

Supplemental Table 1: Descriptors

Case Control Descriptors			Congestive Heart Failure Descriptors									
Animal	Hot Carcass Weight (kg)*	Estimated Live Weight (kg) †	Animal	Location	Elevation	Sex*	Date of Death	Manner of Death	Days on Feed	Weight (kg)	Target Weight (kg)	Yard Diagnosis
1	386	627	1	Colorado	1420 m	S	February 2014	E	>100	500	NA	Congestive Heart Failure
2	400	649	2	Nebraska	544 m	S	September 2014	E	>100	500	NA	Congestive Heart Failure
3	398	645	3	Colorado	1420 m	S	February 2015	E	>100	500	NA	Congestive Heart Failure
4	517	838	4	Nebraska	1246 m	S	July 2016	FD	276	624	624	Congestive Heart Failure
5	450	729	5	Nebraska	1246 m	S	July 2016	FD	>100	NA	NA	Congestive Heart Failure
6	440	713	6	Colorado	1152 m	S	July 2016	FD	168	499	624	Congestive Heart Failure
7	407	660	7	Colorado	1152 m	H	July 2016	FD	141	454	578	Congestive Heart Failure
8	371	602	8	Colorado	1152 m	H	July 2016	FD	131	533	578	Congestive Heart Failure
9	331	537	9	Colorado	1152 m	S	July 2016	FD	143	635	624	Congestive Heart Failure
10	380	615										Complicated by AIP‡
11	451	731	10	Colorado	1152 m	NA	July 2016	FD	>100	NA	NA	NA
12	383	621	11	Colorado	1419 m	S	October 2016	FD	>100	NA	NA	NA
13	434	703	12	Nebraska	759 m	S	March 2017	FD	>100	454	NA	Congestive Heart Failure
14	439	712										Complicated by BRD‡
15	431	698	13	Wyoming	1251 m	H	May 2017	FD	127	463	NA	Congestive Heart Failure
16	422	684	14	Wyoming	1251 m	S	May 2017	FD	>100	NA	NA	Congestive Heart Failure
17	418	677	15	Wyoming	1251 m	S	May 2017	FD	>100	NA	NA	Congestive Heart Failure
18	412	667										
19	468	757										
20	409	664										

*S = Steer; H = Heifer
†FD = Found Dead; E = Euthanized
‡NA = Diagnosis Not Available

ment or use this space to emphasize a key point. To place this text box anywhere on the page, just

*S = Steer; H = Heifer

†FD = Found Dead; E = Euthanized

NA = Descriptors Not Available

‡AIP=Atypical Interstitial Pneumonia

‡BRD=Undifferentiated Bovine Respiratory Disease

ment or use this space to emphasize a key point. To place this text box anywhere on the page, just

*Weight of the carcass after slaughter and removal of head, hide, intestinal tract and internal organs
 †Estimated live weight based upon average 62% dressing percentage, that is 544 kg live steer will yield 337 kg carcass

Supplemental Table 2: Microscopic Cardiac Lesions													
	Animal	LV Fibrosis			LV Fatty Infiltrate		LV Mononuclear Steatitis	RV Fibrosis			RV Fatty Infiltrate		RV Mononuclear Steatitis
		PV**	I***	R****	PV**	Myocardial		PV**	I***	R****	PV**	Myocardial	
Feedyard Case Controls	1	1	1	0	1	0	0	1	1	0	1	0	0
	2	2	2	0	1	0	1	2	3	1	1	0	1
	3	1	1	0	1	1	1	0	1	0	1	1	0
	4	1	2	1	1	1	1	0	1	0	0	0	0
	5	0	0	0	1	0	0	0	0	0	1	0	0
	6	0	0	0	1	0	1	1	1	0	1	0	0
	7	2	2	0	1	0	1	1	1	0	1	0	0
	8	2	2	0	1	0	1	0	0	0	1	0	0
	9	1	0	0	1	0	0	1	1	0	0	0	0
	10	1	2	0	1	1	1	1	1	0	1	0	1
	11	1	2	0	2	0	0	0	1	0	1	0	0
	12	2	2	0	1	0	1	1	2	0	2	1	0
	13	1	1	0	1	0	0	0	1	0	1	0	0
	14	0	0	0	1	0	0	0	1	0	2	0	1
	15	1	2	0	1	1	1	2	2	0	1	0	0
	16	1	3	1	1	0	1	0	1	0	1	0	1
	17	0	1	0	1	0	1	0	2	0	2	1	0
	18	1	2	0	1	0	1	1	2	0	1	0	0
	19	2	2	0	1	0	0	NA†	NA†	NA†	NA†	NA†	NA†
	20	1	3	1	1	0	0	1	2	0	1	0	1
	Avg.	1.05	1.5	0.15	1.05	0.2	0.6	0.58	1.16	0.05	1.05	0.16	0.26
	SD	0.69	0.95	0.37	0.22	0.41	0.50	0.68	0.73	0.23	0.52	0.37	0.45
Feedyard Congestive Heart Failure	1	3	3	1	2	0	1	3	3	1	2	0	1
	2	2	2	0	1	0	0	3	3	1	3	1	0
	3	3	3	3	2	1	3	3	3	3	3	1	3
	4	2	3	0	3	0	0	1	1	0	2	0	0
	5	3	3	0	2	0	1	2	2	0	2	1	1
	6	3	3	1	2	0	0	3	3	0	2	0	0
	7	3	1	0	1	0	1	2	3	0	3	0	1
	8	3	1	0	3	1	2	2	3	2	3	1	1
	9	2	2	0	1	1	1	2	2	1	2	0	1
	10	3	3	0	1	0	1	3	3	2	3	1	1
	11	3	3	1	2	0	1	2	1	0	2	0	1
	12	3	3	1	3	1	3	3	3	1	3	1	3
	13	2	1	0	1	0	0	3	3	2	1	0	0
	14	2	3	1	1	0	1	3	3	1	1	0	1
	15	1	2	0	1	1	0	2	2	0	1	0	1
Avg.	2.53	2.4	0.53	1.73	0.33	1	2.47	2.53	0.93	2.2	0.4	1	
SD	0.64	0.83	0.83	0.80	0.44	1	0.64	0.74	0.96	0.77	0.51	0.93	

* Semiquantitative evaluation: 0 = no lesion; 1 = mild; 2 = moderate; 3 = severe, ** PV = Perivascular, *** I = Interstitial, **** R = Replacement, † NA = No tissue sampled

Supplemental Table 3: Microscopic Pulmonary Lesions

	Animal	Veins-Venules		Small-Medium Arteries				Arterioles	
		Venoconstriction	Adventitial Hyperplasia	Intimal Hyperplasia	Medial Hypertrophy	Adventitial Hyperplasia	Vasa Vasorum Hyperplasia	Muscularization	Adventitial Hyperplasia
Feedyard Case Controls	1	1	0	0	0	0	0	0	0
	2	1	2	1	3	2	0	3	2
	3	1	1	0	0	1	0	0	1
	4	1	0	0	0	0	0	0	0
	5	1	0	0	0	0	0	0	0
	6	1	0	0	0	0	0	0	0
	7	2	1	0	0	1	0	0	1
	8	2	2	0	0	2	0	0	0
	9	2	0	0	0	0	0	0	0
	10	2	0	0	0	0	0	0	0
	11	1	1	0	0	1	0	0	0
	12	1	0	0	0	0	0	0	0
	13	1	0	0	0	0	0	0	0
	14	1	0	0	0	0	0	0	0
	15	1	0	0	0	0	0	0	0
	16	1	0	0	0	0	0	0	0
	17	1	1	0	0	1	0	0	1
	18	1	0	0	0	0	0	0	0
	19	1	0	0	0	0	0	0	0
	20	2	1	0	0	1	0	0	1
	Avg.	1.25	0.45	0.05	0.15	0.45	0	0.15	0.3
	SD	0.44	0.69	0.22	0.67	0.69	0	0.67	0.57
Feedyard Congestive Heart Failure	1	2	3	0	2	3	3	2	3
	2	2	3	1	3	3	3	3	3
	3	3	3	0	3	3	2	2	3
	4	3	3	0	3	3	0	0	0
	5	2	3	0	3	3	3	3	3
	6	2	3	0	3	3	2	3	3
	7	1	3	0	3	3	3	3	3
	8	2	3	0	2	3	0	0	3
	9	1	3	0	2	3	3	0	3
	10	1	3	0	3	3	3	1	3
	11	2	3	0	2	3	0	0	0
	12	1	3	0	2	3	3	0	3
	13	0	3	0	1	3	3	1	3
	14	1	3	0	1	3	1	1	3
	15	2	3	0	2	3	0	2	3
	Avg.	1.67	3	0.07	2.33	3	1.93	1.4	2.6
	SD	0.82	0	0.26	0.94	0	1.33	1.24	1.06

* Semiquantitative evaluation: 0 = no lesion; 1 = mild; 2 = moderate; 3 = severe