OKLAHOMA STATE UNIVERSITY

MEMORANDUM

DATE August 9, 1979

TO Richard McDonald

FROM Fred Owens, Don Gill, Richard Zinn, Jerry Martin

SUBJECT

The last 3 months have been quite active for research on several fronts. Of greatest interest are results from Jerry's Goodwell trial with 3 corn types (high moisture and steam flaked with 15% silage or whole shelled corn with 5% silage) and 3 protein supplements (soybean meal, cottonseed meal or urea) using 680 pound steers. On day 70 (or 71) steers were held off feed overnight and shrunk weights obtained before switching to other corn types. Preliminary results are presented in table 1.

Results look quite encouraging for whole shelled corn despite a higher fecal starch level (some of which is due to lower total feces due to the lower level of silage). Within the steam flaked corn only were fecal pH and fecal starch well related (3.7% starch per 1 unit change in pH). With whole shelled and high moisture corn, the wetter the feces, the lower the starch (1.0 and 1.2% starch per 1% change in fecal dry matter). With coarser corn particles might moisture level and penetration of water and enzymes limit digestion?

Third period gains are presented in table 2. Jerry's tentative conclusions are as follows:

1. Changing from WSC to either HMC or SFC appeared to depress gain during the 3rd period.

2. Changing HMC to WSC appeared to have some advantage over the changes from HMC to SFC.

3. Changing SFC to HMC appeared to have some advantage over the change from SFC to WSC.

4. Changing either SFC or HMC to either of the other corn treatments appeared to be as desirable as continuing on the initial treatment.

Based on concern about a lower degree of marbling with whole corn rations, and higher marbling with fermented feeds than dry feeds in three past comparisons from Goodwell, we are anxious to get carcass data at slaughter at Booker scheduled for August 24 and 25.

Table 1. Goodwell Trial 1979. Phase-feeding and Protein Sources

		Pens		ADG				Fecal		
Corn	Supplement	0-70	70-105	0-70	70-105	ADF(DM)	F/G	DM	pH	Starch
Whole	SBM	9	3	4.27	2.43	20.7	4.86	24	5.9	25
Whole	CSM	3	3	4.29	2.74	20.9	4.89	26	6.0	22
Whole	Urea	2	2	3.86	2.61	20.7	5.35	28	5.9	35
Means		14	8	4.22^{b}		20.7^{a}	4.93^{a}	25^{c}	5.9^{b}	26^{c}
Steam flaked	SBM	9	3	3.73	2.57	21.7	5.85	17	5.7	6
Steam flaked	CSM	3	3	3.89	2.66	21.2	5.46	16	5.8	5
Steam flaked	Urea	2	2	3.78	2.76	22.2	5.90	15	5.9	7
Means		14	8	3.77^{a}		21.7^{b}	5.77^{b}	16^{a}	5.7^{a}	6^{a}
High moisture	SBM	9	3	3.86	3.00	22.7	5.91	22	5.7	13
High moisture	CSM	3	3	3.81	2.79	22.4	5.90	22	5.7	13
High moisture	Urea	2	2	3.84	2.55	22.8	5.94	24	5.9	17
Means		14	8	3.85^{a}		22.7^{b}	5.92^{b}	22^{b}	5.7^{a}	13^{b}

[abc] Means in a column having a common superscript do not differ statistically (5% level of chance occurance).

Table 2. Third period gains

Ration			ADG		
0-70	70-105	Pens	0-70	70-105	% of 0-70
Whole	Whole	3	4.30	2.43	57
Whole	Steam flaked	3	4.25	2.06	48
Whole	High moisture	3	4.27	2.16	51
Steam flaked	Whole	3	3.90	2.82	72
Steam flaked	Steam flaked	3	3.67	2.57	70
Steam flaked	High moisture	3	3.60	2.99	83
High moisture	Whole	3	4.10	3.10	76
High moisture	Steam flaked	3	3.67	2.76	75
High moisture	High moisture	3	3.81	3.00	79