



LET THEM EAT CAKE (PEA RANGE CAKE) 2005 THE DAKOTA LAKES STAFF

INTRODUCTION:

The feeding of high protein “range cake” to supplement low quality forages is a common practice in much of the cow/calf production area of the Great Plains. Its use is especially prevalent where cows are wintered on the range as compared to in a feedlot. New rules with CAFO’s (concentrated animal feeding operations) may encourage livestock producers to do more feeding and backgrounding on the range. Practices such as heat synchronization require feeding an accurate dose of medication to each animal every day. Range cake provides a good carrier for this material and other additives the producer wishes to include in the diet. The animals cannot sort these ingredients when they are included in a uniform piece of range cake.

At the present time, cake is made from an unpredictable variety of products such as cottonseed meal, crop screenings, reject edible beans, wheat midds, etc. The quality and consistency of the ingredients and the cake itself consequently varies widely from manufacturer to manufacturer and even batch to batch. The belief by some producers that they are getting cake that contains chicken feathers and weed seeds is not without merit.

The high feed quality and binding properties of field peas makes them excellent candidates for inclusion in range cake and other pelleted feeds. This might be an excellent local market for peas. They definitely have a quality advantage over many of the ingredients now being used. They should have a transportation advantage over many other high-quality ingredients.

THE PROJECT:

With this in mind, the Dakota Lakes Research Farm decided to produce some range cake in the fall of 2005 for area producers to try. Fifteen hundred bushels of green peas (Cruiser) and five hundred bushels of shelled corn were made into two different versions of range cake using a portable pellet mill. This mill was owned (at that time) by Johnson’s Rancher Supply from Wall. Both versions used 75% peas and 25% corn by weight. They also both had molasses added (probably not necessary) at 70 lbs/ton and high potency Vitamin A and D supplement at 3 lbs/ton. One batch also had a high-phosphorus mineral plus micronutrient supplement added at a rate of 100 lbs/ton. The resulting cake would provide a complete mineral package if the cake was fed at one to

three pounds per head per day. The other batch was made without the supplemental mineral. Feeding that cake would require mineral supplement be offered free choice.

The following table shows the “recipe” and the cost of producing the cake with mineral.

Component	Pounds per Ton	Cost per Ton
Mineral	100	\$27.00
Molasses	70	\$9.80
Vitamin A and D	3	\$5.25
Peas	1500	\$68.51
Corn	500	\$17.13
Cost of Ingredients	2000	\$127.69
Caking Cost		\$57.00
Total Costs		\$184.69

In retrospect, the inclusion rate of 75% peas was a bit higher than is ideal to maximize throughput of the pellet mill. It was used in order to maintain a final product crude protein content of just slightly less than 20%. This level of protein is a compromise. On the one hand there is a desire to have higher protein to minimize the amount of cake that needs to be fed to meet protein needs of the animal but there is a need to provide feed enough product to assure every cow has an opportunity to eat. This means limiting protein level. The excellent binding quality of peas would allow much lower inclusion rates of peas. A small batch of cake consisting of 50% corn and 50% peas showed very good cake quality. The original plan called for making a batch of cake with DDG (dried distillers grain) as a component. Using equal quantities of peas, corn, and DDG would produce a product with almost 20% protein and good bypass or escape protein characteristics. The cost of ingredients would also be cheaper. We were not able to obtain the DDG on the day of the run so that batch was not made.

The cost of the ingredients used is quite reasonable at \$127.69 per ton for the batch with mineral. The ingredients for the batch without mineral cost just slightly over \$100/ton. The charge for making cake with the portable mill was \$57/ton. This was reasonable in light of the circumstances. It is likely that caking can be done more cheaply using a stationary mill with a higher duty cycle. Similarly, the same ingredients can be fed with comparable results by grinding or rolling the material and feeding it in bunks (sorting is an issue). Using peas and DDG in pellets or cake provides a means of improving the density and handling characteristics of DDG and assuring it is not sorted. Plans are still in place to try to make a small batch of creep feeding pellets using this recipe.

The cake was sold priced at \$160 and \$185 per ton for the no mineral and mineral batches respectively. This is equal to the cost of making it. The idea was to allow as many people as possible to try the product. There was significantly more demand for the cheaper “no mineral included” cake. That was a surprise since we had been told that including the mineral was important (it might be important to the cow but not necessarily to the guy with the money). The feed analysis follows.



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Report of Analysis

DWAYNE BECK
DAKOTA LAKES RESEARCH FARM
PO BOX 2
PIERRE, SD 57501

Reported: 12/28/2005
Received: 12/01/2005

	<u>As Received Basis</u>	<u>100% Dry Matter Basis</u>
<u>05S-20418</u> SHELLED CORN		
Total Moisture, %	16.6	0.000
Total Dry Matter, %	83.4	100
Crude Protein, %	7.83	9.39
Crude Fat (Ether Extract), %	3.15	3.78
Ash, %	0.990	1.19
Acid Detergent Fiber, %	2.14	2.57
Neutral Detergent Fiber, %	5.31	6.36
Calcium, %	0.00434	0.00520
Phosphorus, %	0.207	0.248
Potassium, %	0.273	0.327
<u>05S-20419</u> FIELD PEAS		
Total Moisture, %	10.5	0.000
Total Dry Matter, %	89.5	100
Crude Protein, %	22.7	25.3
Crude Fat (Ether Extract), %	1.01	1.13
Ash, %	2.96	3.31
Acid Detergent Fiber, %	5.99	6.69
Neutral Detergent Fiber, %	7.12	7.95
Calcium, %	0.0610	0.0682
Phosphorus, %	0.445	0.497
Potassium, %	1.08	1.21



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	As Received <u>Basis</u>	100% Dry <u>Matter Basis</u>
<u>05S-20420</u> COW CAKE 50% CORN/50% PEAS W/ A&D		
Total Moisture, %	10.1	0.000
Total Dry Matter, %	89.9	100
Crude Protein, %	14.0	15.6
Crude Fat (Ether Extract), %	2.30	2.56
Ash, %	3.09	3.44
Acid Detergent Fiber, %	4.91	5.46
Neutral Detergent Fiber, %	7.32	8.14
Calcium, %	0.120	0.133
Phosphorus, %	0.373	0.415
Potassium, %	1.00	1.11



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	As Received Basis	100% Dry Matter Basis
<u>05S-20421</u> COW CAKE 25% CORN/75% PEAS W/ A&D		
Total Moisture, %	9.71	0.000
Total Dry Matter, %	90.3	100
Crude Protein, %	16.5	18.2
Crude Fat (Ether Extract), %	1.90	2.10
Ash, %	3.56	3.94
Crude Fiber, %	4.29	4.75
Acid Detergent Fiber, %	5.60	6.20
Neutral Detergent Fiber, %	6.85	7.59
Nitrogen Free Extract, %	64.1	71.0
Calcium, %	0.150	0.166
Phosphorus, %	0.447	0.495
Potassium, %	1.19	1.32
Salt (Sodium X 2.54), %	0.340	0.377
Vitamin A, IU/lb	16700	18500
TDN (Proximate), %	76.0	84.2
NE/Lactation (Proximate), Mcal/lb	0.80	0.89
NE/Maintenance (Proximate), Mcal/lb	0.85	0.94
NE/Gain (Proximate), Mcal/lb	0.58	0.64

We do not analyze for vitamin D.



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	As Received Basis	100% Dry Matter Basis
<u>05S-20422</u> COW CAKE 25% CORN/75% PEAS W/ A&D AND MINERALS		
Total Moisture, %	9.01	0.000
Total Dry Matter, %	91.0	100
Crude Protein, %	16.8	18.5
Crude Fat (Ether Extract), %	2.05	2.25
Ash, %	6.35	6.98
Acid Detergent Fiber, %	5.04	5.53
Neutral Detergent Fiber, %	6.25	6.86
Calcium, %	0.704	0.774
Phosphorus, %	1.06	1.16
Potassium, %	1.18	1.30

FINAL REPORT

If you need additional analyses, please let us know.

Reviewed By: Lawrence Novotny