

Appendix (A-5) : Digestibility trial with calves fed ration (E).

1. Average daily feed intake and daily excreta.

Calf No.	Weight (kg)	Av. daily feed intake (kg)				Total DM intake (kg)	Av. daily feces excreted (kg)	
		Rice straw		Concentrate			Fresh	DM
		As fed	DM	As fed	DM			
13	312	4.800	3.354	3.000	2.744	7.098	9.029	1.853
14	325	4.500	4.082	3.000	2.744	6.826	9.243	1.851
15	298	4.200	3.809	3.000	2.744	6.553	7.279	1.410

2. Chemical analysis of feed and feces excreted

Items	DM%	OM%	CP%	CP%	RE%	NFE%	Ash%	GE Kcal/kg DM
Rice straw	100	82.00	3.99	42.61	2.68	32.73	17.99	3358
Concentrate	100	91.12	18.76	11.77	2.62	57.97	8.88	4470
Feces of calf No. 13	100	81.68	13.21	33.08	2.52	32.87	18.32	4157
Feces of calf No. 14	100	79.89	13.47	30.77	2.48	33.17	20.11	3761
Feces of calf No. 15	100	79.60	13.65	28.79	2.59	34.57	20.40	4289

3. Calculation of nutrients digestibility.

Calf No.	Items	DM	OM	CP	CF	EE	NFE	Ash	GE Kcal/kg DM
13	Nutrients consumed (kg)	7.098	6.071	0.689	2.178	0.188	3.016	1.027	26880
	Nutrients excreted (kg)	1.853	1.514	0.245	0.613	0.470	0.609	0.339	7703
	Nutrients digested (kg)	5.245	4.557	0.444	1.565	0.141	2.407	0.688	19177
	Digestion coefficients (%)	73.89	75.06	64.44	71.85	75.00	79.80	-	71.34
	Digested nutrients	-	-	6.25	22.05	1.99	33.91	-	-
14	Nutrients consumed (kg)	6.826	5.848	0.678	2.062	0.181	2.927	0.978	25973
	Nutrients excreted (kg)	1.851	1.479	0.249	0.570	0.046	0.614	0.372	6962
	Nutrients digested (kg)	4.975	4.369	0.429	1.492	0.135	2.313	0.606	19011
	Digestion coefficients (%)	72.88	74.71	63.27	72.36	74.59	79.02	-	73.20
	Digested nutrients	-	-	6.28	21.86	1.98	33.89	-	-
15	Nutrients consumed (kg)	6.553	5.625	0.667	1.947	0.174	2.837	0.929	25052
	Nutrients excreted (kg)	1.410	1.122	0.192	0.406	0.037	0.487	0.288	6048
	Nutrients digested (kg)	5.143	4.503	0.475	1.541	0.137	2.350	0.641	19004
	Digestion coefficients (%)	78.48	80.05	71.21	79.15	78.74	82.83	-	75.86
	Digested nutrients	-	-	7.24	23.51	2.09	35.86	-	-
Av. digestion coefficients %		75.08	76.61	66.31	74.45	76.11	80.55	-	73.47
Av. digested nutrients		-	-	6.59	22.47	2.02	34.55	-	-

4. Average feeding value:

TIN	DM basis %		ICP	Nutritive ratio
	SV			
68.09	51.35	6.59	1:9.36	

Appendix (A-6) : Digestibility trial with calves fed the finishing ration.

1. Average daily feed intake and daily excreta:

Calf No.	Weight (kg)	Av. daily feed intake (kg)				Total DM intake (kg)	Av. daily feces excreta (kg)	
		Rice straw		Concentrate			Fresh	DM
		As fed	DM	As fed	DM			
16	410	4.00	3.628	8.00	7.316	10.944	11.73	2.071
17	398	4.00	3.628	8.00	7.316	10.944	11.33	1.947
18	384	4.00	3.628	8.00	7.316	10.944	10.33	1.705

2. Chemical analysis of feed and feces excreted.

Items	DM%	OM%	CP%	CF%	EE%	NFE%	Ash%	GE Kcal/kg DM
Rice straw	100	82.01	3.99	42.61	2.68	32.73	17.99	3358
Concentrate	100	91.12	18.76	11.77	2.62	57.97	8.88	4470
Faeces of calf No. 16	100	79.04	15.19	24.96	2.38	36.51	20.96	4002
Faeces of calf No. 17	100	80.26	14.21	29.21	2.26	34.58	19.74	3930
Faeces of calf No. 18	100	79.87	15.43	28.26	2.17	34.01	20.13	4112

3. Calculation of nutrients digestibility.

Calf No.	Items	DM	OM	CP	CF	EE	NFE	Ash	GE Kcal/kg DM
16	Nutrients consumed (kg)	10.944	9.645	1.517	2.408	0.289	5.428	1.302	44885
	Nutrients excreted (kg)	2.071	1.637	0.315	0.517	0.049	0.756	0.434	08516
	Nutrients digested (kg)	8.873	8.005	1.202	1.891	0.240	4.672	0.868	36369
	Digestion coefficients (%)	81.08	83.02	79.24	78.53	83.04	86.07	-	81.03
	Digested nutrients	-	-	10.98	17.28	2.19	42.69	-	-
17	Nutrients consumed (kg)	10.944	9.645	1.517	2.408	0.289	5.428	1.302	44885
	Nutrients excreted (kg)	1.947	1.563	0.277	0.569	0.044	0.673	0.384	07652
	Nutrients digested (kg)	8.997	8.079	1.240	1.839	0.245	4.755	0.918	37234
	Digestion coefficients (%)	82.21	83.79	81.74	76.37	84.78	87.60	-	82.95
	Digested nutrients	-	-	11.33	16.80	2.24	43.45	-	-
18	Nutrients consumed (kg)	10.944	9.645	1.517	2.408	0.289	5.428	1.302	44885
	Nutrients excreted (kg)	1.705	1.362	0.263	0.482	0.037	0.580	0.343	06823
	Nutrients digested (kg)	9.239	8.280	1.254	1.926	0.252	4.848	0.959	38062
	Digestion coefficients (%)	84.42	85.87	82.66	79.98	87.20	89.31	-	84.80
	Digested nutrients	-	-	11.46	17.60	2.30	44.00	-	-
Av. digestion coefficients (%)		82.57	84.23	81.21	78.29	85.01	87.66	-	82.93
Av. digested nutrients		-	-	11.26	17.23	2.24	43.48	-	-

4. Average feeding value :

TDN	DM basis %		Nutritive ratio
	SV	DCP	
77.01	65.86	11.26	1:5.84

Appendix (A-7): Changes in body weight of Friesian calves throughout the feeding trial (Group A).

Animal No	Initial weight (kg)	Period (2 weeks)								Final weight (kg)	Total gain (kg)	Daily gain (kg)
		1	2	3	4	5	6	7	8			
1	260	267	274	281	289	297	305	313	321	329	69	0.548
2	217	225	233	241	251	260	269	277	285	292	75	0.595
3	266	274	282	289	297	304	311	318	325	332	66	0.524
4	254	262	270	279	286	293	300	307	314	320	66	0.524
5	209	214	223	231	239	245	251	260	268	273	64	0.508
Av.	241.2	248.4	256.4	264.2	272.4	276.1	287.2	295	302.6	309.2	68	0.540
SE _±	11.72	12.06	11.84	11.72	11.47	10.50	11.57	11.26	11.11	11.46	1.92	0.015
<u>Finishing period</u>												
1	329	340	356	371	386	401	415	427	440	454	125	0.992
2	292	298	315	334	346	354	360	370	382	394	102	0.810
3	332	353	377	394	402	413	423	440	452	464	132	1.048
4	320	329	344	359	379	399	420	440	460	480	160	1.270
5	273	290	308	318	330	345	355	370	380	393	120	0.950
Av.	309.2	322	340	355.2	368.6	382.4	394.6	409.4	422.8	437.0	127.8	1.014
SE _±	11.46	12.09	12.80	13.39	13.26	15.22	15.19	16.23	17.33	18.20	9.44	0.075
<u>Entire period</u>												
1	260									454	194	0.770
2	217									394	177	0.702
3	266									464	198	0.786
4	254									480	226	0.937
5	209									393	184	0.730
Av.	241.2									437.0	195.8	0.777
SE _±	11.72									18.20	8.39	0.041

Appendix (A-8): Changes in body weight of Friesian calves throughout the feeding trial (Group B)

Animal No.	Initial weight (kg)	Period (2 weeks)								Final weight (kg)	Total gain (kg)	Daily gain (kg)
		1	2	3	4	5	6	7	8			
1	259	270	281	293	305	317	328	337	346	354	95	0.754
2	208	219	231	243	254	265	277	286	294	303	95	0.754
3	214	221	229	238	247	256	267	276	285	293	79	0.627
4	258	271	284	297	311	314	336	346	355	364	106	0.841
5	272	282	292	303	312	319	331	341	350	360	88	0.698
Av.	242.2	252.6	263.4	274.8	285.8	294.2	307.8	317.2	326	334.8	92.6	0.735
SE _t	12.99	13.49	13.73	14.09	14.48	13.83	14.73	14.91	15.01	15.16	4.45	0.035
<u>Finishing period</u>												
1	354	369	380	396	410	425	440	450	465	487	133	1.056
2	303	321	340	354	370	380	390	397	406	415	112	0.889
3	293	310	325	346	370	385	403	422	440	450	157	1.246
4	364	379	397	410	424	448	463	471	483	502	138	1.095
5	360	375	392	408	421	436	453	471	483	497	137	1.087
Av.	334.8	350.8	366.8	382.8	399.0	414.8	429.8	442.2	455.4	470.2	135.4	1.075
SE _t	15.16	14.58	14.44	13.64	12.05	16.53	14.20	14.42	14.63	16.50	7.16	0.057
<u>Entire period</u>												
1	259									487	228	0.905
2	208									415	207	0.821
3	214									450	236	0.937
4	258									502	244	0.968
5	272									497	225	0.983
Av.	242.2									470.2	228	0.905
SE _t	12.99									16.50	6.19	0.025

Appendix (A-9): Changes in body weight of Friesian calves throughout the feeding trail (Group C).

Animal No.	Initial weight (kg)	Period (2 weeks)								Final weight (kg)	Total gain (kg)	Daily gain (kg)
		1	2	3	4	5	6	7	8			
1	251	259	267	273	284	292	300	309	317	325	74	0.587
2	230	241	254	268	278	290	305	314	323	332	102	0.810
3	242	252	263	274	283	292	300	311	322	332	90	0.714
4	226	234	243	251	257	265	273	281	288	296	70	0.556
5	270	279	286	293	300	305	313	320	325	331	61	0.484
Av.	243.8	253.0	262.6	271.8	280.4	288.8	298.2	307.0	315.0	323.2	79.4	0.630
SE±	7.89	7.79	7.15	6.71	6.91	6.50	6.72	6.74	6.87	6.91	7.33	0.058
<u>Finishing period</u>												
1	325	340	351	370	384	399	415	431	445	458	133	1.056
2	332	350	375	391	407	426	437	448	461	478	146	1.159
3	332	350	370	388	409	427	441	466	476	493	161	1.278
4	296	315	331	342	353	365	377	389	400	410	114	0.905
5	331	343	362	372	382	394	406	412	423	429	98	0.778
Av.	323.2	339.6	357.8	372.6	387	402.2	415.2	429.2	441.0	453.6	130.4	1.035
SE±	6.91	6.44	7.82	8.70	10.17	11.48	11.57	13.44	13.48	15.26	11.17	0.089
<u>Entire period</u>												
1	251									458	207	0.821
2	230									478	248	0.984
3	242									493	251	0.996
4	226									410	184	0.730
5	270									429	159	0.631
Av.	243.8									453.6	209.8	0.832
SE±	7.89									15.26	17.87	0.071

Appendix (A-10) : Changes in body weight of Friesian calves broughtout the feeding trail (Group D).

Animal No	Period (2 weeks)								Final Weight (kg)	Total gain (kg)	Daily gain (kg)		
	1	2	3	4	5	6	7	8					
	<u>First period</u>												
1	229	241	254	268	280	291	302	314	326	337	108	0.857	
2	255	266	276	288	300	310	320	327	334	341	86	0.683	
3	226	238	251	264	276	288	299	310	321	332	106	0.841	
4	265	276	288	301	311	323	337	349	360	371	106	0.841	
5	240	251	262	273	285	296	307	314	321	327	87	0.690	
Av.	243.0	254.4	266.2	278.8	290.4	301.6	313.0	322.8	332.4	341.6	98.6	0.782	
SE±	7.48	7.27	6.95	6.87	6.55	6.54	6.98	7.14	7.29	7.70	5.07	0.039	
	<u>Finishing period</u>												
1	337	352	362	374	382	400	411	420	435	451	114	0.905	
2	341	360	370	384	398	418	431	439	450	463	122	0.968	
3	332	345	362	376	384	403	413	427	433	451	119	0.944	
4	371	375	380	387	398	419	425	436	443	465	94	0.746	
5	327	346	355	365	370	383	393	419	439	454	127	1.008	
Av.	341.6	355.6	365.8	377.2	386.4	404.6	414.6	428.2	440.0	456.8	115.2	0.914	
SE±	7.70	5.53	4.26	3.88	5.30	6.61	6.54	4.06	3.03	3.00	5.69	0.045	
	<u>Entire period</u>												
1	229									451	222	0.881	
2	255									463	208	0.825	
3	226									451	225	0.893	
4	265									465	200	0.794	
5	240									454	214	0.849	
Av.	243.0									456.8	213.8	0.848	
SE±	7.48									3.00	4.56	0.018	

Appendix (A-11): Changes in body weight of Friesian calves throughout the feeding trial (Group E).

Animal No.	Initial Weight (kg)	Period (2 weeks)								Final Weight (kg)	Total gain (kg)	Daily gain (kg)
		1	2	3	4	5	6	7	8			
1	288	297	307	316	325	333	341	350	359	368	80	0.635
2	253	265	276	287	298	310	320	329	337	345	92	0.730
3	237	250	262	273	285	297	308	319	320	339	102	0.81
4	207	216	221	226	232	239	245	250	258	265	58	0.46
5	229	236	243	249	256	263	269	274	279	283	54	0.429
Av.	242.8	252.8	261.8	270.2	279.2	288.2	296.6	304.4	310.6	320	77.2	0.613
SE _t	13.49	13.66	14.57	15.45	16.17	16.70	17.40	18.38	18.53	19.56	9.33	0.074
<u>Finishing period</u>												
1	368	377	388	399	411	421	437	452	469	484	116	0.921
2	345	354	365	378	388	405	421	435	450	470	125	0.992
3	339	355	364	374	393	410	420	431	443	458	119	0.944
4	265	283	299	320	340	360	381	396	410	430	165	1.310
5	283	300	310	323	338	345	355	367	376	390	107	0.849
Av.	320	333.8	345.2	358.8	374	388.2	402.8	416.2	429.6	446.4	126.4	1.003
SE _t	19.56	17.92	17.22	15.79	14.77	14.97	15.06	15.27	16.41	16.64	10.06	0.08
<u>Entire period</u>												
1	288									484	196	0.778
2	253									470	217	0.861
3	237									458	221	0.877
4	207									430	223	0.885
5	229									390	161	0.639
Av.	242.8									446.4	203.6	0.808
SE _t	13.49									16.64	11.67	0.046