ECONOMIC EVALUATION OF STRATEGIES TO REDUCE FEED COST OF GAIN IN THE FEEDLOT

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Introduction

Two indices drive feedlot profitability. One, average daily gain, is associated with days on feed and mainly affects nonfeed cost of gain. The other, DM required/lb gain, is more closely associated with feed cost of gain. Because, under most condition, feed cost of gain is greater than nonfeed cost of gain, small changes in feed cost have a greater impact than similar changes in daily gain. For instance, a feed additive that improves feed efficiency (reduces DM required/lb gain) by 10% may be used. On the other hand, another feed additive that improves daily gain by 10% without affecting feed efficiency may be used. At a given daily gain of 3 lb/d and DM required/lb gain of 6.5, increasing daily gain 10% will reduce days on feed for 500 lb gain by 15 days. For 500 lb gain in this scenario, feed needs will be 3250 lb DM. At a nonfeed daily cost/head of $.25, the savings will be $3.75. Feed bill will be $130 when feed DM is priced at $.04/lb. On the other hand, given a daily gain of 3 lb/d and DM required/lb gain of 6.5, reducing DM required/lb gain by 10% will not affect days on feed, but will reduce feed needs to 2925 lb DM. Therefore, the feed bill will be $117, a savings of $13 relative to the first scenario, assuming no change in feed price/lb DM. Because changing feed efficiency did not affect daily gain, net savings will be $9.25/steer under this scenario.

This paper will focus on factors that affect feed cost of gain. It will also provide a system to evaluate alternative feed sources, feed storage or feed processing methods based on a cost benefit analysis.

Improving Cost Of Gain Through Use Of Alternative Feeds

Corn milling byproducts. Corn gluten feed (CGF) is a byproduct of the milling of corn for starch, germ meal and sugar production. Corn gluten feed is comprised mainly of corn bran which contains some germ meal and starch with some steep liquor added. This combination results in a feedstuff that is high in fiber and protein. However, the fiber portion of CGF digests rapidly; therefore, energy value of CGF is better than expected from its high fiber content.

Studies with CGF indicate that wet or dry CGF fed at 20 to 50% diet DM in corn silage-based diets has a similar energy value as corn silage (.52 Mcal NEg/lb DM; Table 1). Although an increase of 8% in DM required/lb gain resulted when DCGF replaced corn silage (80% diet DM) in some instances, the price of DCGF relative to corn silage may permit reductions in cost of gain.

In finishing diets, value of wet or dry CGF approaches that of corn grain when CGF constitutes up to 50% of the diet DM (Table 1). Addition of DCGF over 50% of diet DM causes increases in DM required/lb gain; however, price of DCGF relative to corn grain may permit reductions in cost of gain.

Some negative interactions exist when wet or dry CGF is fed with corn silage in high corn grain diets. When CGF was fed dry at 30%, or wet at 50 or 70%, of the diet DM and either 15 or 10% corn silage in DCGF or WCGF diets, respectively, DM required/lb gain was increased from 3 to 16% over the control diet (Table 1). This may be the result of negative associative effects resulting from digestion of fiber components from both CGF and corn silage in the presence of corn grain (DiCostanzo et al., 1990). Thus, it is important to recognize that when either wet or dry CGF is used, addition of corn silage may negatively affect feed efficiency.

Distillers byproducts include fiber, protein and lipid fractions derived from the milling of corn for ethanol production. Studies conducted with distillers byproducts normally involve some distillers grains and solubles. These may be either dried before marketing, or sold as a mash which must be fed quickly because of potential spoilage.

Most studies with dry or wet distillers byproducts demonstrate that these byproducts contain an energy value equal to or greater than corn grain (Table 1). Increasing concentration of dietary wet distiller byproduct reduced DM required/lb gain as much as 17%. Further evaluation of these data indicate that steers consuming increasing amounts of wet distiller byproduct consumed less dry matter but gained more weight than those fed the control corn grain diet (Table 1). Based on these results, Klopfenstein and Stock (1983) indicate that the energy value of wet distiller byproduct approximates .97 Mcal/lb DM. Data reported by Firkins et al. (1985) support this observation (Table 1).

Feeding dry distillers byproduct may cause some concern because of the increased probability for damaging protein fraction during the drying process. However, data reported by Klopfenstein and Stock (1993) demonstrated that, for dry distillers byproduct diets (40% of diet DM) with a range in acid detergent insoluble nitrogen between 9.7 and 28.8% of CP, DM required/lb gain was 90 to 92% that of the control diet. Dry matter required/lb gain for a wet distiller byproduct diet (40% diet DM) fed during this trial was 84% that of the control diet, thereby indicating that, although some reduction in energy value was caused by drying this byproduct, its energy value was yet greater than that of corn.

Table 1. Feed efficiency of steers fed various corn milling byproducts.

Weight	Control diet	Diet NE_g, Mcal/lb	Byproduct	Byproduct, %DM	Ratio of F/G value relative to control diet
550 [a]	Corn silage	49	DCGF	20	101.2
550 [a]	Corn silage	49	DCGF	50	100.9
550 [a]	Corn silage	49	DCGF	80	107.7
600 [b]	Corn silage	50	WCGF	35	84.3
600 [b]	Corn silage	50	DCGF	35	88.7
600 [b]	Corn silage	50	DDG	17	73.9
850 [a]	Corn grain	62	DCGF + CS	30 + 15	116.0
850 [a]	Corn grain	62	DCGF	50	102.2
850 [a]	Corn grain	62	DCGF	70	118.1
780 [a]	Corn grain	62	DCGF + CS	30 + 15	109.2
780 [a]	Corn grain	62	DCGF	50	95.8
780 [a]	Corn grain	62	DCGF	70	106.8
720 [b]	Corn grain	62	WCGF	50	103.9
720 [b]	Corn grain	62	DCGF	50	114.3
670 [b]	Corn grain	65	WCGF + CS	50 + 10	102.6
670 [b]	Corn grain	65	WCGF	50	101.2
670 [b]	Corn grain	65	WCGF + CS	70 + 10	110.0
670 [b]	Corn grain	65	WCGF	70	101.1
670 [b]	Corn grain	65	WCGF	90	103.7
615 [c]	Corn grain	62	WDG + TS[d]	5	98.1
615 [c]	Corn grain	62	WDG + TS[d]	13	94.5
615 [c]	Corn grain	62	WDG + TS[d]	40	87.6
748 [c]	Corn grain	62	WDG + TS[d]	5	95.4
748 [c]	Corn grain	62	WDG + TS[d]	13	91.2
748 [c]	Corn grain	62	WDG + TS[d]	40	83.3

WCGF = Wet corn gluten feed DDG = Dry distillers grain CS = Corn silage
DCGF = Dry corn gluten feed WDG = Wet distillers grain TS = Thin stillage

[a] DiCostanzo et al., 1990.
[b] Firkins et al., 1985.
[c] Klopfenstein and Stock, 1993.
[d] 63:37 ratio.

Use of sound or moldy small grains. In some areas of the country, small grains may present an opportunity to replace corn in finishing diets. Although both wheat and barley contain similar energy/lb DM as corn, their rate of fermentation in the rumen is faster than that of corn. Therefore, strategies for utilizing small grains in finishing rations require careful bunk management and price considerations.

Compared to corn grain, dry rolled barley supported similar feed efficiencies (Table 2), but steers fed barley gained 5 to 7% less weight, and consumed 4 to 6% less feed daily than those fed corn grain. Thus, although feed cost of gain may be reduced by utilizing barley, additional time in the feedlot must be evaluated against the cost of feed savings.

Table 2. Feed efficiency of steers fed various small grains.

Weight	Control diet	Diet NE_g, Mcal/lb	Grain	Grain, %DM	Ratio of F/G value relative to control
512 [a]	Corn grain	62	Barley	70	100.8
660 [b]	Corn grain	63	Barley	68	102.7
670 [c]	Corn grain	62	Wheat	15	103.5
670 [c]	Corn grain	62	Wheat	30	102.6
670 [c]	Corn grain	62	Wheat	45	98.4

[a] Windels et al., 1976.
[b] Windels et al., 1994.
[c] Anderson et al., 1992.

Compared to corn grain, increasing amounts of dry rolled wheat from 15 to 45% of diet DM permitted similar feed efficiencies (Table 2), but steers gained 2 to 6% less weight than those fed corn grain. Increased time in the feedlot must be considered when evaluating potential reduction in cost of gain by using wheat.

Be aware that a source of low priced wheat or barley may be grain that is contaminated with mycotoxins, specifically vomitoxin (deoxynivalenol). Studies conducted to date (DiCostanzo et al., 1994) and current studies at the University of Minnesota (Table 3) indicated that vomitoxin concentrations as high as 21 ppm did not affect feed efficiency. Therefore, some additional reductions in feed cost of gain may be realized when low priced vomitoxin-contaminated wheat or barley are included in feedlot diets at a reduced price.

Table 3. Feed efficiency of steers fed sound or vomitoxin-contaminated barley.

Weight	Control diet	Diet NE_g, Mcal/lb	Vomitoxin, ppm	Ratio of F/G value relative to control
914 [a]	Sound barley	58	6	103.3
914 [a]	Sound barley	58	12	99.3
914 [a]	Sound barley	58	18	97.4
870 [b]	Sound barley	61	7	99.3
870 [b]	Sound barley	61	14	99.8
870 [b]	Sound barley	61	21	100.1

[a] DiCostanzo et al., 1995.
[b] Windels et al., 1995.

Manipulating Feed Efficiency Through Processing Or Storage Methods.

Most feedlots in the Upper Midwest must face the question of what method to store grains or whether to process them. Because of weather or facilities, high moisture grains may need to be utilized.

Similarly, because of feedlot size, design of facilities or feed delivery method, grinding or rolling grain may be considered. Some results of trials conducted in the Upper Midwest and their main conclusions are included in the discussion below.

Processing method. It is well established that small grains should be processed to permit proper digestion in the rumen. The question is, "to what extent should they be processed?" Apparently, rolling may be sufficient to permit proper digestion and fermentation in the rumen because excessive grain processing affected feed effeciency negatively (Table 4). Grinding barley resulted in a 4.6% increase in DM required/lb gain. This increase was a direct result of increased feed intake without an increase in daily gain (Windels et al., 1970).

Results of comparisons between whole and rolled or cracked corn are included in Table 4, and are just a sample of the immense data found in the literature on this subject. From these data, it is difficult to generalize about a given trend for either rolled or whole corn. In most instances, differences in feed efficiency do not amount to more than 5%. Therefore, the decision to roll or crack corn must be made on the basis of price and(or) complications of the feeding routine associated with processing or not processing corn.

Storage method. Utilizing high moisture feeds will generally improve feed intake; however, a similar increase in daily gain must follow to prevent an increase in DM required/lb gain. For small grains with an inherently fast fermentation rate, high moisture content may affect feed efficiency negatively. Indeed, inclusion of high mositure rolled barley instead of dry rolled barley increased DM required/lb gain 7 to 24% (Table 4). In both instances feed intake increased, but daily gain was either not improved or was decreased (Kennelly et al., 1988).

In contrast, replacing dry rolled or cracked corn with high moisture shelled or rolled corn did not affect, or tended to improve feed efficiency (Table 4). Because of a slower fermentation rate, corn fermentation may be improved by moisture content. Feedlot operators in the Upper Midwest may take advantage of this feature because of short growing seasons, the potential for reduced harvest costs, or both.

Table 4. Effect of grain storage or processing method on feed efficiency

BW	Control diet	Diet NE_g, Mcal/lb	Alternative storage or processing method	Ratio of F/G value relative to control
Processing Method				
783 [a]	Rolled barley	61	Ground barley	104.6
660 [b]	Rolled corn	63	Whole corn + hay	104.3
NA [c]	Rolled corn	63	Whole corn + hay	101.4
NA [c]	Rolled corn	63	Whole corn + haylage	100.0
702 [d]	Cracked corn	66	Whole corn + 5% hay	99.2
702 [d]	Cracked corn	64	Whole corn + 10% hay	98.0
702 [d]	Cracked corn	62	Whole corn + 20% hay	88.4
793 [e]	Rolled corn	62	Whole corn + silage	97.5
Storage Method				
778 [f]	Ground barley	62	High moisture rolled barley	90.6
477 [g]	Rolled barley	56	High moisture rolled barley	107.2
785 [g]	Rolled barley	62	High moisture rolled barley	123.8
443 [h]	Rolled corn	62	High moisture rolled corn	100.4
456 [i]	Rolled corn	62	High moisture rolled corn	99.8
722 [j]	Cracked corn	63	High moisture shelled corn	95.7
780 [k]	Rolled corn	65	High moisture rolled corn	97.2

[a] Windels et al., 1970.
[b] Brink et al., 1984.
[c] Poppert and Mader, 1989.
[d] Malone et al., 1986.
[e] Hansen et al., 1984.
[f] Windels et al., 1974.
[g] Kennelly et al., 1988.
[h] Miller et al., 1971.
[i] Gharib et al., 1971.
[j] Hanke et al., 1981.
[k] Dexheimer et al., 1971.

Evaluating Use Of Alternative Feeds Or Processing And Storage Methods.

As feedlot operators prepare to make decisions on whether to utilize alternative feed sources or what effects storing or processing will have on feed cost of gain, it is important that they consider potential benefits and costs associated with an alternative. Worksheet 1 was generated based on the concept of optimizing use of feeds or storage and processing methods. Data to be included in the worksheet are ingredients, amounts fed daily of the current diet, their cost and dry matter content, and a projected or observed average daily gain. Feed costs must include any handling or processing costs (real cost delivered to the bunk). Dry matter contents of feedstuffs must be measured regularly to estimate dry matter intake accurately. In addition, cost, desired amount to feed (from Tables 1 through 4, or other sources), potential change in feed DM required/lb gain (from Tables 1 through 4, or other sources), and dry matter content of alternative feed must be considered. Cost must include handling and processing costs (real cost delivered to the bunk).

The worksheet will permit calculation of alternative diet breakeven cost (cost at which there is no additional economic benefit to include alternative feed). This worksheet can be used to evaluate whether it pays to roll corn, what the expected cost of gain will be with a lower quality feedstuff that must be used, or what price an alternative feed should be to maintain profitability. To complete the worksheet follow these simple steps:

Under current diet fed section.

1. Fill in ingredients and amounts fed on an as-fed basis under columns 1 and 2, respectively, in lines provided (lines 1 through 6).

2. Fill in the price/lb as fed under column 3 in lines corresponding to step 1.

3. Multiply values in column 2 by values in column 3 and enter results under column 4 in lines corresponding to step 1.

4. Enter each ingredient DM content (from your lab printout) under column 5.

5. Calculate DM fed from each ingredient under column 6 by multiplying values in column 2 by those in column 5.

6. Determine totals for columns 2, 4 and 6 by adding values within each column.

7. Calculate diet DM by dividing total for column 6 by total for column 2. Enter result in box 1.

8. Calculate diet cost/lb by dividing total for column 4 by total for column 2. Enter result in box 2.

9. Calculate diet cost/lb DM by dividing total for column 4 by total for column 6. Enter result in box 3.

10. Enter an observed or projected average daily gain (in pounds) in box 4.

11. Calculate feed required/lb gain by dividing total in column 2 by value in box 4. Enter result in box 5.

12. Calculate DM required/lb gain by dividing total in column 6 by value in box 4. Enter result in box 6.

13. Calculate feed cost of gain/lb by multiplying value in box 5 by value in box 2. Enter result in box 7.

Under alternative diet section.

1. Fill in ingredients and amounts to be fed (DM basis) under columns 1 and 2, resepctively.

2. Enter the ingredient DM content (from your lab printout) under column 3.

3. Calculate ingredient amounts to be fed (as fed basis) by dividing values in column 2 by those in column 3. Enter results under column 4 in lines corresponding to step 1.

4. Fill in the price/lb as fed under column 5 in lines corresponding to step 1.

5. Multiply values in column 4 by values in column 5 and enter results under column 6 in lines corresponding to step 1.

6. Determine totals for columns 2, 4 and 6 by adding values within each column.

7. Calculate diet DM by dividing total for column 2 by total for column 4. Enter result in box 8.

8. Calculate diet cost/lb by dividing total for column 6 by total for column 4. Enter the result in box 9.

9. Calculate diet cost/lb DM by dividing total for column 6 by total for column 2. Enter result in box 10.

Under breakeven diet cost determination section.

1. Enter value from box 5 in box 11 (*current feed cost/lb gain, $*).

2. Enter expected change in DM required/lb gain relative to current diet (from Tables 1 through 4, or any other source) in box 12 (*expected change in DM required/lb gain*).

3. Multiply value in box 11 by that in box 12. Enter result in box 13 (*expected DM/lb gain*).

4. Determine new maximum allowable diet cost/lb DM by dividing value in box 11 by that in box 13. Enter result in box 14 (*maximum new diet cost, $/lb DM*).

5. Enter new diet DM from box 8 in box 15 (*new diet DM, %*).

6. Multiply value in box 14 by that in box 15. Enter result in box 16 (*new diet breakeven cost, $/lb)*. **THIS IS THE DIET BREAKEVEN COST (MAXIMUM COST OF ALTERNATIVE DIET) FOR INCLUSION OF THE ALTERNATIVE FEED AS ENTERED UNDER DIET TO FEED SECTION.** Compare this diet cost with alternative diet cost (box 9). For an alternative feed to be a profitable venture, this cost should be higher than the value in box 9.

Based on this method, a simulation was for inclusion of an alterntative ingredient to substitute for 100% of an originial ingredient (fed at 75% of diet DM) of similar dry matter content in a diet that permits a feed-to-gain ratio (DM) of 6.5 (Table 5). This simulation evaluated diet costs between $.02 and .06/lb ($40 to 120/ton) and changes DM required/lb gain between .85 and 1.15 relative to the original diet. Results are presented as price of alternative feed relative to price of original feed for the alternative diet to be feasible.

Table 5. Price an alternative ingredient must have for an alternative diet cost to breakeven with original feed cost of gain given 100% substitution of an original ingredient fed a 75% of diet DM.[a]

Expected relative change in DM required/lb gain	Diet cost, $/lb ($/ton)				
	.02 (40)	.03 (60)	.04 (80)	.05 (100)	.06 (120)
	---------Alternative ingredient price relative to original ingredient price---------				
0.85	132	125	123	121	120
0.90	119	116	114	113	113
0.95	110	108	107	106	106
1.05	92	93	94	94	94
1.10	83	87	88	89	89
1.15	76	82	83	84	85

[a] Original diet permits 6.5 lb DM/lb gain efficiency.

It is evident that as the alternative ingredient reduces DM required/lb gain, the price/lb that can be paid increases up to 32% relative to the original ingredient. Similarly, if inclusion of the alternative ingredient increases DM required/lb gain to 1.15 times, the price of the alternative ingredient should be 24% below the original ingredient. It is also evident that within a given diet price, a change in DM required/lb gain of 5 percentage points will be compensated by a change in ingredient price of 6 to 7 percentage points. Thus, for a given diet utilizing an alternative ingredient that increases DM required/lb gain by 10 percentage points**,** the alternative ingredient must be priced 14% below the original ingredient used to make the diet feasible.

Table 5 can be used to determine the feasibility of feeding rolled corn vs feeding it whole. If it is assumed that a decrease of .95 in DM required/lb gain will result from feeding rolled corn, then a person paying $76.2/ton for rolled corn ($5.6/ton for rolling) is not realizing any economic benefits for rolling corn when whole corn is priced at $70.6/ton (diet cost = $60/ton). Any rolling costs below $5.6/ton will favor rolling vs whole corn feeding in this scenario.

Similarly, Table 5 can be used to consider the feasibility of substituing barley for corn grain. With corn priced at $70.6/ton, and considering that barley feeding may increase DM required/lb gain by 1.05, barley price should be 93% that of corn, or $65.66/ton.

Table 5 and the worksheet from which it was derived aid in determining the cost-benefit relationship due to changes in DM required/lb gain only. A prudent feedlot operator should consider other effects of using alternative feeds or alternative storage or processing methods such as changes in feedlot period length and carcass characteristics.

Literature Cited

Anderson, P.T., D.P. O'Connor, M.T. Lewis, and B.J. Johnson. 1992. Inclusion of wheat in typical Minnesota feedlot diets. MN Beef Cattle Res. Rep. B-389.

Brink, D.R., O.A. Turgeon, Jr., D.L. Harmon, R.T. Steele, T.L. Mader, and R.A. Britton. 1984. Effects of additional limestone of various types on feedlot performance of beef cattle fed high corn diets differing in processing method and potassium level. J. Anim. Sci. 59:791.

Dexheimer, C.E., J.C. Meiske, and R.D. Goodrich. 1971. Comparison of ensiled high moisture and artificially dried shelled corn for finishing yearling steers. B-158.

DiCostanzo, A., L. Johnston, H. Chester-Jones, J.C. Meiske, M. Murphy, R. Epley, and L. Felice. 1995. Effects of feeding vomitoxin-contaminated barley on performance of feedlot steers. MN Cattle Feeder Rep. B-418.

DiCostanzo, A., L. Johnston, and M. Murphy. 1994. Feeding vomitoxin and mold-contaminated grains to cattle. In: Proc. 55th MN Nutr. Conf. and Roche Tech. Symp. Sept 19-21, Bloomington, pp 193-216.

DiCostanzo, A., H. Chester-Jones, S.D. Plegge, T. M. Peters, and J.C. Meiske. 1990. Energy value of maize gluten feed in starter, growing or finishing steer diets. Anim. Prod. 51:75.

Firkins, J.L., L.L. Berger, and G.C. Fahey, Jr. 1985. Evaluation of wet and dry distillers grains and wet and dry corn gluten feeds for ruminants. J. Anim. Sci. 60:847.

Gharib, F.H., R.D. Goodrich, J.C. Meiske, and H.A. Cloud. 1971. Comparison of corn stored at 11.5% moisture or 16.1% moisture in a steel bin with aeration. MN Cattle Feeder Rep. B-160.

Hanke, H.E., R.E. Smith, R.D. Goodrich, and J.C. Meiske. 1981. Type of corn (dry corn vs high mositure corn grain) and nitrogen supplement (urea vs soybean meal) for yearling steers. MN Cattle Feeder Rep. B-271.

Hanson, S., S.D. Plegge, and J.C. Meiske. 1984. Influence of feeding whole or rolled corn to Holstein steers. MN Cattle Feeder Rep. B-320.

Kennelly, J.J., G.W. Mathison, and G. de Boer. 1988. Influence of high-moisture barley on the performance and carcass characteristics of feedlot cattle. Can. J. Anim. Sci. 68:811.

Klopfenstein, T.J. and R.A. Stock. 1993. Feeding wet distillers and gluten feed to ruminants. In: Proc. 54th MN Nutr. Conf. and National Renderers Symp. Sept 20-22, Bloomington, pp 53-61.

Malone, D., D.B. Faulkner, G.F. Cmarik, R. Johnson, and D.F. Parrett. 1986. Factors influencing the feeding value of whole shelled corn. IL Beef Cattle Res. Rep. 53-54.

Miller, K.P., E.C. Frederick, J.C. Meiske, and R.D. Goodrich. 1971. Performance of Holstein steers fed corn stored and processed by three methods. MN Cattle Feeder Rep. B-159.

Poppert, G.L. and T.L. Mader. 1989. Roughage source and corn processing for step-up and finishing diets. NE Beef Cattle Rep. MP 54, pp 43-44.

Windels, H.F., A. DiCostanzo, M. Murphy, and R.D. Goodrich. 1995. Effect of deoxynivalenol from barley on performance and health of large frame crossbred steers. MN Cattle Feeder Rep. B-417.

Windels, H.F., B.W. Woodward, J.C. Meiske and R.D. Goodrich. 1994. The effect of combined use of trenbolone acetate and estradiol implants on response of large-frame crossbred steers to dietary energy sources. MN Cattle Feeders Rep. B-410.

Windels, H.F., R.D. Goodrich, and J. C. Meiske. 1976. Comparison of corn or barley, corn silage or alfalfa haylage + corn silage and housing systems for growing finishing cattle. MN Cattle Feeder Rep. B-220.

Windels, H.F., R.D. Goodrich, and J.C. Meiske. 1974. Comparison of housing systems and dry or high moisture barley for feedlot cattle. MN Cattle Feeder Rep. B-198.

Windels, H.F., J.C. Meiske, and R.D. Goodrich. 1970. Dry rolled vs. ground barley for finishing cattle. MN Cattle Feeder Rep. B-147.

Worksheet 1. *Determination of breakeven diet cost to evaluate feasibility of using alternative feeds.*

Current diet fed

Column

1 Ingredient	2 1b/hd/d	3 Price, $/lb	4 $/d	5 Ingredient DM, %	6 DM fed, lb
#					
#					
#					
#					
#					
#					
TOTAL					

Box 2 Cost, $/lb = _______

Box 1 Diet DM, % = _______

Box 3 Cost, $/lb DM = _______

Box 4 Current ADG, lb = _______

Box 5 Feed/ lb gain, as fed = _______

Box 6 Feed DM/ lb gain = _______

Box 7 Cost/ lb gain, $ = _______

New diet to feed

Column

1 Ingredient	2 DM fed, lb	3 Ingredient DM, %	4 lb/hd/d	5 Price, $/lb	6 $/d
#					
#					
#					
#					
#					
#					
TOTAL					

Box 8 New diet DM, % = _______

Box 9 New cost, $/lb = _______

Box 10 New cost, $/lb DM = _______

Breakeven diet cost determination

Box 11 Current feed cost/lb gain, $ = _______

Box 12 Expected change in DM required/lb gain = _______

Box 13 Expected DM/lb gain = _______

Box 14 Maximum new diet cost, $/lb DM = _______

Box 15 New diet DM, % = _______

Box 16 New diet breakeven cost, $/lb = _______