	823	9.5%	9529	823	8.6%
Scotland	1261	33	2.6%	1301	33	2.5%
GB	37311	2341	6.3%	42151	2341	5.6%

Table 7a Number of private samples April 2018

	* Test type	Num Submissions	Num Sample	Num Positives Private	% Positive
Buckinghamshire	PRV-SE	1	1		0
Somerset excl North	PRV-SP	1	1		0
	Total	2	2		0

Table 7b Number of private samples 2018

	* Test type	Num Submissions	Num Samples	Num Positives Private	% Positive
Buckinghamshire	PRV-SE	1	1		0
Isle of Man	SER-IOM	5	18		0
Northern Somerset & South Glou	PRV-SE	1	16	1	6.25 %
Oxfordshire	PRV-SE	1	38	4	10.53 %
Somerset excl North	PRV-SE	1	25		0
	PRV-SP	1	1		0
Suffolk	PRV-SP	2	11		0
	Total	12	110	5	4.55 %

*SER-IOM: Serial High Specificity test – Isle of Man; PRV-SE: Private High Sensitivity test - England;
PRV-SP: Private High Specificity test – England

Table 8a Number of Cattle Antibody Tests April 2018

Test	County	Num Submissions	Num Samples Tested	Num Positive Samples	% Positive
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Table 8b Number of Cattle Antibody Tests 2018

Test	County	Num Submissions	Num Samples Tested	Num Positive Samples	% Positive
TC0077	Ceredigion	1	85	4	4.7 %
TC0077		Sum:	85	4	4.7 %