

Supplementary table 1 Non-welfare cross compliance regulations 2007 – 2013 tested in model

	Country	Description
SMRs	All	SMR 1 Wild Birds
	All	SMRs 6 – 8 Identification and registration: SMR 6 (pig); SMR 7 (cattle); SMR 8 (sheep & goats)
	All	SMR 11 Food and feed law
GAECs†		Grazing
	England	GAEC 9 Overgrazing and unsuitable supplementary feeding
	Scotland	GAEC 4 Erosion caused by livestock; GAEC 10 Undergrazing; GAEC 11 overgrazing
	Wales	GAEC B Overgrazing; GAEC D Supplementary feeding
		Weeds
	England	GAEC 11 Control of weeds
	Scotland	GAEC 18 Encroachment of unwanted vegetation
	Wales	GAEC C Under Grazing / Under Management: Control of weeds
		Boundaries
	England	GAEC 15 Hedgerows
Scotland	GAEC 15 Field boundaries	
Wales	GAEC E Boundaries	

SMR statutory management requirements, were the same by country

GAEC good agricultural and environmental conditions, differed by country

Supplementary table 2 Number of animals inspected per visit by quintile

quintile	Number of animals inspected									
	Cattle	Calves	Sheep	Pigs	Poultry	Deer	Goats	Horses	Rabbits	Other
≤20%	0-10	0-4	0-26	0-2	0-4	0-1	0-1	0-1	0-3	0-1
>20-40%	11-25	5-9	27-84	3-6	5-11	2-4	2-4	2-3	4-7	2-4
>40-60%	26-51	10-19	85-199	7-17	12-29	5-8	5-7	4-6	8-11	5-12
>60-80%	52-100	20-39	200-489	18-65	30-132	9-23	8-15	7-13	12-19	13-49
>80-100%	≥ 101	≥ 40	≥ 490	≥ 66	≥ 133	≥ 24	≥ 16	≥ 14	≥ 20	≥ 50

Supplementary table 3 Number (N) and percentage (%) of inspections and non-compliant (CD) inspections by scheme membership type

	Farm Assurance			Organic Certification			Herd Health			Not a member N			Total
	N	N CD	% CD	N	N CD	% CD	N	N CD	% CD	N	N CD	% CD	
<i>Year</i>													
2007	2015	312	15.5	128	7	5.5	259	40	15.4	5632	1588	28.2	7837
2008	2952	344	11.7	230	17	7.4	671	60	8.9	6752	1877	27.8	10080
2009	1710	210	12.3	220	15	6.8	681	55	8.1	7603	1605	21.1	9844
2010	2303	230	10.0	189	9	4.8	626	34	5.4	4830	923	19.1	7362
2011	2070	200	9.7	175	19	10.9	476	30	6.3	3706	844	22.8	5875
2012	1581	134	8.5	114	15	13.2	472	42	8.9	4444	814	18.3	6247
2013	1466	163	11.1	132	6	4.5	531	41	7.7	5164	1179	22.8	6956
<i>Country</i>													
England	6674	797	11.9	753	51	6.8	2101	208	9.9	28642	6216	21.7	36801
Scotland	4782	519	10.9	261	30	11.5	1177	76	6.5	4784	1506	31.5	9883
Wales	2641	277	10.5	174	7	4.0	438	18	4.1	4705	1108	23.5	7517
<i>Visit reason</i>													
XC random	2100	39	1.9	179	2	1.1	580	19	3.3	2373	187	7.9	4747
XC risk-based	5209	293	5.6	470	35	7.4	1625	85	5.2	10289	1231	12.0	16383
XC targeted	940	400	42.6	62	20	32.3	175	71	40.6	2464	1438	58.4	3482
Complaint	1659	350	21.1	121	18	14.9	337	56	16.6	5308	1775	33.4	7142
Targeted	3480	477	13.7	253	13	5.1	724	61	8.4	11936	3925	32.9	15752
Programmed	386	14	3.6	57	0	0.0	163	8	4.9	3854	161	4.2	4360
Elective	196	11	5.6	43	0	0.0	74	1	1.4	1429	48	3.4	1717
OTMS*	126	9	7.1	3	0	0.0	38	1	2.6	446	64	14.3	585
Special	1	0	0.0	0	0	0.0	0	0	0.0	32	1	3.1	33
<i>Rural payment claimant</i>													
Yes	1554	188	12.1	151	8	5.3	388	42	10.8	13268	3569	26.9	15093
No	12543	1405	11.2	1037	80	7.7	3328	260	7.8	24863	5261	21.2	39108
<i>Enterprise type</i>													
Calves	2512	222	8.8	181	12	6.6	896	63	7.0	4303	923	21.5	7255
Beef - breeding	2376	238	10.0	224	19	8.5	449	23	5.1	7110	1992	28.0	9754
Cattle - growing	2806	290	10.3	183	10	5.5	691	59	8.5	4934	1210	24.5	8050
Dairy cattle	1493	200	13.4	91	6	6.6	799	76	9.5	991	239	24.1	2849
Sheep	3052	437	14.3	244	30	12.3	472	34	7.2	7695	1914	24.9	10998
Caged hens	22	6	27.3	0	0	0.0	2	0	0.0	110	43	39.1	133
Broilers/breeders	101	15	14.9	23	1	4.3	13	3	23.1	491	96	19.6	613
Ducks	80	5	6.3	14	0	0.0	15	0	0.0	886	132	14.9	983
Geese	69	3	4.3	9	0	0.0	13	0	0.0	759	99	13.0	842
Turkeys	60	5	8.3	8	0	0.0	11	0	0.0	426	60	14.1	495
Other layers	257	7	2.7	47	1	2.1	60	2	3.3	1816	319	17.6	2128
Pigs - breeding	377	60	15.9	47	5	10.6	94	15	16.0	2290	652	28.5	2726
Pigs - growing	567	75	13.2	54	4	7.4	116	22	19.0	2419	647	26.7	3053
Wild boar	0	0	0.0	0	0	0.0	0	0	0.0	27	4	14.8	27
Goats	115	21	18.3	16	0	0.0	29	3	10.3	1407	234	16.6	1551
Horses	117	5	4.3	19	0	0.0	27	2	7.4	1009	157	15.6	1152
Rabbits	29	1	3.4	6	0	0.0	7	0	0.0	434	15	3.5	473
Deer	6	0	0.0	4	0	0.0	4	0	0.0	140	9	6.4	153
Ratites/ostriches	6	0	0.0	1	0	0.0	4	0	0.0	83	10	12.0	93
Other	52	3	5.8	17	0	0.0	14	0	0.0	801	75	9.4	873
<i>Enterprise size (quintiles)</i>													
≤20%	1208	123	10.2	125	6	4.8	353	21	5.9	8430	1624	19.3	9923
>20-40%	1726	181	10.5	176	8	4.5	483	39	8.1	8857	1910	21.6	10944
>40-60%	2513	284	11.3	259	25	9.7	561	47	8.4	7857	1917	24.4	10720
>60-80%	3438	407	11.8	259	28	10.8	829	79	9.5	7602	2107	27.7	11458
>80-100%	5167	593	11.5	367	21	5.7	1484	116	7.8	5293	1257	23.7	11016

*originally OTMS was an inspection under the BSE over thirty month scheme, currently used variously by inspectors

Supplementary table 4 Number and percentage (%) of inspections to each area of inspection, that scored A (compliant with both legislation and codes), or non-compliant (C or D) by membership of scheme

Area of inspection	Score	Farm assurance		Organic certification		Herd health		Not scheme member		Total
		Number	%	Number	%	Number	%	Number	%	
Staffing	A	9614	71.3	849	73.8	2807	77.8	20320	55.8	31377
	C/D	442	3.3	20	1.7	38	1.1	2716	7.5	3179
Total inspected		13475	95.6	1150	96.8	3607	97.1	36435	95.6	51837
Inspection	A	10509	77.4	909	78.7	3021	83.2	23205	63.6	35251
	C/D	196	1.4	10	0.9	15	0.4	1177	3.2	1385
Total inspected		13578	96.3	1155	97.2	3632	97.7	36488	95.7	52005
Disease	A	8794	66.7	755	66.1	2547	71.6	18376	52.9	28442
	C/D	672	5.1	37	3.2	107	3.0	3169	9.1	3898
Total inspected		13193	93.6	1143	96.2	3557	95.7	34767	91.2	49853
Records	A	8094	70.7	727	73.8	2337	72.9	14614	53.2	23838
	C/D	620	5.4	41	4.2	117	3.6	3717	13.5	4414
Total inspected		11445	81.2	985	82.9	3206	86.3	27469	72.0	40614
Housing	A	8307	67.2	741	70.9	2414	71.1	17660	52.6	27230
	C/D	275	2.2	12	1.1	72	2.1	2362	7.0	2675
Total inspected		12369	87.7	1045	88.0	3394	91.3	33562	88.0	47749
Environment	A	9342	68.9	817	71.6	2685	74.4	19994	54.3	30702
	C/D	469	3.5	28	2.5	80	2.2	3248	8.8	3762
Total inspected		13561	96.2	1141	96.0	3611	97.2	36820	96.6	52299
Equipment	A	4369	77.5	386	80.9	1257	81.3	9272	66.7	14292
	C/D	80	1.4	3	0.6	7	0.5	347	2.5	429
Total inspected		5635	40.0	477	40.2	1546	41.6	13898	36.4	20339
Freedom of movement	A	11645	86.4	1020	88.7	3166	87.9	28323	78.2	41635
	C/D	79	0.6	4	0.3	10	0.3	333	0.9	419
Total inspected		13477	95.6	1150	96.8	3603	97.0	36213	95.0	51606
Feed & water	A	10199	74.2	851	72.9	2851	78.0	21376	57.4	33036
	C/D	367	2.7	30	2.6	48	1.3	3040	8.2	3438
Total inspected		13751	97.5	1167	98.2	3656	98.4	37225	97.6	52924
Mutilations	A	10362	85.2	931	86.9	2907	87.1	24932	79.2	36789
	C/D	82	0.7	3	0.3	11	0.3	183	0.6	270
Total inspected		12158	86.2	1071	90.2	3339	89.9	31469	82.5	45379
Breeding	A	9056	84.6	804	83.8	2644	88.2	20292	71.4	30697
	C/D	118	1.1	5	0.5	4	0.1	888	3.1	1011
Total inspected		10705	75.9	959	80.7	2999	80.7	28428	74.6	40746
Space	A	788	77.9	78	73.6	250	83.9	2204	76.1	3152
	C/D	27	2.7	0	0.0	4	1.3	76	2.6	103
Total inspected		1011	7.2	106	8.9	298	8.0	2895	7.6	4105