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ADF	acid detergent fiber
ADL	acid detergent lignin
AIA	acid insoluble ash
ATP	adenosine triphosphate
BUN	blood urea nitrogen
CP	crude protein
DM	dry matter
DMD	dry matter digestibility
DMI	dry matter intake
FCM	fat corrected milk
HQFB	high quality feed block
HQFP	high quality feed pellet
ME	metabolic energy
NEg	net energy for growth
NEl	net energy for lactation
NE _m	net energy for maintenance
NH ₃ -N	ammonia nitrogen
NPN	non-protein nitrogen
NSC	non-structural carbohydrate
OM	organic matter
OMD	organic matter digestibility
SNF	solids not fat
TDN	total digestible nutrient
TVFA	total volatile fatty acids
UDP	undegradable protein
UFP	urea fermentation potential

Appendix table 1 Dependent Variable : Roughage intake (kgDM/d).

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	1.374	0.245	2.74	0.218
P*COW	5	2.076	0.415	4.15	0.136
PERIOD	1	0.792	0.792	7.91	0.067
TRT	2	0.172	0.086	0.86	0.506
		R-Square	C.V.	Root MSE	Mean
		0.977	4.767	0.316	6.638

Appendix table 2 Dependent Variable : Roughage intake (gDM/kgBW^{0.75}).

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	506.087	101.217	11.88	0.034
P*COW	5	326.967	65.393	7.68	0.062
PERIOD	1	109.970	109.970	12.91	0.037
TRT	2	31.780	15.890	1.87	0.298
		R-Square	C.V.	Root MSE	Mean
		0.986	4.048	2.919	72.093

Appendix table 3 Dependent Variable : Roughage intake (% of body weight).

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	0.300	0.060	9.95	0.044
P*COW	5	0.176	0.035	5.83	0.089
PERIOD	1	0.046	0.046	7.67	0.070
TRT	2	0.015	0.007	1.21	0.412
		R-Square	C.V.	Root MSE	Mean
		0.980	4.973	0.078	1.562

Appendix table 4 Dependent Variable : Total intake (kgDM/d).

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	6.845	1.369	0.78	0.623
P*COW	5	10.536	2.107	1.20	0.469
PERIOD	1	4.128	4.128	2.36	0.222
TRT	2	1.066	0.533	0.30	0.758
		R-Square	C.V.	Root MSE	Mean
		0.878	8.756	1.324	15.118

Appendix table 5 Dependent Variable : Total intake (gDM/kgBW^{0.75}).

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	1917.988	383.598	1.65	0.361
P*COW	5	1435.798	287.160	1.23	0.460
PERIOD	1	501.984	501.984	2.16	0.238
TRT	2	198.560	99.280	0.43	0.670
		R-Square	C.V.	Root MSE	Mean
		0.869	9.451	15.253	161.395

Appendix table 6 Dependent Variable : Total intake (% of body weight).

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	1.259	0.252	2.14	0.282
P*COW	5	0.735	0.147	1.25	0.455
PERIOD	1	0.247	0.247	2.10	0.243
TRT	2	0.112	0.056	0.48	0.661
		R-Square	C.V.	Root MSE	Mean
		0.901	9.623	0.343	3.561

Appendix table 7 Dependent Variable : Dry matter digestibility coefficient

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	290.240	58.048	1.40	0.416
P*COW	5	303.639	60.728	1.46	0.400
PERIOD	1	65.044	65.044	1.57	0.299
TRT	2	11.860	5.930	0.14	0.872
		R-Square	C.V.	Root MSE	Mean
		0.842	11.654	6.439	55.248

Appendix table 8 Dependent Variable : Organic matter digestibility coefficient.

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	218.515	43.703	1.41	0.414
P*COW	5	144.643	28.929	0.93	0.561
PERIOD	1	20.400	20.400	0.66	0.477
TRT	2	11.661	5.831	0.19	0.838
		R-Square	C.V.	Root MSE	Mean
		0.914	6.743	5.575	69.679

Appendix table 9 Dependent Variable : Neutral detergent fiber digestibility coefficient.

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	161.949	32.390	5.73	0.091
P*COW	5	74.513	14.903	2.63	0.228
PERIOD	1	121.147	121.147	21.41	0.019
TRT	2	123.957	61.978	10.96	0.042
		R-Square	C.V.	Root MSE	Mean
		0.976	4.614	2.379	51.547

Appendix table 10 Dependent Variable : Acid detergent fiber digestibility coefficient.

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	4.503	0.901	0.21	0.935
P*COW	5	1.642	0.328	0.08	0.991
PERIOD	1	13.876	13.876	3.29	0.167
TRT	2	85.455	42.727	10.13	0.046
		R-Square	C.V.	Root MSE	Mean
		0.924	5.151	2.054	39.880

Appendix table 11 Dependent Variable : Total volatile fatty acid concentration (TVFA)

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	10.556	2.111	0.40	0.828
P*COW	5	35.417	7.083	1.33	0.433
PERIOD	1	34.028	34.028	6.39	0.086
TRT	2	29.167	14.583	2.74	0.211
		R-Square	C.V.	Root MSE	Mean
		0.943	2.845	2.307	81.111

Appendix table 12 Dependent Variable : Ruminant pH.

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	0.092	0.018	0.15	0.966
P*COW	5	0.134	0.033	0.27	0.904
PERIOD	1	0.035	0.035	0.29	0.629
TRT	2	0.049	0.025	0.20	0.826
		R-Square	C.V.	Root MSE	Mean
		0.572	5.357	0.348	6.502

Appendix table 13 Dependent Variable : Ammonia-nitrogen ($\text{NH}_3\text{-N}$) concentration.

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	2.779	0.556	5.51	0.096
P*COW	5	3.782	0.756	7.49	0.064
PERIOD	1	0.148	0.148	1.47	0.312
TRT	2	0.561	0.281	2.78	0.208
	R-Square	C.V.	Root MSE	Mean	
	0.974	3.924	0.318	8.097	

Appendix table 14 Dependent Variable : Blood urea nitrogen (BUN) concentration.

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	0.931	0.186	0.74	0.643
P*COW	5	1.769	0.354	1.40	0.415
PERIOD	1	0.198	0.198	0.79	0.441
TRT	2	4.319	2.159	8.56	0.058
	R-Square	C.V.	Root MSE	Mean	
	0.936	5.510	0.502	9.115	

Appendix table 15 Dependent Variable : Bacterial count.

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	0.493	0.099	3.23	0.182
P*COW	5	0.855	0.171	5.60	0.094
PERIOD	1	0.003	0.003	0.09	0.780
TRT	2	0.439	0.219	7.18	0.072
		R-Square	C.V.	Root MSE	Mean
		0.963	5.610	0.175	3.116

Appendix table 16 Dependent Variable : Protozoal count.

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	0.213	0.043	0.86	0.591
P*COW	5	0.114	0.023	0.46	0.791
PERIOD	1	0.003	0.003	0.05	0.837
TRT	2	0.080	0.040	0.80	0.525
		R-Square	C.V.	Root MSE	Mean
		0.834	2.478	0.223	9.000

Appendix table 17 Dependent Variable : Milk yield.

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	20.810	4.161	6.38	0.079
P*COW	5	5.460	1.092	1.68	0.356
PERIOD	1	1.742	1.742	2.67	0.201
TRT	2	3.360	1.680	2.58	0.223
		R-Square	C.V.	Root MSE	Mean
		0.987	6.210	0.807	13.002

Appendix table 18 Dependent Variable : Fat corrected milk (FCM).

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	12.142	2.428	1.72	0.348
P*COW	5	6.376	1.275	0.90	0.572
PERIOD	1	4.803	4.803	3.40	0.162
TRT	2	3.326	1.663	1.18	0.419
		R-Square	C.V.	Root MSE	Mean
		0.968	9.969	1.188	11.916

Appendix table 19 Dependent Variable : Milk protein.

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	0.393	0.787	0.71	0.654
P*COW	5	0.815	0.163	1.48	0.397
PERIOD	1	0.004	0.004	0.04	0.854
TRT	2	0.996	0.498	4.52	0.124
		R-Square	C.V.	Root MSE	Mean
		0.937	8.224	0.332	4.034

Appendix table 20 Dependent Variable : Milk fat.

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	0.300	0.060	0.91	0.569
P*COW	5	0.204	0.041	0.62	0.702
PERIOD	1	0.264	0.264	4.00	0.140
TRT	2	0.040	0.020	0.31	0.757
		R-Square	C.V.	Root MSE	Mean
		0.864	7.463	0.257	3.441

Appendix table 21 Dependent Variable : Solids not fat (SNF).

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	0.274	0.055	0.32	0.872
P*COW	5	0.056	0.011	0.07	0.994
PERIOD	1	0.011	0.011	0.06	0.818
TRT	2	0.508	0.254	1.50	0.353
	R-Square	C.V.	Root MSE	Mean	
	0.806	4.979	0.411	8.263	

Appendix table 22 Dependent Variable : Total solids.

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	0.713	0.143	1.04	0.522
P*COW	5	0.294	0.059	0.43	0.810
PERIOD	1	0.068	0.068	0.50	0.531
TRT	2	0.677	0.339	2.47	0.233
	R-Square	C.V.	Root MSE	Mean	
	0.923	2.912	0.371	12.724	

Appendix table 23 Dependent Variable : Milk protein yield (kg/d).

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	0.027	0.005	1.26	0.453
P*COW	5	0.017	0.003	0.79	0.621
PERIOD	1	0.003	0.003	0.58	0.503
TRT	2	0.036	0.018	4.17	0.136
	R-Square	C.V.	Root MSE	Mean	
	0.934	12.714	0.066	0.518	

Appendix table 24 Dependent Variable : Fat yield (kg/d).

Source	DF	Type III SS	Mean Square	F Value	Pr >F
COW	5	0.014	0.003	0.81	0.609
P*COW	5	0.013	0.003	0.74	0.644
PERIOD	1	0.012	0.012	3.39	0.163
TRT	2	0.006	0.003	0.90	0.495
	R-Square	C.V.	Root MSE	Mean	
	0.948	13.150	0.059	0.447	

Appendix table 25 Protein degradability at different periods of withdrawals (%).

Items	hours								X	%UDP ¹
	0	2	4	6	12	24	48	72		
Control	16.28	53.55	67.06	81.67	92.56	94.35	97.55	98.42	75.18	24.82
HQFP 1	35.61	57.27	66.77	74.31	79.23	86.85	93.08	97.00	73.77	26.24
HQFP 2	36.53	52.93	62.24	67.35	73.32	77.45	80.33	90.38	67.57	32.43

¹UDP = Undegradable protein

Appendix table 26 a, b, c constant values from protein degradability equation

Items	a	b	c	a+b	T1/2 (hr)
Control	31.94	66.33	0.15	98.27	4.62
HQFP 1	34.12	61.66	0.13	95.78	5.33
HQFP 2	35.60	49.00	0.09	84.60	7.70