



## Development of innovative scorecard for assessment of welfare and production performance of commercial layer birds reared at different stocking densities in cages

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Supplementary Table 1. Evaluation of welfare and behaviour of commercial layers on the basis of developed score card method

Parameter	Sub-group of parameter	Total score	Range	Score allotted	Scores of treatment			
					A 387 cm <sup>2</sup> /b	B 484 cm <sup>2</sup> /b	C 548 cm <sup>2</sup> /b	D 645 cm <sup>2</sup> /b
Stress, Immunity and Welfare	H/ L ratio	04	1) 0.26 to 0.293	04		04		
			2) 0.294 to 0.327	03				
			3) 0.328 to 0.361	02			02	
			4) 0.362 to 0.390	01	01			01
	Corticosterone level	04	1) 0.920 to 1.053	04			04	
			2) 1.054 to 1.187	03		03		
			3) 1.188 to 1.321	02				
			4) 1.322 to 1.450	01	01			
	Immune status (HI titre)	04	1) 2.96 to 2.993	01				01
			2) 2.994 to 3.027	02				
			3) 3.028 to 3.061	03		03	03	
			4) 3.062 to 3.09	04	04			
	Feather score	08	1) 6.89 to 7.17	02	02			
			2) 7.18 to 7.46	04		04	04	
			3) 7.47 to 7.75	06				
			4) 7.76 to 8.04	08			08	
	Gait Score	08	1) 7.89 to 7.91	02	02			
			2) 7.92 to 7.94	04				
			3) 7.95 to 7.97	06				
			4) 7.98 to 8.00	08		08	08	
State behaviours	06	1) 931.00 to 942.75	00			00		
		2) 942.76 to 954.51	02		02			
		3) 954.52 to 966.27	04	04				
		4) 966.28 to 978.00	06			06		
Event behaviours	06	1) 461.33 to 473.04	00				00	
		2) 473.05 to 484.76	02	02				
		3) 484.77 to 496.48	04		04			
		4) 496.49 to 508.17	06			06		
Sub-total		40			16	28	27	27

Supplementary Table 2. Effect of stocking density on state and event behaviours of bird reared in California cage system

Parameter	387 cm <sup>2</sup> /b		484 cm <sup>2</sup> /b		548 cm <sup>2</sup> /b		645 cm <sup>2</sup> /b		SEM	P-value
	Minutes	%	Minutes	%	Minutes	%	Minutes	%		
Standing	222.50 <sup>a</sup> ±9.74	15	277.00 <sup>a</sup> ±17.92	19	169.50 <sup>b</sup> ±13.46	12	245.17 <sup>a</sup> ±27.52	17	11.851	0.004**
Sitting	365.50 <sup>a</sup> ±29.67	25	204.17 <sup>b</sup> ±21.54	14	264.50 <sup>b</sup> ±20.40	18	239.17 <sup>b</sup> ±17.29	17	16.393	0.000**
Sleeping	216.17 <sup>d</sup> ±5.42	15	254.50 <sup>c</sup> ±10.02	18	359.00 <sup>a</sup> ±8.58	25	325.00 <sup>b</sup> ±13.354	23	12.597	0.000**
Investigating	136.33 <sup>b</sup> ±8.18	9	175.67 <sup>a</sup> ±8.59	12	101.17 <sup>c</sup> ±4.99	7	137.17 <sup>b</sup> ±2.94	10	6.298	0.000**
Walking	25.17 <sup>b</sup> ±0.60	2	34.67 <sup>a</sup> ±2.78	2	37.83 <sup>a</sup> ±3.81	3	32.33 <sup>a</sup> ±0.56	2	1.479	0.009**
Total state behaviour	965.67±15.17	67	946.17±8.91	66	931.83±13.58	65	978.83±33.36	68	10.070	0.382-NS
Drinking	73.00±3.27	5	76.67±4.24	5	78.50±3.19	5	71.50±3.21	5	1.735	0.484-NS
Feeding	295.67±14.97	21	287.83±8.80	20	286.50±9.25	20	254.67±26.71	18	8.397	0.337-NS
Grooming and Preening	87.83 <sup>b</sup> ±2.17	6	120.17 <sup>a</sup> ±6.13	8	129.50 <sup>a</sup> ±4.72	9	126.50 <sup>a</sup> ±8.33	9	4.389	0.000**
Feather pecking	16.33 <sup>a</sup> ±1.17	1.1	11.17 <sup>b</sup> ±1.01	0.8	8.00 <sup>c</sup> ±0.58	0.6	5.33 <sup>c</sup> ±0.76	0.4	0.954	0.000**
Wing flapping	1.17 <sup>b</sup> ±0.31	0.1	1.17 <sup>b</sup> ±0.17	0.1	2.33 <sup>a</sup> ±0.42	0.2	2.83 <sup>a</sup> ±0.31	0.2	0.211	0.002**
Total event behaviour	474.17±15.30	33	493.67±8.82	34	508.17±13.58	35	461.33±33.37	32	10.074	0.386

Means bearing superscript within a column differ significantly. NS, Non-significant; \*, P<0.05; \*\*, P< 0.01.