NFE Trial Results

NFE Trial Results at Wold Farm

First 15 Trials 22/3/2012 06/10/2016

First Trial

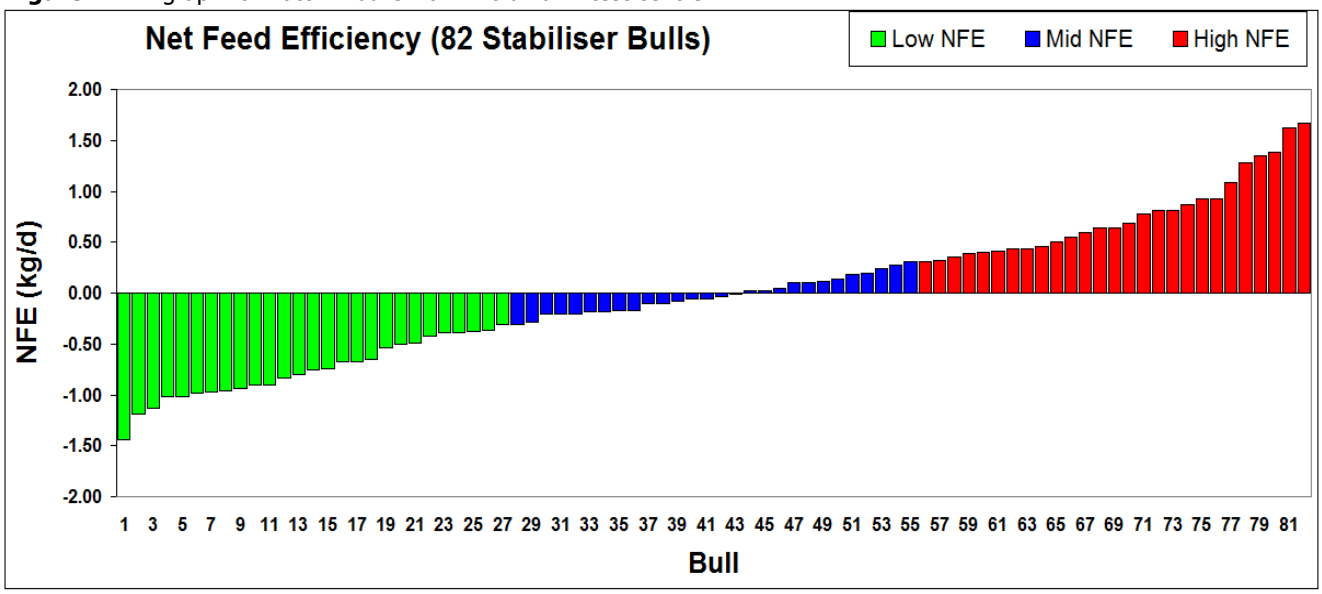
The first batch of 82 young Stabiliser bulls finished test on 22nd March 2012.
On an individual animal basis there was a difference of 25% in feed intake between the most efficient bull and the least efficient. This is equivalent to £96 difference in feed cost for the same gain over a 200 day finishing period.

There was a difference of 13% between the top 1/3 most efficient bulls and the bottom 1/3 least efficient bulls. This is equivalent to £48 difference in feed costs for the same gain in favour of the top 1/3 over a 210 day finishing period.

Table 1. Summary NFE and performance data:-

	Low NFE	**Average**	**High NFE**
DMI (kg/d)	12.03	12.87	13.83
DLWG (kg/d)	1.89	1.87	1.94
Mean LW (kg)	567	574	582
Fat depth (mm)	6.0	6.4	6.2
FCR (kg DMI:LWG)	6.49	7.10	7.45
NFE (kg/d)	-0.75	0.00	+0.76
Cost deviation from average (£ per 12 weeks on test centre) @ feed cost of £155/t DM	-£11	0	+£12

Figure1. NFE graph for Batch 1 bulls from Wold Farm test centre



Second Trial

The second batch of 38 Stabiliser and 5 Beef Shorthorn young breeding bulls and 39 steers finished test on 28th June 2012.

Bulls

The trial animals ate on average 12.8 kg of dry matter per day (20 kg of mix) costing £1.98 per animal per day and grew on average at 1.84 kg per day.

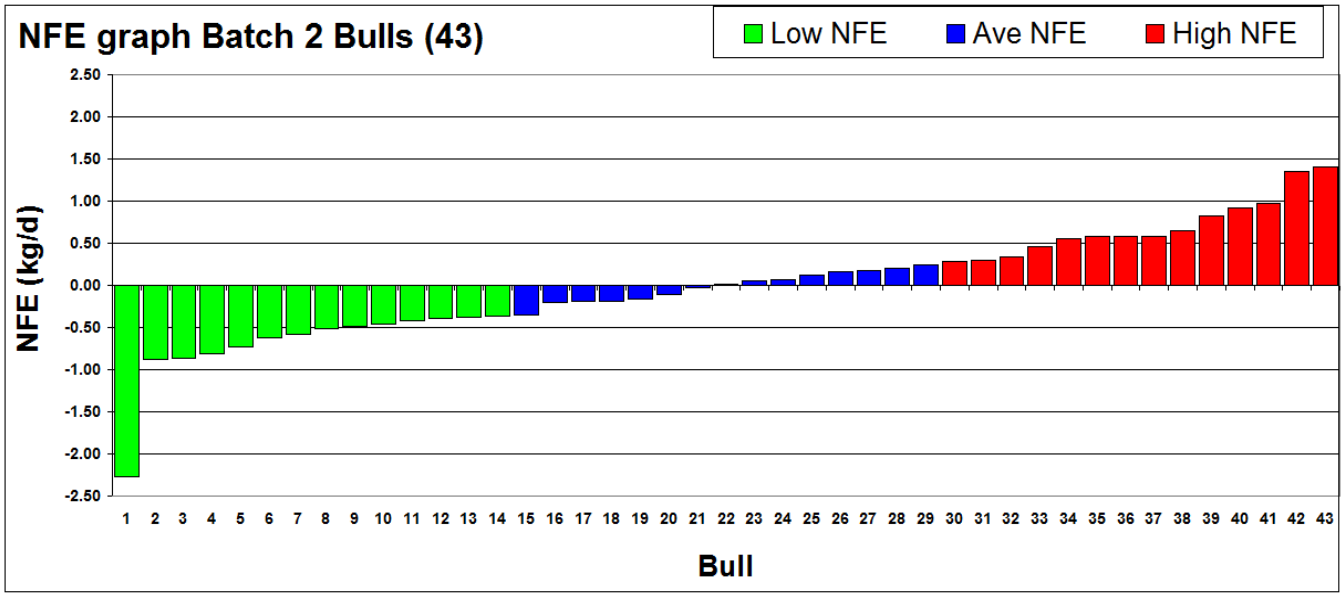
There was a difference of 24% in feed intake between the most efficient bull and the least efficient. This is equivalent to £72 difference in feed cost for the same gain over a 210 day finishing period.

There was a difference of 12% between the top 1/3 most efficient bulls and the bottom 1/3 least efficient bulls. This is equivalent to £36 difference in feed costs for the same gain in favour of the top 1/3 over a 200 day finishing period.

Table 1. Summary NFE and performance data for bulls (including 5 Beef Shorthorn bulls)

	Low NFE	**Average**	**High NFE**
DMI (kg/d)	12.10	12.80	13.45
DLWG (kg/d)	1.81	1.84	1.81
Mean LW (kg)	589	591	587
Fat depth (mm)	5.5	5.2	5.2
FCR (kg DMI:LWG)	6.80	7.09	7.62
NFE (kg/d)	-0.70	0.00	+0.70
Cost deviation from average (£ per 12 weeks on test centre) @ feed cost of £155/t DM	-£9	0	+£9

Figure1. NFE graph for Batch 2 bulls



Steers

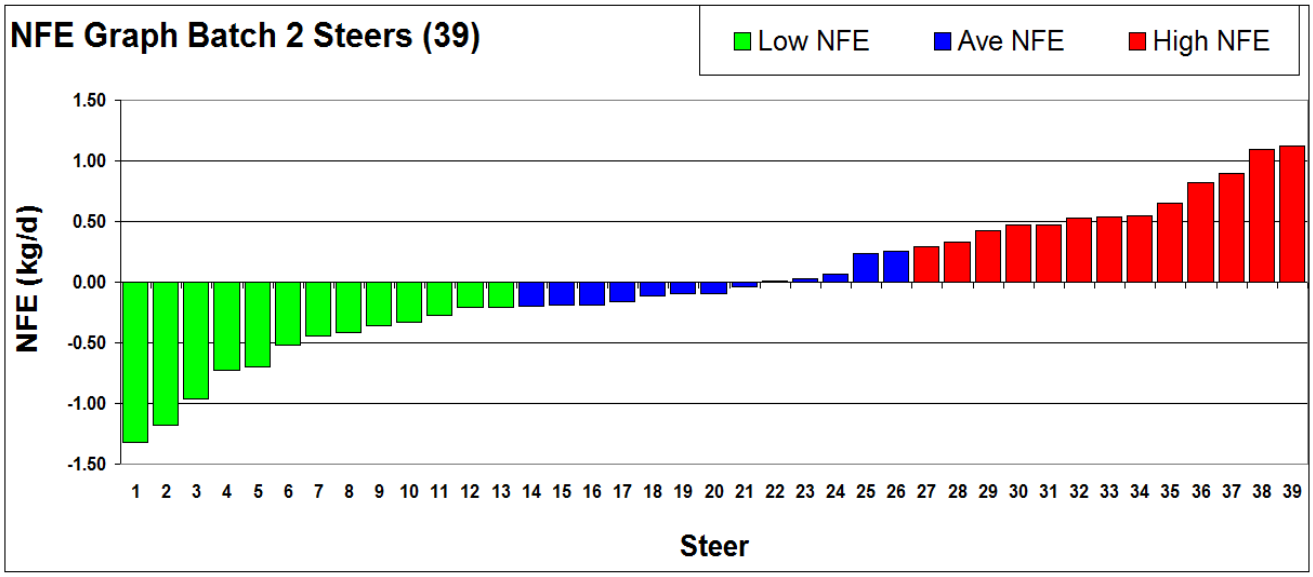
There was a difference of 8% between the top 1/3 most efficient steers and the bottom 1/3 least efficient steers. This is equivalent to £28 difference in feed costs for the same gain in favour of the top 1/3 over a 210 day finishing period.

The second trial results show that the steers had a 40% greater fat depth compared with the bulls and the bulls were 20% more efficient at converting feed to gain for the same slaughter weight as the steers.

Table 2. Summary NFE and performance data for Stabiliser steers

	Low NFE	**Average**	**High NFE**
DMI (kg/d)	12.40	12.81	13.46
DLWG (kg/d)	1.48	1.47	1.48
Mean LW (kg)	590	578	578
Fat depth (mm)	7.3	7.4	7.5
FCR (kg DMI:LWG)	8.49	8.80	9.20
NFE (kg/d)	-0.59	0.00	+0.63
Cost deviation from average (£ per 12 weeks on test centre) @ feed cost of £155/t DM	-£5	0	+£9

Figure 2. NFE graph for Batch 2 steers



This comparison between bulls and steers also demonstrated that the difference in feed costs for bulls v steers over the last 200kg of gain was as follows:-

Feed cost for steers: £270
Feed cost for bulls: £216
Difference: £54 per bull

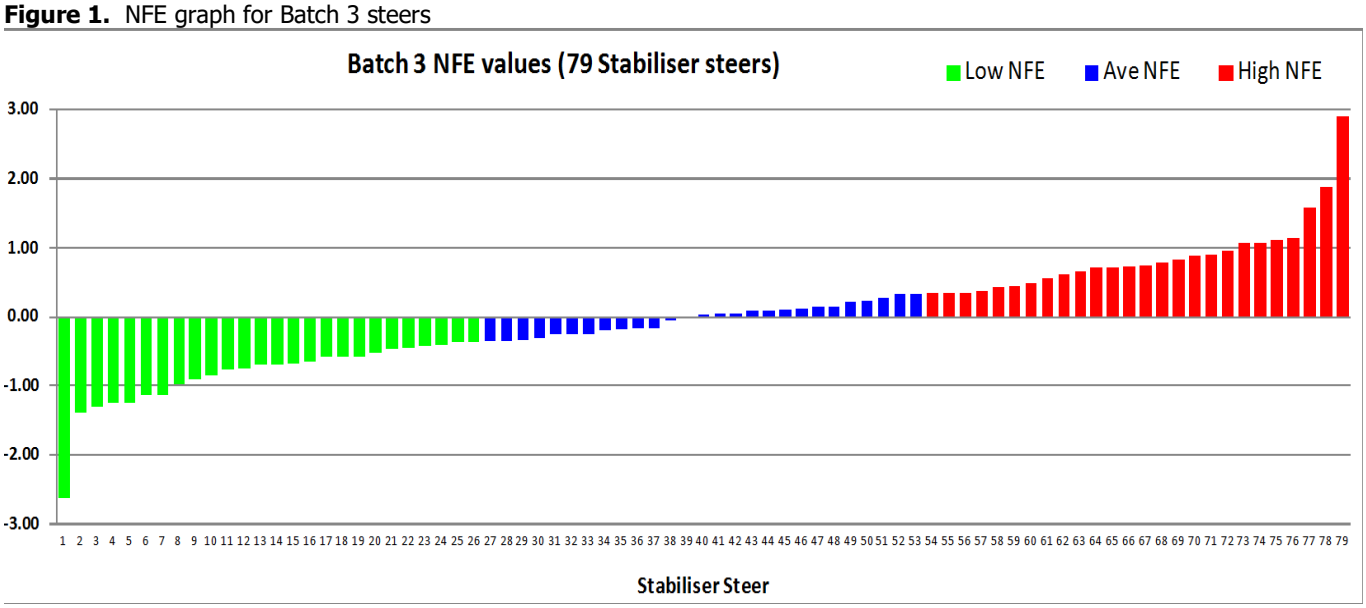
Third Trial

The third batch of 79 steers finished test on 29 November 2012
On average the low 1/3 NFE steers consumed 13% less feed/day, were approximately 13% more efficient in converting feed into LWG and cost £25 less to feed over the 12 weeks they were on the unit compared with high 1/3 NFE steers.

Table 1. Summary NFE and performance data:-

	Low NFE	**Average**	**High NFE**
DMI (kg/d)	12.21	13.09	14.06
DLWG (kg/d)	1.42	1.46	1.47
Mean LW (kg)	611	616	620
Fat depth (mm)	7.5	7.3	7.4
FCR (kg DMI:LWG)	9.18	9.34	9.88
CCW (kg)	340	348	352
KO (g/kg)	525	530	529
NFE (kg/d)	-0.84	-0.01	+0.86
Cost deviation from average (£ per 12 weeks on test centre) @ feed cost of £165/t DM	-£12	0	+£13

Figure 1. NFE graph for Batch 3 steers



Meat Sampling

Meat samples from 33 steers were obtained at slaughter and were tested for cooking loss and mechanical measures of tenderness by JSR Genetics using the TenderScot machine.
Regression analysis relating these eating quality values to NFE values are presented below. In general, only relatively weak relationships between eating quality measures and NFE were found suggesting that selection for animals with Low NFE should have no adverse effects on eating quality parameters.

Figure 2. Relationship between cooking loss (%) and NFE values in beef from 32 Stabiliser steers

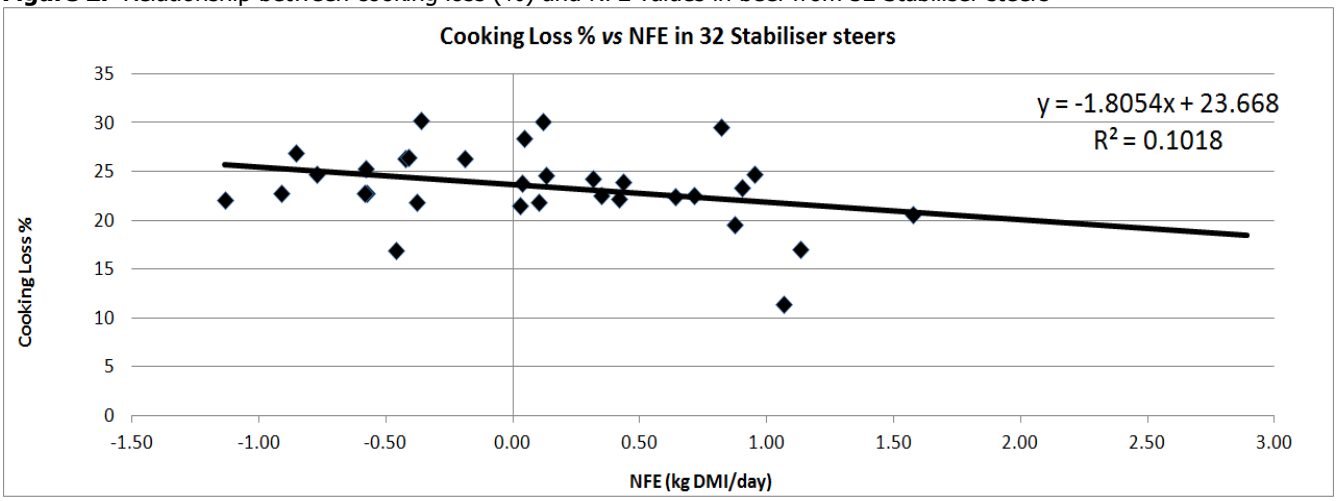


Figure 3. Relationship between MIRINZ Bite Force (N) and NFE values in beef from 33 Stabiliser steers

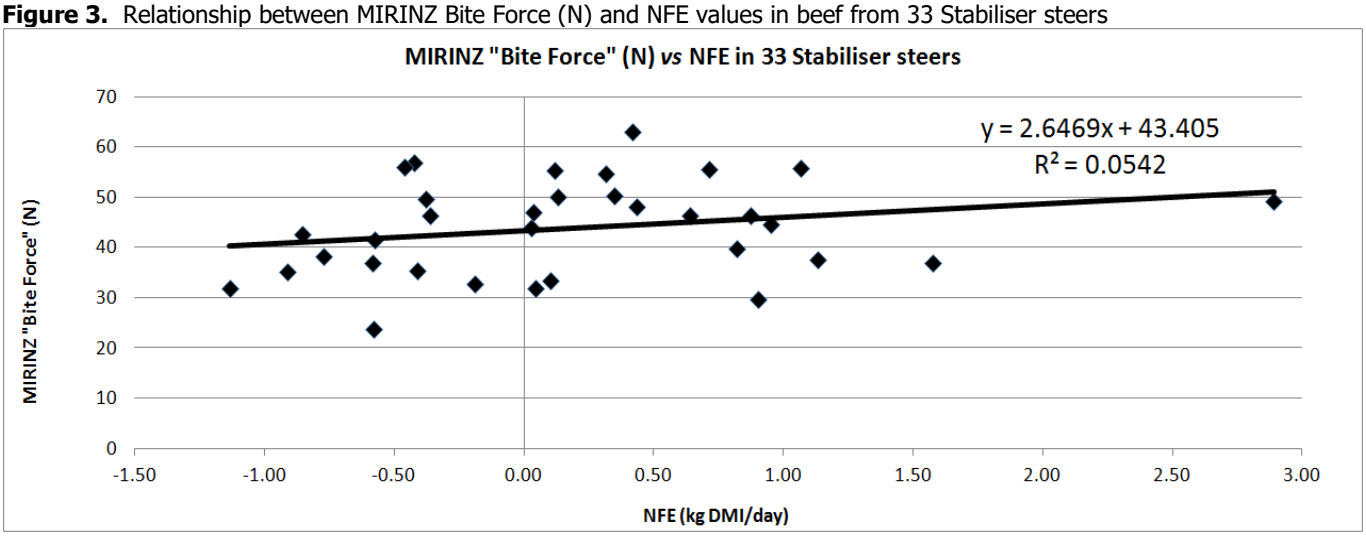
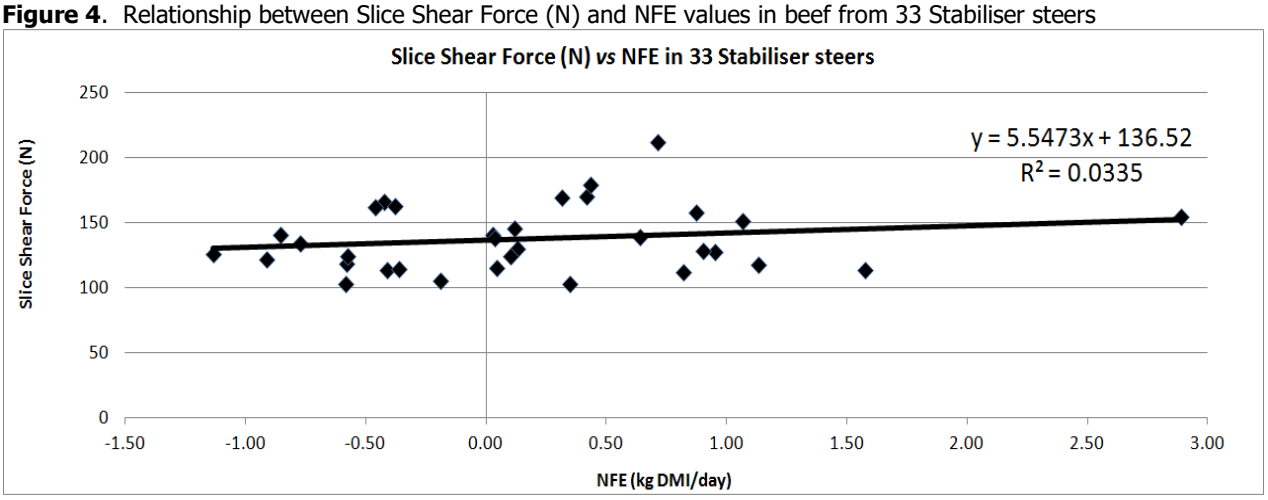


Figure 4. Relationship between Slice Shear Force (N) and NFE values in beef from 33 Stabiliser steers



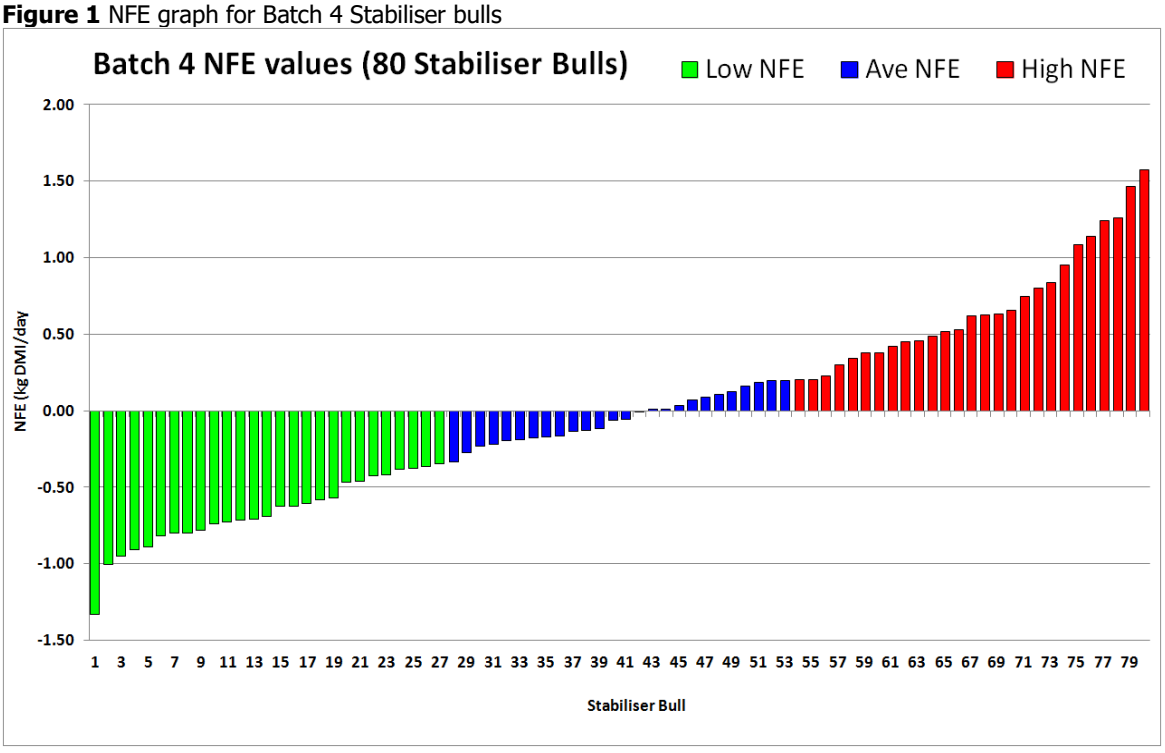
Fourth Trial

The fourth trial of 80 Stabiliser bulls finished test on 28th February 2013.
On average the low 1/3 NFE bulls consumed 15% less feed/day, were approximately 13% more efficient in converting feed into LWG and cost £24 less to feed over the 12 weeks they were on the unit compared with high 1/3 NFE bulls.

Table 1. Summary NFE and performance data:-

	Low NFE	**Average**	**High NFE**
DMI (kg/d)	9.85	10.74	11.63
DLWG (kg/d)	1.68	1.70	1.73
Mean LW (kg)	483	499	512
Fat depth (mm)	4.3	4.3	4.3
FCR (kg DMI:LWG)	5.9	6.4	6.8
NFE (kg/d)	-0.67	0.00	+0.69
Cost deviation from average (£ per 12 weeks on test centre) @ feed cost of £165/t DM	-£12	0	+£12

Figure 1 NFE graph for Batch 4 Stabiliser bulls



Fifth Trial

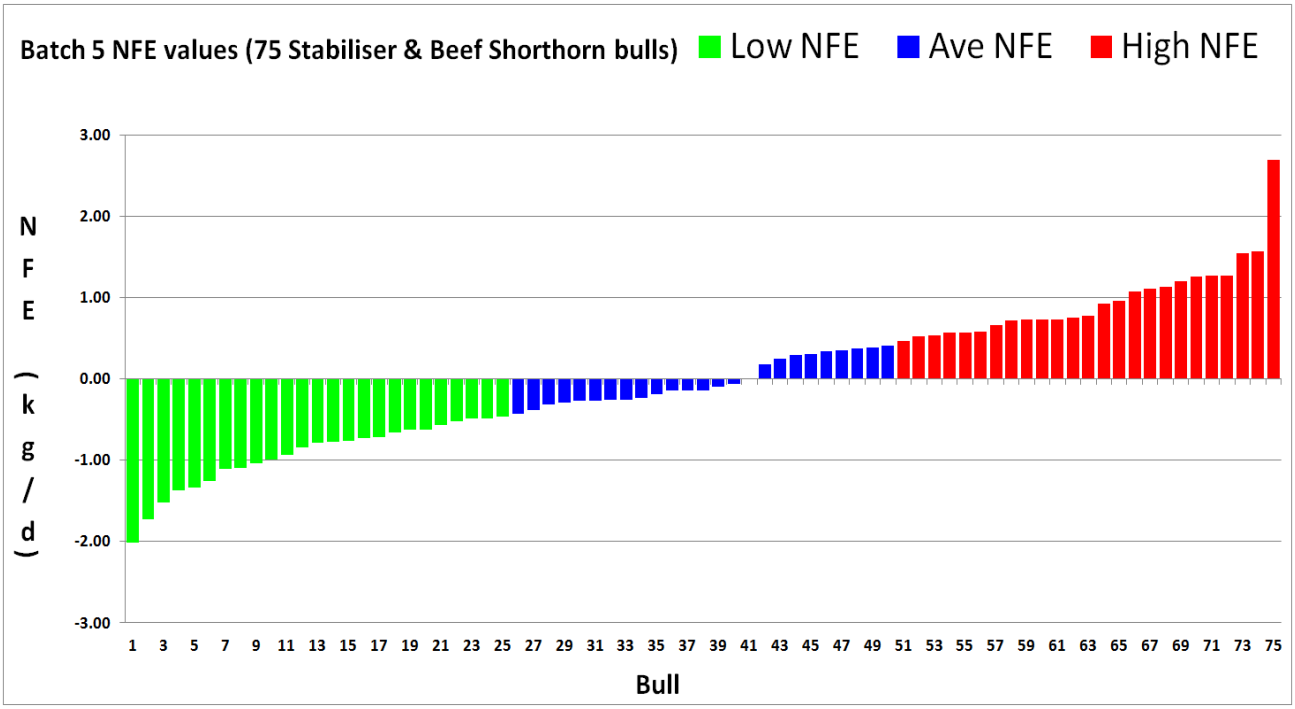
The fifth batch of 41 Stabiliser bulls and 34 Shorthorn bulls finished test on 13th June 2013

On average the low 1/3 NFE bulls consumed 13% less feed/day, were approximately 14% more efficient in converting feed into LWG and cost £23 less to feed over the 12 weeks they were on the unit compared with high 1/3 NFE bulls.

Table 1 Summary NFE and performance data for the fifth batch

	Low NFE	Average	High NFE
DMI (kg/d)	11.10	11.98	12.79
DLWG (kg/d)	1.93	1.90	1.91
Mean LW (kg)	532	530	519
Fat depth (mm)	3.7	3.7	3.5
FCR (kg DMI:LWG)	5.9	6.4	6.8
NFE (kg/d)	-0.94	0.01	+0.98
Cost deviation from average (£ per 12 weeks on test centre) @ feed cost of £165/t DM	-£12	0	+£11

Figure 1 NFE graph for Batch 5 Stabiliser & Beef Shorthorn bulls



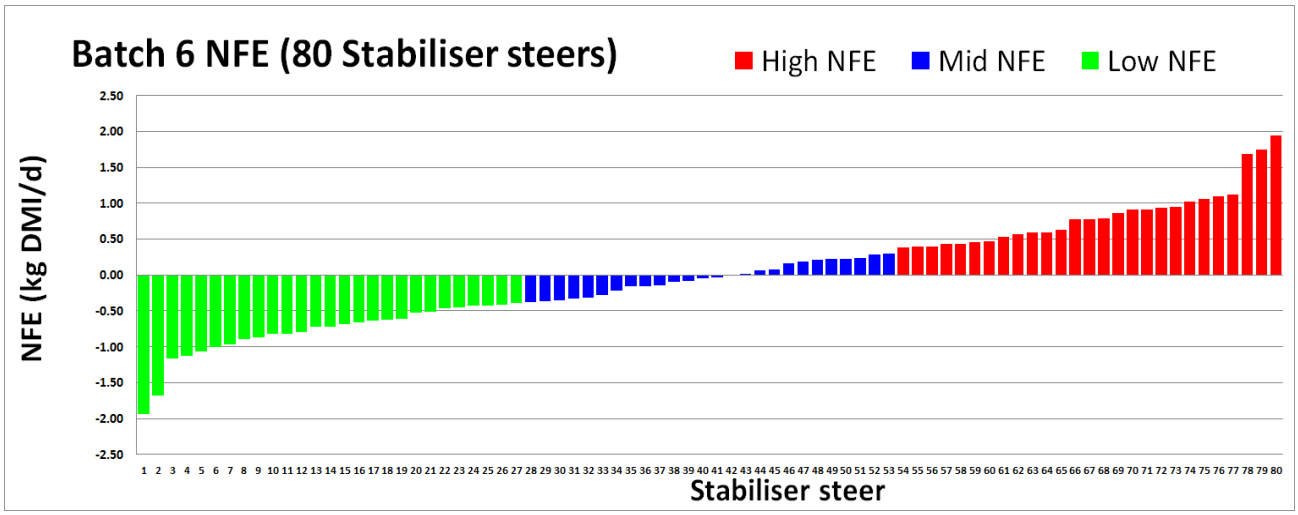
Sixth Trial

NFE and production results from the sixth batch of steers are shown in Table 1 and Figure 1 below. On average the low NFE steers consumed 12% less feed/day, were approximately 13% more efficient in converting feed into LWG and cost £22 less to feed over the 12 weeks they were on the unit compared with high NFE steers.

Table 1 Summary NFE and performance data for the 6th batch of 80 Stabiliser steers

	Low NFE	Average	High NFE
DMI (kg/d)	12.10	13.17	13.69
DLWG (kg/d)	1.82	1.87	1.80
Mean $LW^{0.75}$ (kg)	119	120	119
Fat depth (mm)	6.8	7.2	6.8
FCR (kg DMI:LWG)	6.73	7.12	7.68
NFE (kg/d)	-0.79	-0.04	+0.83
Sale LW (kg)	642	650	639
CCW (kg)	341.8	344.8	341.8
KO (g/kg)	533	531	535
Fat score (1-15)	8.58	8.97	8.39
Conf score (1-15)	8.00	7.77	7.89
Cost deviation from average (£ per 12 weeks on test centre) @ feed cost of £165/t DM	**-£15**	**0**	**+£7**

Figure 1. Individual NFE values for batch 6 Stabiliser steers



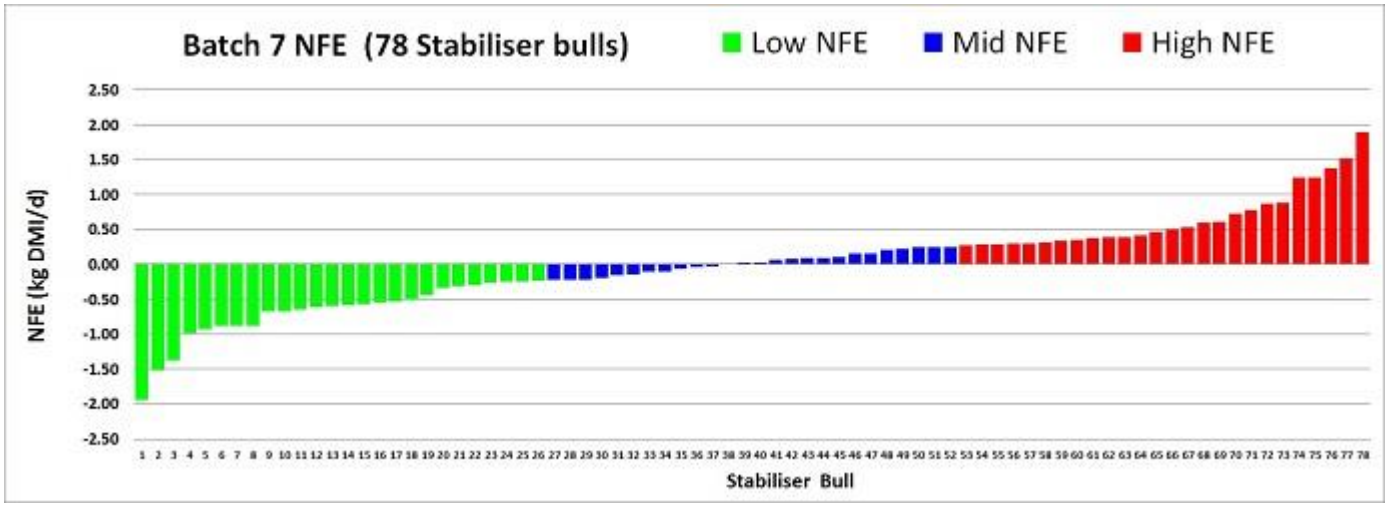
Seventh Trial

NFE results from the seventh batch of 78 bulls are shown in Table 1 and Figure 1 below. On average the low NFE bulls consumed 17% less feed, had 13% better FCR and cost £24 less to feed over the twelve week period they were in the NFE unit.

Table 1 Summary NFE and performance data for the 7th batch of 78 Stabiliser bulls

	Low NFE	Average	High NFE
DMI (kg/d)	9.4	10.1	11.1
DLWG (kg/d)	1.54	1.64	1.63
Mean LW0.75 (kg)	103	102	106
Fat depth (mm)	5.0	4.6	5.0
FCR (kg DMI:LWG)	6.2	6.3	7.0
NFE (kg/d)	-0.68	0.02	+0.66
Cost deviation from average (£ per 12 weeks on test centre) @ feed cost of £165/t DM	-£10	0	+£14

Figure 1. Individual NFE values for 78 Stabiliser bulls from batch 7



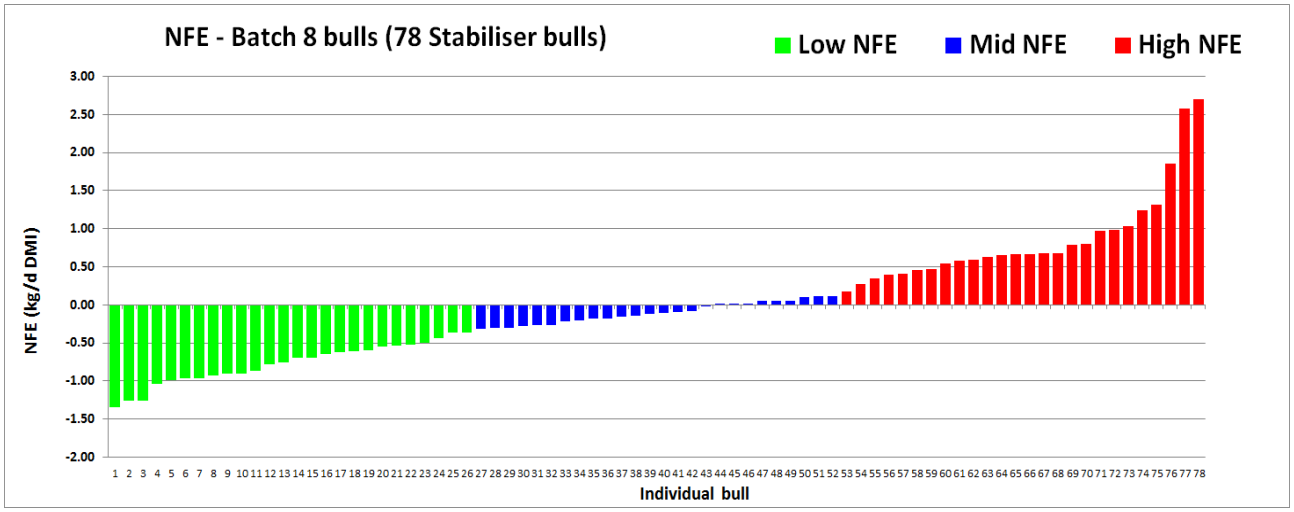
Eighth Trial

NFE results from the eighth batch of 78 bulls are shown in Table 1 and Figure 1 below. On average the low NFE bulls consumed 16% less feed, had 13% better FCR and cost £24 less to feed over the twelve week period they were in the NFE unit compared with the high NFE bulls.

Table 1 Summary NFE and performance data for the 8th batch of 78 Stabiliser bulls

	Low NFE	Average	High NFE
DMI (kg/d)	10.5	11.4	12.3
DLWG (kg/d)	1.69	1.68	1.73
Mean LW0.75 (kg)	113	106	113
Fat depth (mm)	5.2	5.7	5.3
FCR (kg DMI:LWG)	6.4	7.0	7.3
NFE (kg/d)	-0.77	-0.10	+0.86
Cost deviation from average (£ per 12 weeks on test centre) @ feed cost of £155/t DM	-£12	0	+£12

Figure 1. Individual NFE values for 78 Stabiliser bulls from batch 8



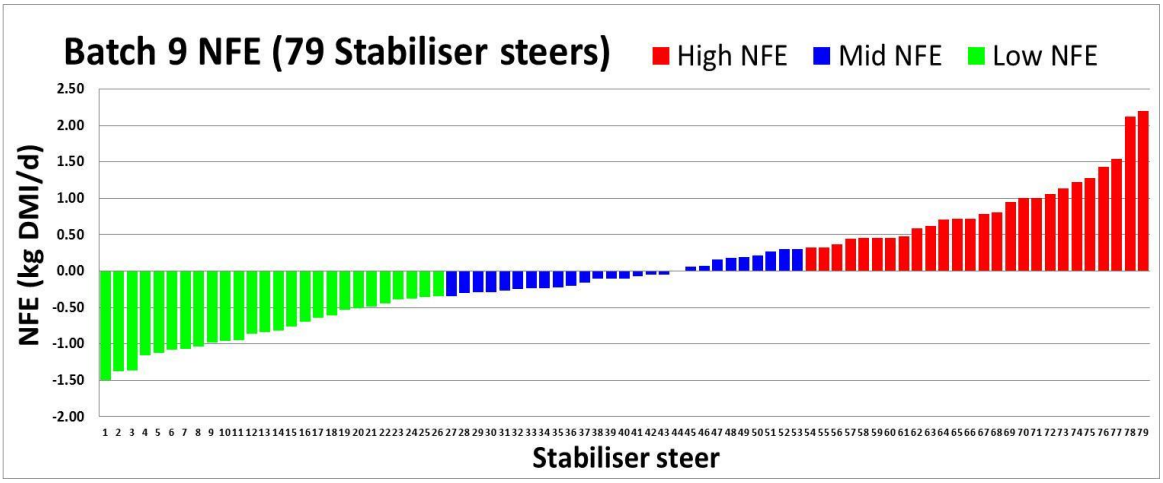
Ninth Trial

NFE and production results from the ninth batch of steers are shown in Table 1 and Figure 1 below.
On average the low NFE steers consumed 15% less feed/day, were approximately 13% more efficient in converting feed into LWG and cost £24 less to feed over the 12 weeks they were on the unit compared with high NFE steers.

Table 1 Summary NFE and performance data for the 9th batch of 79 Stabiliser steers

	Low NFE	Average	High NFE
DMI (kg/d)	11.13	11.87	12.97
DLWG (kg/d)	1.30	1.27	1.35
Mean LW0.75 (kg)	119	118	119
Fat depth (mm)	6.1	7.0	6.2
FCR (kg DMI:LWG)	8.85	9.81	10.09
NFE (kg/d)	-0.82	-0.06	+0.89
Sale LW (kg)	615	607	622
CCW (kg)	326.1	327.8	326.9
KO (g/kg)	531	541	526
Fat score (1-15)	8.02	8.36	8.42
Conf score (1-15)	7.65	7.67	7.54
Cost deviation from average (£ per 12 weeks on test centre) @ feed cost of £155/t DM	-£10	0	+£14

Figure 1. Individual NFE values for batch 9 Stabiliser steers



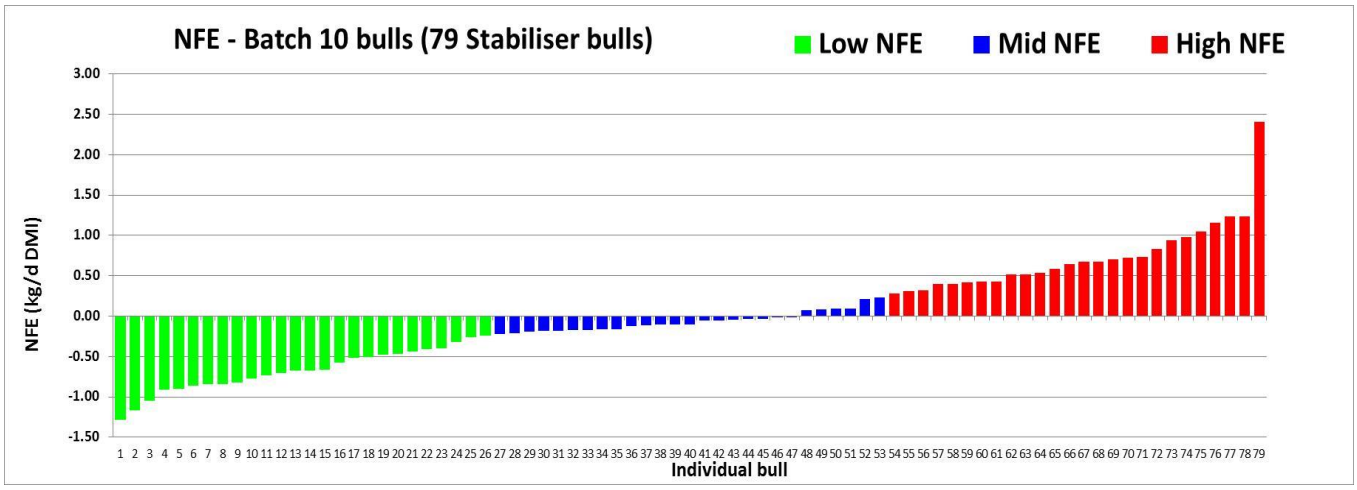
Tenth Trial

The tenth batch of 79 Stabiliser bulls grew at 1.55 kg per day and the trial finished on the 12th February 2015.
On average the low NFE bulls consumed 13% less feed/day, were approximately 15% more efficient at converting feed into LWG and cost £18 less to feed over the 12 weeks they were on the unit compared with high NFE bulls.

Table 1
Summary NFE and performance data for the 10th batch of 79 Stabiliser bulls

	Low NFE	Average	High NFE
DMI (kg/d)	9.44	9.99	10.86
DLWG (kg/d)	1.55	1.52	1.55
Mean LW0.75 (kg)	106	105	106
Fat depth (mm)	4.9	4.8	4.9
FCR (kg DMI:LWG)	6.17	6.65	7.15
NFE (kg/d)	-0.67	-0.06	+0.74
Cost deviation from average (£ per 12 weeks on test centre) @ feed cost of £155/t DM	-£7	0	+£11

Figure 1. Individual NFE values for batch 10 Stabiliser bulls



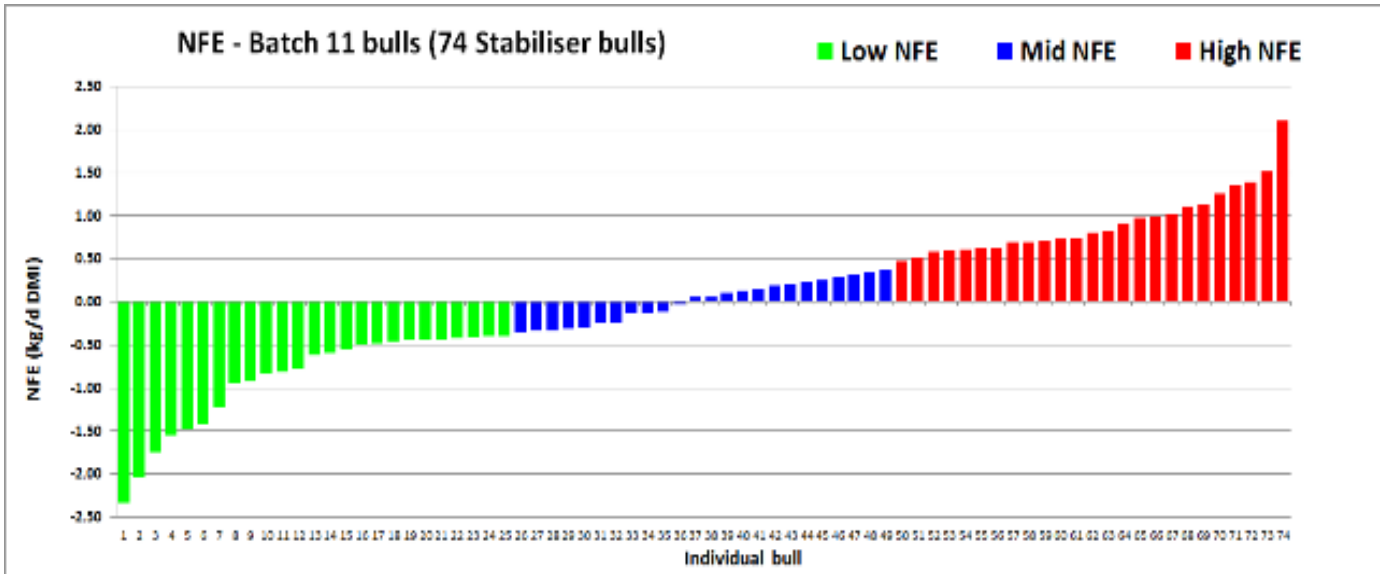
Eleventh Trial

NFE and production results from the eleventh batch of 74 Stabiliser bulls are shown in Table 1 and Figure 1 below. On average the low NFE bulls consumed 14% less feed/day, were approximately 16% more efficient in converting feed into LWG and cost £22 less to feed over the 12 weeks they were on the unit compared with high NFE bulls.

Table 1
Summary NFE and performance data for the 11th batch of 74 Stabiliser bulls

	Low NFE	Average	High NFE
DMI (kg/d)	**10.77**	**11.20**	**12.38**
DLWG (kg/d)	**1.76**	**1.66**	**1.73**
Mean LW0.75 (kg)	**120**	**117**	**118**
Fat depth (mm)	**5.4**	**4.9**	**5.4**
FCR (kg DMI:LWG)	**6.16**	**6.86**	**7.24**
NFE (kg/d)	**-0.89**	**0.01**	**+0.92**
Cost deviation from average (£ per 12 weeks on test centre) @ feed cost of £160/t DM	**-£6**	**0**	**+£16**

Figure 1. Individual NFE values for batch 11 Stabiliser bulls



Twelfth Trial

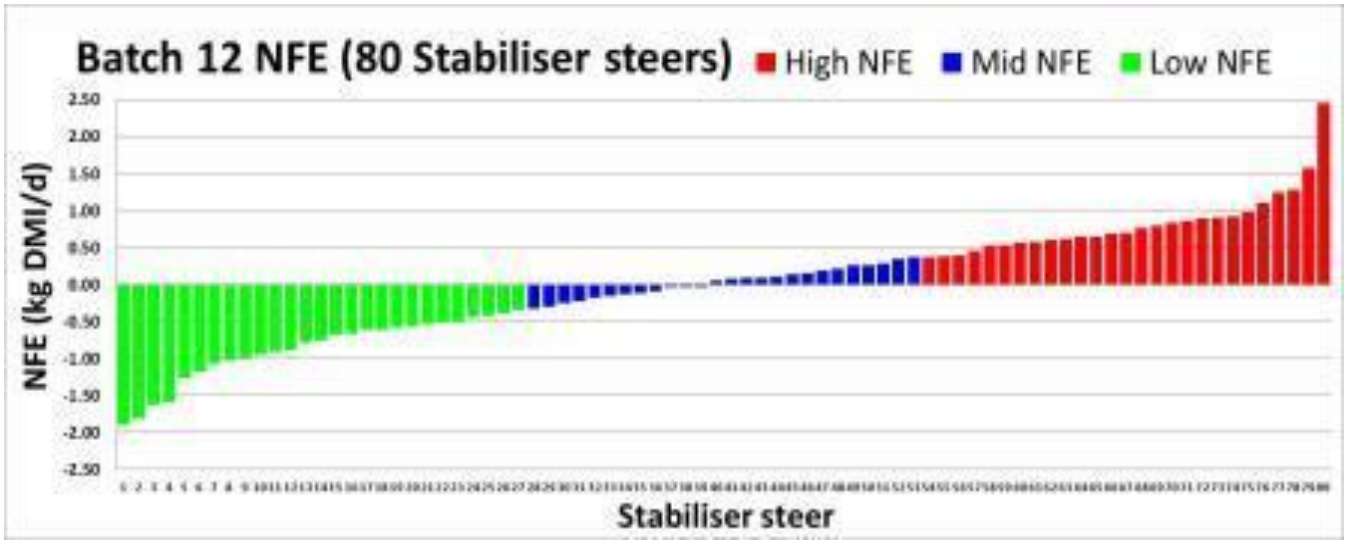
NFE and production results from the twelfth batch of steers are shown in Table 1 and Figure 1 below. On average the low NFE steers consumed 16% less feed/day, were approximately 13% more efficient in converting feed into LWG and cost £20 less to feed over the 12 weeks they were on the unit compared with high NFE steers. This is slightly lower than with previous groups as the prevailing feed prices have dropped recently such that the overall complete diet cost now sits at approximately £135/t DM compared to approximately £155/t DM with previous batches.

Table 1 Summary NFE and performance data for the 12th batch of 80 Stabiliser steers

	Low NFE	**Average**	**High NFE**
DMI (kg/d)	10.18	11.23	11.98
DLWG (kg/d)	1.23	1.30	1.28
Mean $LW^{0.75}$ (kg)	118	118	118
Fat depth (mm)	7.2	7.7	7.2
FCR (kg DMI:LWG)	8.45	8.87	9.60
NFE (kg/d)	-0.87	0.03	+0.83
Sale LW (kg)	617	620	620
CCW (kg)	328.8	328.5	333.7
KO (g/kg)	533	530	539
Fat score (1-15)	8.39	8.51	8.33
Conf score (1-15)	7.89	7.77	7.89
Cost deviation from average (£ per 12 weeks on test centre)	-£12	0	+£8

@ feed cost of £135/t DM

Figure 1. Individual NFE values for Batch 12 - Stabiliser steers



Thirteenth Trial

81 Stabiliser bull calves for the thirteenth trial started their NFE measurement phase on 17th December and finished on 18th February, 7 days later than planned due to an equipment malfunction. They were scanned for eye muscle depth, area and back fat on 11th February. Due to a faulty tag during the trial, one bull's data had to be removed from the analysis meaning that 80 Stabiliser bulls have been evaluated to completion in batch 13 with this batch if bulls being on the unit for a total of 13 weeks rather than the usual 12.

NFE and production results from the thirteenth batch of 80 Stabiliser bulls are shown in Table 1 and Figure 1 below. On average the low NFE bulls consumed 18% less feed/day, were approximately 13% more efficient in converting feed into LWG and cost £25 less to feed over the 13 weeks they were on the unit compared with high NFE bulls.

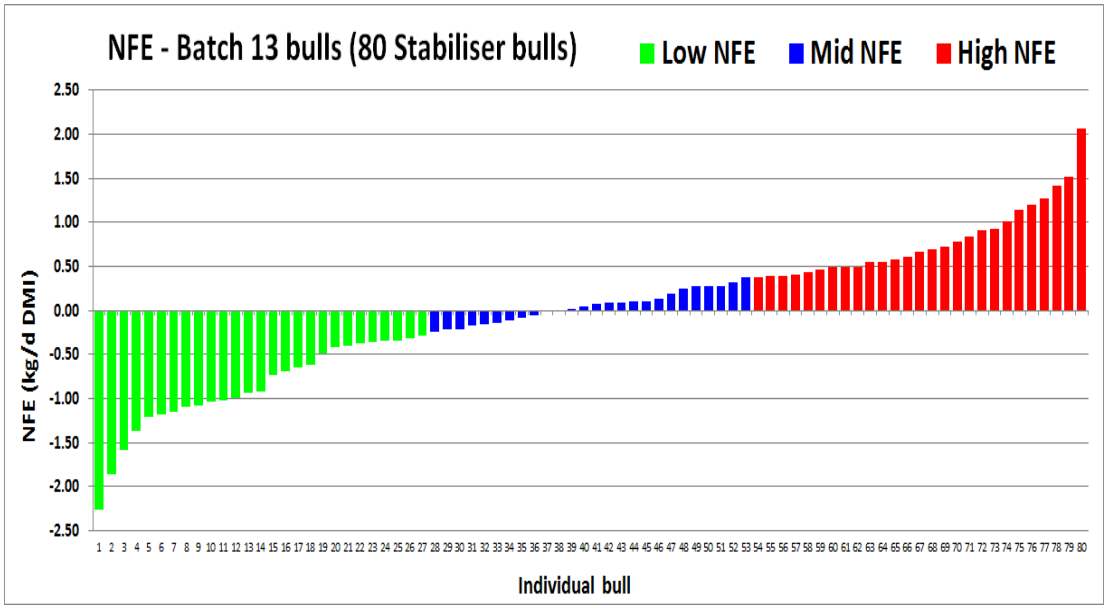
Growth rate from these bulls has averaged 1.61 kg/d. This is slightly lower than average, possibly as a result of the bull weight being slightly lower than average but overall performance is still well within acceptable levels.

Table 1 Summary NFE and performance data for the 13th batch of 80 Stabiliser bulls

	Low NFE	Average	High NFE
DMI (kg/d)	9.44	10.61	11.51
DLWG (kg/d)	1.60	1.54	1.70
Mean $LW^{0.75}$ (kg)	105	108	109
Fat depth (mm)	5.4	5.9	5.7
FCR (kg DMI:LWG)	6.03	7.09	6.94
NFE (kg/d)	-0.88	0.05	+0.79
Cost deviation from average (£ per 13 weeks on test centre)	-£14	0	+£11

@ feed cost of £135/t DM

Figure 1. Individual NFE values for batch 13 Stabiliser bulls



Fourteenth Trial

NFE and production results from the 14th batch of 76 Stabiliser bulls are shown in Table 1 and Figure 1 below. On average the low NFE bulls consumed 13% less feed/day, were approximately 16% more efficient in converting feed into LWG and cost £18 less to feed over the 12 weeks they were on the unit compared with high NFE bulls.

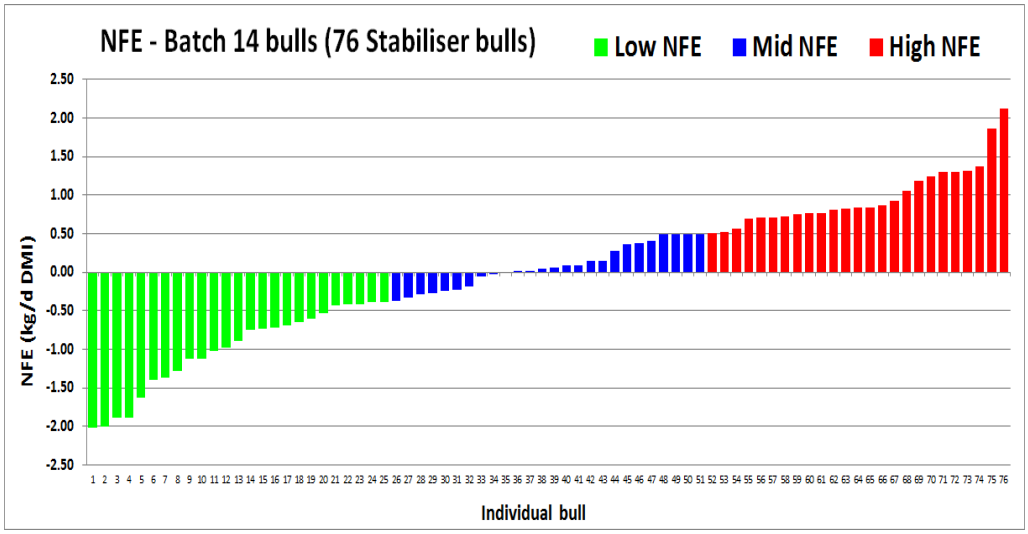
Growth rate from these bulls has averaged 1.8 kg/d. This is slightly higher than average, but overall performance is still well within acceptable levels.

Table 1 Summary NFE and performance data for the 14th batch of 76 Stabiliser bulls

	Low NFE	Average	High NFE
DMI (kg/d)	11.15	11.77	12.74
DLWG (kg/d)	1.84	1.74	1.80
Mean $LW^{0.75}$ (kg)	121	118	117
Fat depth (mm)	6.4	6.6	5.9
FCR (kg DMI:LWG)	6.21	6.89	7.35
NFE (kg/d)	-1.01	0.07	+0.98
Cost deviation from average (£ per 12 weeks on test centre)	-£7	0	+£11

@ feed cost of £135/t DM

Figure 1. Individual NFE values for batch 14 Stabiliser bulls



Fifteenth Trial

NFE and production results from the 15th batch of steers are shown in Table 1 and Figure 1 below. On average the low NFE steers consumed 15% less feed/day, were approximately 15% more efficient in converting feed into LWG and cost £22 less to feed over the 12 weeks they were on the unit compared with high NFE steers. This is slightly lower than with previous groups as the prevailing feed prices have dropped during 2015-16 such that the overall complete diet cost now sits at approximately £135/t DM compared to approximately £155/t DM with previous batches.

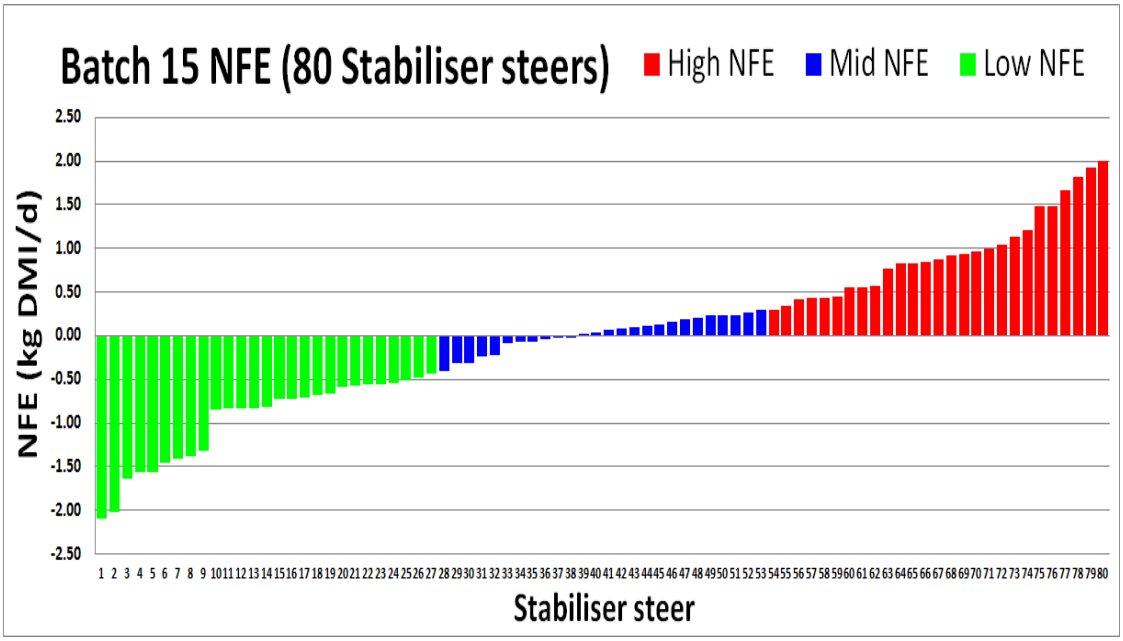
As has been seen with previous steer batches, these differences in feed intake and efficiency have been seen with no differences in steer sale parameters at slaughter confirming that NFE is an efficiency parameter completely independent of saleable product specification.

Table 1 Summary NFE and performance data for the 15th batch of 80 Stabiliser steers

	Low NFE	Average	High NFE
DMI (kg/d)	10.87	11.76	12.84
DLWG (kg/d)	1.39	1.38	1.38
Mean $LW^{0.75}$ (kg)	118	118	119
Fat depth (mm)	8.4	8.4	8.4
FCR (kg DMI:LWG)	7.97	8.70	9.56
NFE (kg/d)	-0.98	0.02	+0.95
Sale LW (kg)	631	624	630
CCW (kg)	333.7	334.9	334.6
KO (g/kg)	530	537	531
Fat score (1-15)	7.55	7.12	7.90
Conf score (1-15)	8.00	8.15	8.00
Cost deviation			
from average	-£10	0	+£12
(£ per 12 weeks on test centre)			

@ feed cost of £135/t DM

Figure 1. Individual NFE values for batch 15 Stabiliser steers



Sixteenth trial

NFE and bull production results from the 16th batch of bulls are shown in Table 1 and Figure 1 below. On average the low NFE bulls consumed 13% less feed/day, were approximately 14% more efficient in converting feed into LWG and cost £15 less to feed over the 12 weeks they were on the unit compared with high NFE steers. This is slightly lower than with previous groups as the prevailing feed prices have dropped during 2015-16 such that the overall complete diet cost now sits at approximately £135/t DM compared to approximately £155/t DM with previous batches.

Table 1 Summary NFE and performance data for the 16th batch of 77 Stabiliser bulls

	Low NFE	Average	High NFE
DMI (kg/d)	9.19	9.95	10.52
DLWG (kg/d)	1.47	1.47	1.52
Mean $LW^{0.75}$ (kg)	104	105	102
Fat depth (mm)	5.5	5.2	5.2
FCR (kg DMI:LWG)	6.64	7.05	7.03
NFE (kg/d)	-0.74	0.01	+0.73
Cost deviation			
from average	-£9	0	+£6
(£ per 12 weeks on test centre)			

@ feed cost of £135/t DM

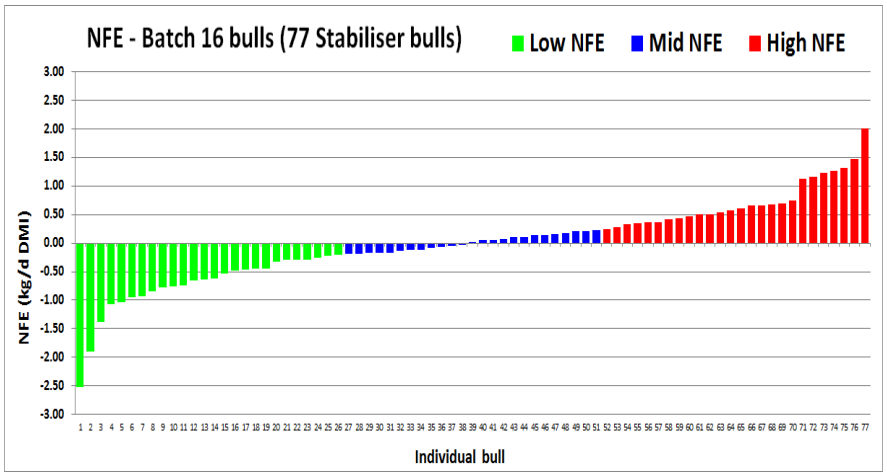



Figure 1. Individual NFE values for batch 16 Stabiliser bulls