



Feed Management Concerns

Charles C. Stallings
Professor of Dairy Science
Virginia Tech, Blacksburg

FOB Price Relationships

	<u>Feb. 2006</u>	<u>Feb. 2007</u>
Corn, Chicago	\$2.18/bu	\$3.99/bu
	\$73/ton	\$133/ton
DDGS, Chicago	\$89	\$133
DDGS, NC	\$129	\$169

Cost of Protein

Soybean meal, 44% - \$223/ton
or \$.25/lb. protein

DDGS, 30% - \$169/ton
or \$.31/lb. protein

Nutrient Composition

National Research Council 2001

	<u>Corn</u>	<u>DDGS</u>
Crude protein, %	9.4	29.7
Starch, % est.	74	1.0
Net energy, mcal/kg	2.09	1.97
Fat, %	4.0	10.0
N. D. fiber, %	9.5	38.8
Phosphorus, %	.3	.83

Nutritional Limitations of DDGS

1. Protein quality
2. Oil content
3. Phosphorus

Protein Quality

- ❑ Lysine content is low especially in the rumen undegraded fraction
- ❑ Rations based on corn silage with corn grain are limited as to the amount of DDGS that should be included
- ❑ Inclusion of 20% of the ration dry matter as DDGS would be excessive under these conditions

Oil Content

- ❑ Ruminants are limited as to the amount of oil or fat they can tolerate especially unsaturated fats such as corn oil
- ❑ Usually no more than 7% of the ration dry matter should be fat
- ❑ If feeds such as whole cottonseeds or soybeans are fed at maximums (7 lbs./cow/day) no or little DDGS would be used

Phosphorus Content

- ❑ Can vary
- ❑ Is more than double the concentration in corn
- ❑ Needs to be considered in the context of overall feeding not just a source of phosphorus

Phosphorus estimates vary

	<u>NRC</u>	<u>CVAS</u>
Phosphorus, %	.83	.74

Impact of DDGS on Phosphorus in Total Ration

One pound of feed dry matter contains:

	<u>P, grams</u>
DDGS (.74% P)	3.36
Soybean meal (.71% P)	3.22
Corn (.3% P)	1.36
Corn silage (.25% P)	1.12

Impact of DDGS on Phosphorus in Total Ration

One pound of feed dry matter contains:

	<u>P, grams</u>	<u>Diff., g</u>
DDGS (.74% P)	3.36	
Soybean meal (.71% P)	3.22	.14
Corn (.3% P)	1.36	2.00
Corn silage (.25% P)	1.12	2.22

Impact of DDGS on Phosphorus in Total Ration

Ten pounds of feed dry matter contains:

	<u>P, grams</u>	<u>Diff., g</u>
DDGS (.74% P)	33.6	
Soybean meal (.71% P)	32.2	1.4
Corn (.3% P)	13.6	20.0
Corn silage (.25% P)	11.2	22.2

Impact of DDGS on Phosphorus in Total Ration

With a combination of replacement of soybean meal, corn, and corn silage with DDGS we could have an extra 10 grams per cow extra P; this would be with the maximum inclusion rate (20%) and most rations would be less than this

Impact

Most cows will have a P requirement between 60 to 90 grams/cow/day; the 10 extra grams of P per day would be more than 10% of the required in this example with full DDGS inclusion

Impact

With typical East Coast diets based on soybean meal, corn, and corn silage each one pound of DDGS fed will increase the P feeding by approximately one gram; if DDGS substitutes for higher P by-product feeds such as whole cottonseeds there may be no net change in P fed however