

ASPECTS OF BEEF PRODUCTION

**A dissertation submitted to the National
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By

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MATERIALS AND METHODS

Experiment 2

Animals and Treatment

Forty-eight mid-February born Friesian calves were used in the experiment. The calves were reared with the minimum usage of milk replacer and the maximum usage of concentrates.

Following turnout (27/4/88), the calves were fed 1 kg meal/hd/day and had access to a mineralised molasses block. On 13/6/88 the calves were moved onto silage aftergrass and meal feeding ceased. The calves then weighed 118 kg on average. Prior to being moved the calves were dosed with Levamisole and randomly allotted to two groups.

Group C1: (green tag)

Control: access to a molassed mineral block.

Group C2: (yellow tag)

Treatment: access to a molassed mineral block with 3% Panacur powder, (4% fenbendazole) added.

Molassed Mineral Block

The treatment block contains the following:

47% Molasses

4% Salt

10% Fibre

4% Hardener

1% Chromic Oxide (Cr_2O_3)

3% Panacur Powder (contains 4% fenbendazole)

31% Minerals and Vitamins

The control blocks had a similar analysis but contained no chromic oxide or anthelmintic.

Grazing Area .

The grazing area consisted of 30 acres divided into 8 equal sized paddocks. This area was cut for silage in May 1988 and had not been grazed since November 1987, until the start of the experiment on June 13, 1988. Each group grazed 4 paddocks.

RESULTS

The trial progressed as planned and was terminated on the 2/11/1988. One animal was removed from the control group due to an undiagnosed condition unrelated to the experiment. Weather data during the trial was collected at Lyons Estate during the months of June, July August and September and is presented below.

Table 1: Weather Data for June to September 1988 at Lyons Estate

	June	July ¹	August ²	September
Temperature ^(a) °C	14.8	14.7	14.5	12.6
Sunshine hours	171.33	142.25	NA	NA
Rainfall mm.	37.6	101.5 ^(b)	87.8	36.5

(a) Average monthly temperature

(b) 71 mm. of rainfall occurred on 20 days in July

1. Average rainfall in July from 1981 to 1988 is 46.4 mm.
2. Average rainfall in August from 1981 to 1988 is 60.66 mm.

Mean performance data is given in Table 2 and statistical analysis in Appendix 6. Individual weights are given in Appendix 7.

Mean serum pepsinogen levels are given in Table 3 and statistical analysis in Appendix 8. Individual pepsinogen levels are given in Appendix 9. The pattern of pepsinogen levels throughout the experiment are given in Figure 1. Mean faecal egg counts are given in Table 4 and statistical analysis in Appendix 10. Individual egg counts are given in Appendix 11.

The stability of the molassed mineral block under the prevailing

weather condition was measured from the 2/8/88 to 2/11/88. The result of this examination is given in Table 5.

Average daily block intake and anthelmintic intake (mg/kg body wt.) is given in Table 6. This was obtained from weekly weighing of the untreated and treated blocks. The patterns of block intake by both groups are given in Figure 2.

Chromium analysis on the faeces of the treated animals was carried out twice during the trial (28/6/88 to 1/7/88 and 2/8/88 to 6/8/88). The methods used to convert a chromium analysis into block intake is given in Table 7 and 8 respectively. Individual chromium levels and block intake are given in Tables 9 and 10 respectively. Copper levels in the faeces were also analysed and are given in Table 10.

Table 2: Mean Weight Gains of Groups

	Groups		Significance
	C 1	C 2	
Number	22	23	-
Mean weight kg.			
Initial weight (13/6/88)	121.04	118.04	-
Final weight (2/11/88)	235.30	251.86	-
Weight gains	114.26	133.82	P .005

Table 3: Mean Serum Pepsinogen Levels of Groups (IU)

Date	Groups		Significance
	C 1	C 2	
13/6/88	0.498	0.397	NS
5/7/88	0.435	0.505	NS
25/7/88	0.451	0.458	NS
15/8/88	0.589	0.740	P 0.05
6/9/88	0.672	0.660	NS
27/9/88	0.857	0.918	NS
18/10/88	0.474	0.728	P 0.001
2/11/88	0.562	0.547	NS

Table 4: Mean Strongyla Faecal Egg Counts of Groups

Date	Groups		Significance
	C 1	C 2	
13/6/88	50	67.39	NS
5/7/88	50	0	Pr 0.001
25/7/88	29.5	0	Pr 0.001
15/8/88	36.36	0	Pr 0.015
6/9/88	190.9	4.3	Pr 0.001
27/9/88	154.5	6.5	Pr 0.001
18/10/88	193.1	19.56	Pr 0.001
2/11/88	125.0	4.54	Pr 0.001

Table 5: Block Stability

<u>Weekly Weight of Molasses Block on Weathering Observations</u>		
<u>Date</u>	<u>Weight (kg)</u>	<u>Dry Matter</u>
2/8/88	10.1	91%
9/8/88	10.1	--
16/8/88 (a)	8.8	--
23/8/88	8.4	--
31/8/88	7.9	--
6/9/88	7.4	--
13/9/88	7.1	--
20/9/88	6.9	--
27/9/88	6.7	--
4/10/88	6.7	--
11/10/88	6.6	--
18/10/88	6.6	--
25/10/88	6.6	--
2/11/88	6.6	73%
Average dry matter loss per week was 33.6 g		3.27%

(a) 27.2 mm of rain occurred on the 13/8/88

Table 6: Block and Anthelmintic Intake

Week-ending	Block Intake (g/day)	Anthelmintic Intake (mg/kg bwt/day)
20/6/88	46.70	0.49
27/6/88	66.22	0.67
4/7/88	96.52	0.98
11/7/88	87.09	0.77
18/7/88	99.75	0.88
25/7/88	71.05	0.70
1/8/88	80.43	0.62
8/8/88	72.10	0.56
15/8/88	84.70	0.66
22/8/88	69.05	0.43
29/8/88	48.30	0.33
5/9/88	47.08	0.33
12/9/88	47.04	0.28
19/9/88	49.80	0.28
26/9/88	58.53	0.31
3/10/88	62.11	0.32
10/10/88	54.34	0.28
17/10/88	58.22	0.29
24/10/88	56.07	0.27
1/11/88	56.60	0.27

Table 7: Determination of Block Intake Using Chromium Analysis

Date	
Mean weight (kg)	130
Mean daily liveweight gain (kg/d)	0.86
Calculated mean m.e. intake (mj/d)	36 ¹
Calculated mean grass d.m. intake (kg/d)	3.25 ¹
Calculated mean faecal d.m. output (kg/d)	0.81 ¹
Mean chromium level in faeces (ppm)	552.9
Chromium level in block (ppm)	6800
Chromium level in grass (ppm)	58.05
Mean intake of block (g/day)	68.05
Range of intake of block (g/day)	2.3 to 131.2

1 Taken from bulletin 33.

Table 8: Determination of Block Intake Using Chromium Analysis

Date: 2-6/8/1988	
Mean weight (kg)	170
Mean daily liveweight gain (kg/d)	1.03
Calculated mean m.e. intake (mj/d)	52.118
Calculated mean grass d.m. intake (kg/d)	4.74
Calculated mean faecal d.m. output (kg/d)	1.19
Mean chromium level in faeces (ppm)	198.05
Chromium level in block (ppm)	6800
Chromium level in grass (ppm)	1.91
Average intake of block (g/day)	51.1
Range of intake of block (g/day)	4.17 to 124.31

Table 9: Individual Daily Anthelmintic Intake (28/6-2/7/88)

Animal No. (yellow)	Estimated Weight (kg)	Intake of Block (g)	Intake of Anthelmintic (mg/kg body wt/day)
1	130	6.54	0.06
2	160	182.39	1.36
3	160	53.27	0.39
4	170	95.85	0.68
5	100	81.03	0.97
6	100	25.30	0.30
7	150	98.40	0.78
8	130	52.70	0.48
9	150	106.47	0.85
10	120	56.67	0.57
11	120	39.77	0.39
12	140	100.30	0.85
13	130	52.60	0.48
14	150	77.30	0.61
15	110	88.72	0.96
16	160	52.82	0.39
17	110	3.21	0.03
18	150	173.42	1.39
19	120	104.88	1.05
20	150	10.65	0.08
23	110	86.80	0.65
24	100	43.18	0.51
25	160	165.40	1.24
Average	133.04	76.42	0.69(0.03-1.39)

Table 10: Individual Anthelmintic (Daily) Intake and Copper Analysis in the Faeces (2-6/8/88).

Animal Number (yellow)	Estimated Weight (Kg)	Intake of Block (g)	Anthelmintic Intake (Mg/kg b. wt./day)	¹ Copper in the Faeces (PPM)
1	150	35.20	0.28	69.55
2	200	59.42	0.35	56.95
3	210	100.50	0.57	61.40
4	210	19.80	0.11	54.88
5	120	18.17	0.18	63.95
6	130	15.20	0.14	40.25
7	190	46.40	0.29	69.55
8	180	30.00	0.20	45.10
9	200	60.94	0.36	52.40
10	190	46.10	0.29	66.50
11	150	57.60	0.46	71.54
12	180	94.51	0.63	104.60
13	170	49.10	0.35	77.95
14	190	60.83	0.38	70.19
15	150	112.42	0.89	102.77
16	210	34.50	0.197	41.51
17	130	3.40	0.03	45.50
18	200	103.76	0.62	100.10
19	150	33.03	0.26	35.40
20	190	47.61	0.30	60.00
23	130	69.26	0.64	103.00
24	150	61.22	0.48	56.97
25	220	46.65	0.26	76.95
Average	173.47	52.41	0.36	66.39

1 Average copper level in block is 2300 ppm