RFI CALCULATIONS
All data is received 'real time' by Texas A&M and calculations are done by Texas A&M. ***The results are RFI indexed separately by breed, so please do not try to compare between breeds.***

RATION
Midland Bull Test is the only major bull test to feed a high roughage ration.
The Ration:

- 7% Corn
- 8% Wheat mids/oats
- 20% Chopped hay
- 63% Silage
- 2% Supplement

A weekly ration analysis is taken by Cenex Harvest States (CHS) and analyses are done by Servi-Tech Laboratories.

On a dry matter basis the MBT ration contains:

- Crude Protein: 12.8%
- ADF (Acid Detergent Fiber): 23.5%
- Net Energy – Gain (Mcal/lb): 0.45

REPORT HEADINGS
Final BW – Final Body Weight

ADG – Average Daily Gain without fill (bulls were weighed before feeding early in morning)

Dry Matter Intake – The ration converted to a dry matter basis for pounds of feed consumed daily.

Feed:Gain Ratio – DM intake/ADG

RFI (Residual Feed Intake) (lbs/day) – The amount of feed an animal consumes daily, above or below its maintenance requirements as well as its performance (growth) requirements. A negative RFI is a more efficient bull.

UNDERSTANDING EFFICIENCY AND RFI
Historically, the weight of an animal has been the most important component in determining value, which follows closely with production being the most heavily promoted and taught value in agriculture.

However, when you consider that over 75 percent of the cost of growing cattle is related to feed inputs. And that 70-75 percent of the feed consumed by cattle is solely for maintenance requirements, then the importance of improving the efficiency of feed intake becomes very real. Remember that a 5% improvement in feed:gain is worth four times more than a 5% improvement in daily gain. With today's high feed prices, improving a herds efficiency of feed utilization is obvious.

WHAT DOES THE RESEARCH SAY

1. Efficiency is highly related to growth and growth is the traditional method of measuring efficiency. The problem is that using growth as a measure of efficiency also increases the size of the animal, which will increase maintenance requirements (70-75% of feed consumed goes toward maintenance requirements), which will increase appetite, which will increase the need for available feeds/grasses.

2. Using RFI will lead to improvements in feed efficiency without compounding the need for additional feeds or increasing mature size.

3. RFI allows you to produce at a level that optimizes on one's management and environment instead of stressing it.

4. RFI is a highly heritable trait meaning that through genetic identification and then selection one can make rapid improvements.

5. RFI research has shown that improvement in efficiency can be made by as much as 25 percent.

6. Selecting for efficiency will allow the cattle industry to become more competitive in production with swine and chicken. About 5 percent of the feed consumed by cattle is converted into protein, while swine and chicken are 14 and 22 percent respectively.

7. Research has shown there is a 0.90 correlation (very high) between bulls measured for RFI postweaning and how their daughters will perform for efficiency in the cowherd.

QUESTIONS AND ANSWERS

What is the heritability of RFI (Residual Feed Intake)?
0.38-0.40 (Moderately to highly heritable).

How is RFI calculated?
Basically RFI is looking at what the feed intake requirements for maintenance are for the individual bulls and then what the feed intake requirements are for production (each individual bull's ADG) and compares that to what the individual bull consumes.

How much difference can one expect to find in cattle?
Research from Australia, Canada, and the U.S. have consistently found differences of up to 30 percent. Our first test group of 400 here at Midland , we found up to 40% variance.

If you have two cows weighing 1300 lbs and one produces 15 pounds of milk and the other 20 pounds of milk, wouldn't the cow at 15 lbs require less feed?
No, and it could just as well be that the 15 lbs. milk producer is a larger consumer of feed which compounds her inefficiency on both feed intake and lower production. That's the importance of measuring RFI. This is a case where size doesn't matter.

What should one be aware of when using RFI?
First and most importantly, efficiency needs to be balanced with production and profitability. High efficiency with low production is no more cost effective than the high production and low efficiency.

Why can't we just use our eye and pick the more moderate, easy-fleshing cow?
Don't confuse size or fleshing ease with efficient productive cattle. Contrary, to what some folks have believed, RFI is not related to frame size, body type, or body condition. You'll find as many inefficient cows in any frame size and just because they look fat and easy-doing doesn't mean they're efficient. A fat cow that is high intake with a 400 lbs calf is not going to generate much profit.

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Breed	VID	Final BW, lb	ADG, lb/d	Dry matter intake, lb/d	Feed: gain ratio	Feed:gain ratio index	RFI, lb/d
AN	1	1119	3.38	22.7	6.73	114	-1.37
AN	4	1140	2.93	24.1	8.24	93	-0.16
AN	6	1190	2.97	24.5	8.25	93	-0.78
AN	8	1143	3.18	22.8	7.16	107	-1.67
AN	10	1152	3.23	24.1	7.44	103	-0.63
AN	11	1148	3.62	25.2	6.96	110	0.42
AN	13	1341	3.66	28.2	7.70	100	-0.38
AN	14	1284	3.20	26.5	8.26	93	-0.77
AN	15	1231	3.77	27.5	7.30	105	0.97
AN	21	1235	2.50	24.4	9.75	79	-1.55
AN	22	1250	3.61	26.3	7.27	106	-0.54
AN	24	1250	2.22	25.7	11.56	66	
AN	25	1266	2.97	27.0	9.10	84	0.25
AN	26	1235	3.65	26.1	7.13	108	-0.46
AN	27	1183	4.00	26.9	6.73	114	1.21
AN	28	1032	3.86	23.7	6.13	125	1.10
AN	31	1222	3.82	24.9	6.52	118	-1.49
AN	32	1238	3.30	29.0	8.79	87	2.57
AN	33	1267	3.73	27.0	7.22	106	-0.25
AN	34	1161	2.97	23.7	7.98	96	-1.03
AN	35	1151	3.05	25.7	8.41	91	1.09
AN	36	1235	3.51	27.5	7.84	98	1.08
AN	38	1155	3.22	26.9	8.35	92	2.19
AN	39	1289	3.73	27.5	7.37	104	-0.10
AN	40	1205	4.37	24.9	5.70	135	-1.41
AN	41	1151	3.66	24.9	6.80	113	0.04
AN	42	1232	2.88	26.3	9.15	84	0.25
AN	43	1354	4.35	28.8	6.63	116	-0.36
AN	45	1151	3.30	24.7	7.49	102	0.00
AN	46	1217	3.66	25.8	7.06	109	-0.34
AN	48	1182	2.16	25.7	11.86	65	
AN	49	1238	3.79	26.3	6.94	111	-0.37
AN	303	1524	4.17	31.6	7.58	101	0.11
AN	304	1340	4.39	26.6	6.06	127	-1.61
AN	305	1329	3.82	25.2	6.61	116	-2.43
AN	306	1407	3.95	28.8	7.29	105	-0.45
AN	307	1355	3.03	27.8	9.19	84	0.08
AN	308	1337	4.10	28.5	6.95	111	0.53
AN	309	1216	3.61	28.4	7.85	98	2.97
AN	311	1198	2.94	27.2	9.25	83	2.50
AN	315	1189	3.62	25.6	7.06	109	0.70
AN	317	1360	3.80	27.8	7.32	105	-0.45
AN	318	1279	2.81	22.5	8.02	96	-3.69
AN	321	1408	3.76	28.5	7.58	101	-0.68
AN	322	1415	4.29	29.5	6.89	111	-0.04
AN	324	1257	3.42	28.1	8.22	93	2.03

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AN	325	1302	4.24	28.1	6.63	116	0.75
AN	330	1420	4.13	30.3	7.34	105	0.74
AN	332	1293	3.58	27.2	7.60	101	0.38
AN	333	1305	3.35	26.0	7.75	99	-1.03
AN	334	1375	3.79	29.1	7.68	100	0.55
AN	335	1261	4.11	25.6	6.23	123	-0.93
AN	337	1255	3.50	22.8	6.51	118	-3.29
AN	339	1282	2.82	24.4	8.65	89	-1.88
AN	342	1310	4.36	29.8	6.83	112	2.2
AN	344	1311	4.23	26.8	6.33	121	-0.74
AN	345	1257	3.95	26.8	6.80	113	0.48
AN	348	1238	3.65	26.8	7.34	105	0.97
AN	349	1498	3.19	30.5	9.54	80	-0.02
AN	350	1249	3.62	29.7	8.21	94	3.39
AN	351	1297	3.79	27.2	7.17	107	-0.19
AN	352	1251	3.84	29.2	7.61	101	2.69
AN	353	1194	3.03	25.1	8.28	93	0.14
AN	354	1210	3.21	26.2	8.14	94	0.80
AN	355	1261	3.48	26.0	7.47	103	-0.51
AN	356	1236	3.81	25.9	6.81	113	-0.24
AN	357	1404	3.88	30.1	7.75	99	0.62
AN	358	1271	2.97	25.5	8.59	89	-0.93
AN	359	1349	3.35	29.2	8.71	88	1.04
AN	360	1319	3.70	26.9	7.25	106	-0.86
AN	361	1268	4.11	26.0	6.32	122	-1.00
AN	362	1286	3.18	25.9	8.12	95	-0.97
AN	363	1261	3.31	26.8	8.10	95	0.36
AN	364	1199	3.32	24.9	7.50	102	-0.32
AN	365	1292	3.70	26.7	7.20	107	-0.57
AN	366	1280	4.26	28.8	6.77	114	1.52
AN	367	1254	3.32	24.5	7.38	104	-1.79
AN	369	1181	3.52	24.7	7.03	109	-0.22
AN	370	1388	3.08	31.6	10.25	75	2.87
AN	371	1312	3.56	27.3	7.65	100	-0.27
AN	373	1394	2.99	27.5	9.18	84	-1.31
AN	374	1481	4.68	31.7	6.77	113	0.36
AN	375	1186	3.30	23.9	7.25	106	-1.06
AN	376	1343	3.40	28.1	8.26	93	0.03
AN	377	1440	3.54	29.1	8.23	93	-0.79
AN	378	1486	3.76	32.6	8.69	88	1.73
AN	379	1302	3.29	28.9	8.80	87	1.72
AN	380	1332	3.66	29.2	7.98	96	1.25
AN	381	1294	3.28	28.3	8.64	89	1.26
AN	382	1250	3.28	27.4	8.37	92	1.21
AN	383	1294	3.99	26.3	6.58	117	-1.13
AN	384	1508	3.94	31.1	7.90	97	-0.30

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AN	385	1198	3.33	23.8	7.16	107	-1.39
AN	386	1377	2.96	26.2	8.84	87	-2.29
AN	387	1308	4.19	26.3	6.28	122	-1.44
AN	388	1388	3.77	28.8	7.64	100	-0.29
AN	390	1238	3.94	23.4	5.93	129	-2.93
AN	391	1187	3.49	25.4	7.29	105	0.37
AN	392	1415	4.04	28.6	7.07	109	-1.16
AN	393	1324	3.89	29.1	7.48	103	1.15
AN	394	1343	3.91	29.1	7.44	103	0.80
AN	396	1179	2.70	24.9	9.21	83	0.41
AN	397	1332	4.06	28.8	7.09	108	0.61
AN	398	1278	3.61	28.3	7.84	98	1.43
AN	400	1205	2.63	24.4	9.28	83	-0.58
AN	401	1211	3.15	26.3	8.33	92	0.87
AN	402	1289	3.46	27.9	8.08	95	0.88
AN	403	1323	3.83	34.2	8.94	86	6.28
AN	404	1382	3.59	27.6	7.67	100	-1.36
AN	405	1448	4.14	30.6	7.39	104	0.14
AN	408	1192	3.73	22.6	6.05	127	-2.75
AN	411	1248	4.01	26.9	6.70	115	0.32
AN	412	1257	4.50	26.3	5.86	131	-0.63
AN	413	1279	3.84	27.3	7.11	108	0.19
AN	414	1341	3.88	27.3	7.05	109	-0.94
AN	415	1371	3.90	28.0	7.18	107	-0.88
AN	416	1401	3.76	28.6	7.62	101	-0.73
AN	417	1295	3.89	28.8	7.40	104	1.35
AN	418	1488	4.07	34.2	8.41	91	3.08
AN	419	1445	3.83	30.7	8.02	96	0.48
AN	420	1251	3.66	26.9	7.33	105	0.43
AN	421	1466	3.31	30.7	9.28	83	0.35
AN	422	1339	3.95	26.1	6.61	116	-2.18
AN	424	1351	3.37	27.7	8.23	93	-0.50
AN	425	1278	3.79	28.7	7.58	101	1.67
AN	427	1243	3.68	23.8	6.45	119	-2.52
AN	429	1340	3.21	29.8	9.27	83	1.88
AN	430	1183	3.77	23.6	6.27	122	-1.53
AN	432	1338	3.19	28.3	8.86	87	0.44
AN	435	1185	3.80	24.8	6.53	118	-0.41
AN	437	1458	2.86	31.0	10.84	71	1.04
AN	438	1435	3.35	29.4	8.78	87	-0.39
AN	439	1334	3.34	27.0	8.09	95	-0.88
AN	440	1345	3.85	26.1	6.79	113	-2.22
AN	441	1272	3.78	27.4	7.26	106	0.49
AN	442	1335	2.92	28.9	9.89	78	1.21
AN	444	1282	4.36	27.1	6.21	124	-0.34
AN	445	1354	3.85	27.6	7.16	107	-0.96

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Breed	VID	Final BW, lb	ADG, lb/d	Dry matter intake, lb/d	Feed: gain ratio	Feed:gain ratio index	RFI, lb/d
AN	446	1406	3.87	29.2	7.54	102	-0.34
AN	448	1260	3.82	25.4	6.66	115	-1.27
AN	550	1297	3.43	26.8	7.81	98	-0.18
AN	551	1269	2.63	25.9	9.85	78	-0.07
AN	552	1384	4.32	30.2	6.99	110	1.11
AN	553	1359	4.45	28.1	6.32	122	-0.58
AN	554	1393	4.14	26.9	6.50	118	-2.25
AN	555	1369	4.45	27.8	6.25	123	-1.09
AN	559	1327	4.31	25.8	5.99	128	-2.20
AN	560	1322	3.46	28.5	8.25	93	1.08
AN	561	1317	4.63	26.3	5.67	135	-1.72
AN	563	1255	3.82	25.5	6.68	115	-0.85
AN	565	1296	3.61	27.0	7.48	103	-0.04
AN	566	1340	3.76	27.1	7.22	106	-0.85
AN	567	1318	3.83	31.9	8.35	92	4.36
AN	568	1193	3.48	23.3	6.69	115	-1.68
AN	569	1210	3.47	23.2	6.70	115	-2.05
AN	570	1181	3.19	26.3	8.22	93	1.68
AN	571	1302	4.17	30.4	7.28	105	2.94
AN	573	1384	4.24	33.5	7.88	97	4.42
AN	574	1198	3.84	24.2	6.30	122	-1.06
AN	575	1185	3.85	27.0	7.03	109	2.04
AN	576	1265	4.14	26.9	6.48	118	0.14
AN	578	1352	5.10	30.2	5.91	130	1.27
AN	580	1308	3.91	24.7	6.31	122	-2.77
AN	581	1385	4.01	29.7	7.40	104	0.72
AN	582	1254	3.13	25.3	8.08	95	-0.65
AN	584	1351	3.95	27.0	6.85	112	-1.21
AN	586	1431	3.97	29.0	7.30	105	-0.84
AN	587	1146	3.04	23.8	7.82	98	-0.04
AN	588	1215	3.65	26.5	7.27	106	1.07
AN	589	1182	3.63	25.8	7.10	108	0.96
AN	590	1338	4.93	28.6	5.81	132	0.09
AN	591	1263	3.26	27.9	8.58	90	1.72
AN	592	1418	3.84	28.1	7.32	105	-1.40
AN	596	1317	3.50	26.8	7.67	100	-0.53
AN	599	1363	3.14	27.3	8.68	89	-0.80
RA	701	1260	3.53	26.0	7.35	95	-0.66
RA	702	1293	3.34	25.9	7.76	90	-1.14
RA	703	1290	3.29	27.4	8.33	84	0.42
RA	707	1412	3.67	27.6	7.51	93	-1.72
RA	708	1320	3.87	29.5	7.64	91	1.66
RA	709	1345	3.94	28.9	7.33	95	0.51
RA	710	1227	2.96	22.2	7.50	93	-3.45
RA	711	1308	3.50	29.9	8.55	82	2.50
RA	713	1199	4.34	26.6	6.13	114	0.46

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RA	716	1174	3.81	26.2	6.87	101	0.85
RA	717	1224	4.31	25.6	5.94	117	-0.98
RA	718	1243	4.41	28.3	6.42	109	1.38
RA	719	1335	3.18	28.0	8.81	79	0.38
RA	720	1333	3.98	28.3	7.11	98	0.12
RA	721	1192	3.59	25.5	7.09	98	-0.03
RA	722	1151	3.23	24.9	7.71	90	0.44
RA	723	1098	2.55	23.1	9.04	77	-0.03
RA	724	1273	2.80	25.1	8.98	78	-1.23
RA	725	1218	3.12	26.7	8.56	81	1.13
RA	726	1140	4.04	25.9	6.40	109	0.99
RA	727	1275	3.70	28.1	7.59	92	1.10
RA	728	1305	4.67	27.1	5.80	120	-1.10
RA	729	1088	3.22	20.4	6.33	110	-2.96
RA	730	1259	4.03	26.4	6.55	106	-0.56
RA	731	1345	4.53	27.3	6.03	116	-1.46
RA	732	1192	3.60	27.2	7.55	92	1.71
RA	733	1074	3.48	23.4	6.72	104	0.08
RA	734	1179	4.41	24.7	5.60	124	-1.13
RA	735	1262	3.95	28.4	7.20	97	1.48
RA	738	1245	4.40	29.9	6.80	102	2.96
RA	741	1257	3.71	27.0	7.28	96	0.35
RA	742	1196	4.66	24.3	5.22	134	-1.95
RA	743	1186	3.68	25.8	6.99	100	0.32
RA	744	1258	4.97	28.8	5.79	120	1.20
RA	745	1086	4.01	24.5	6.10	114	0.58
RA	746	1194	3.53	24.8	7.03	99	-0.64
RA	747	1080	3.24	24.6	7.58	92	1.35
RA	748	1144	3.89	25.4	6.52	107	0.53
RA	749	1134	4.27	24.5	5.75	121	-0.39
RA	839	1248	4.22	26.6	6.30	111	0.47
RA	846	1411	3.66	28.0	7.65	91	-0.51
RA	847	1231	3.40	27.4	8.07	86	2.15
RA	849	1261	4.05	28.7	7.08	99	2.41
RA	854	1168	4.19	24.1	5.75	121	-0.61
RA	855	1288	4.05	30.5	7.53	93	3.79
RA	860	1180	3.50	26.7	7.62	91	2.22
RA	861	1218	4.34	24.0	5.54	126	-1.66
RA	862	1261	4.23	27.7	6.54	107	1.32
RA	863	1171	4.19	25.6	6.10	114	0.82
RA	864	1284	5.24	25.4	4.83	144	-2.13
RA	865	1178	3.94	24.8	6.29	111	0.07
RA	868	1232	3.71	26.9	7.24	96	1.40
RA	869	1207	3.36	22.8	6.78	103	-2.05
RA	870	1168	3.27	22.2	6.80	102	-1.86
RA	871	1216	4.22	24.1	5.72	122	-1.45

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RA	872	1168	4.07	24.3	5.96	117	-0.37
RA	874	1157	3.06	25.2	8.22	85	1.43
RA	875	1200	3.65	25.7	7.04	99	0.82
RA	876	1281	4.38	24.3	5.23	133	-2.51
RA	877	1362	2.89	27.3	9.44	74	0.11
SD	900	1059	2.82	22.1	7.85	94	0.16
SD	901	1289	3.27	26.1	7.99	93	-0.16
SD	902	1113	2.71	23.2	8.53	87	0.36
SD	904	1033	2.84	22.1	7.78	95	0.57
SD	905	971	2.41	22.3	9.24	80	2.21
SD	906	1053	2.33	20.6	8.87	83	-0.78
SD	907	1019	3.13	21.3	6.81	109	-0.20
SD	909	1191	3.30	25.3	7.69	96	0.69
SD	912	973	2.27	18.0	7.96	93	-1.92
SD	913	1066	2.72	19.9	7.30	101	-2.11
SD	914	1113	3.08	21.5	6.99	106	-1.57
SD	919	1207	2.67	23.8	8.92	83	-0.52
SD	920	1077	3.24	23.0	7.08	105	0.33
SD	921	1174	3.05	25.5	8.35	89	1.32
SD	922	1084	3.46	22.6	6.54	113	-0.32
SD	924	1211	4.11	25.5	6.20	119	-0.24
SD	925	1297	4.06	25.9	6.39	116	-1.18
SD	926	1260	4.03	28.5	7.07	105	2.04
SD	927	1167	3.42	23.8	6.96	106	-0.55
SD	928	1155	2.97	21.5	7.23	102	-2.27
SD	929	1089	3.74	23.9	6.38	116	0.63
SD	930	1180	3.47	24.0	6.92	107	-0.59
SD	931	1124	3.05	24.5	8.03	92	1.22
SD	932	1165	4.39	23.9	5.44	136	-1.30
SD	935	1101	3.52	22.0	6.24	119	-1.31
SD	936	1229	3.45	28.0	8.11	91	2.55
SD	937	1180	3.15	25.3	8.03	92	1.01
SD	938	1160	3.39	24.1	7.10	104	-0.15
SD	941	1090	2.89	21.4	7.40	100	-1.20
SD	942	1069	2.84	23.2	8.19	90	1.07
SD	943	1188	3.18	24.1	7.56	98	-0.42
SD	944	1132	3.70	25.0	6.76	109	1.04
SD	945	981	2.84	21.8	7.69	96	1.21
MG	1200	1123	3.01	22.4	7.45	100	-0.89
MG	1202	1168	2.71	25.2	9.29	80	1.31
MG	1203	977	3.16	21.9	6.91	108	0.94
MG	1204	1114	3.49	23.9	6.84	109	0.43
MG	1205	1177	3.45	23.6	6.84	109	-0.87
MG	1206	991	2.97	22.2	7.48	100	1.13