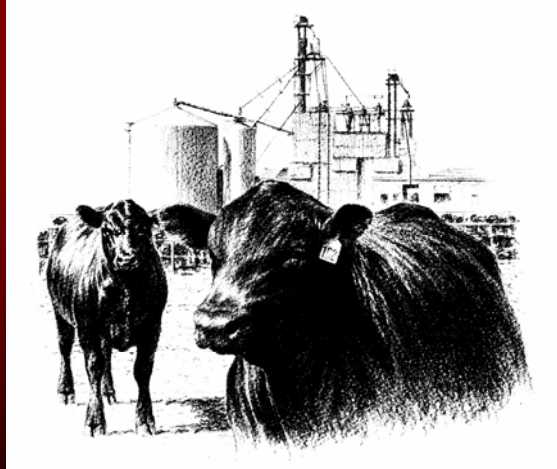


Use of “New Generation” DDGS in Ruminant Diets



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 Oct. 28, 2004

Nutrient Composition

Item	% of DM
Crude protein	28 to 36
RUP, % of CP	47 to 63
NEI, Mcal/kg	2.20
Fat	8.2 to 11.7
ADF	19 to 24
NDF	38 to 44
Ca	0.10 to 0.15
P	0.43 to 0.83

High-bypass potential
 with >80% SI digestion

NDF
 As effective as Alfalfa haylage
 Only 68% as effective as Corn silage

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Handling that causes particle separation will result in considerable variation of DDG or DDGS composition.

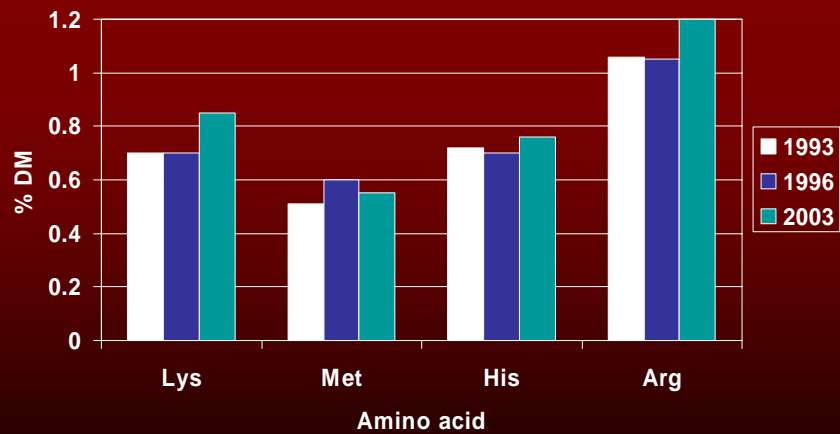
Akayezu et al., 1998

Fine particles (< 1 mm) represented 58% of the sample weight on average across 8 ethanol production facilities (CV 20.6%).

Harty et al., 1998

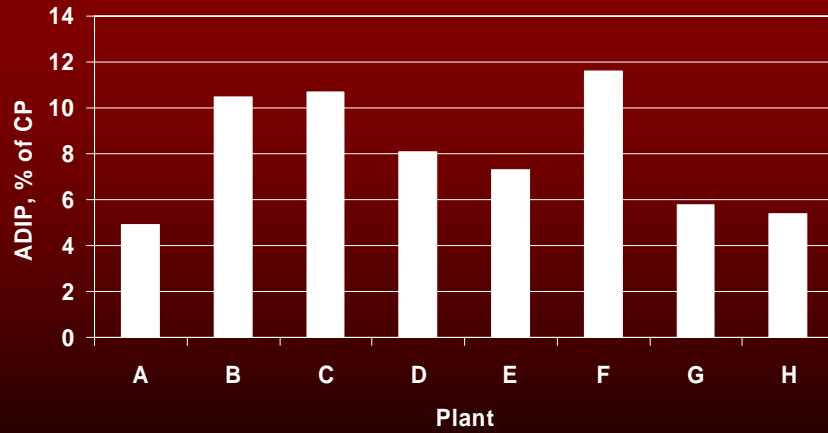
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Amino Acid Profile



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ADICP

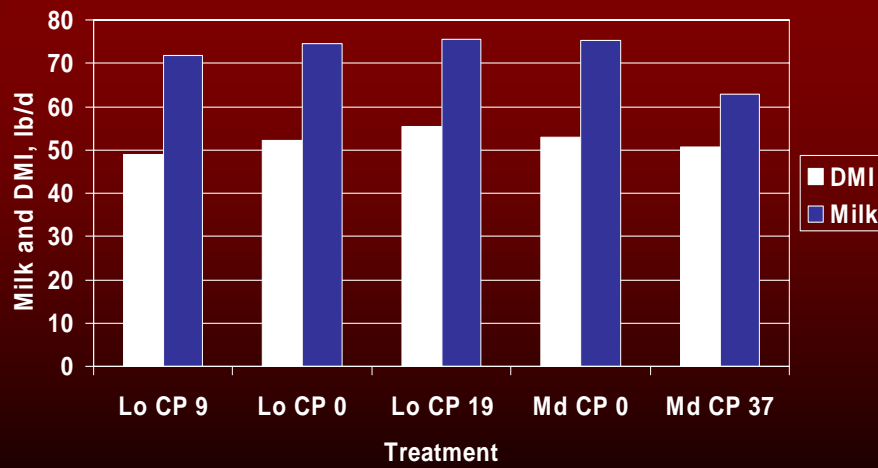


Harty et al., 1998

When ADIN > 13% N lightness correlated with ADIN and IARUP.

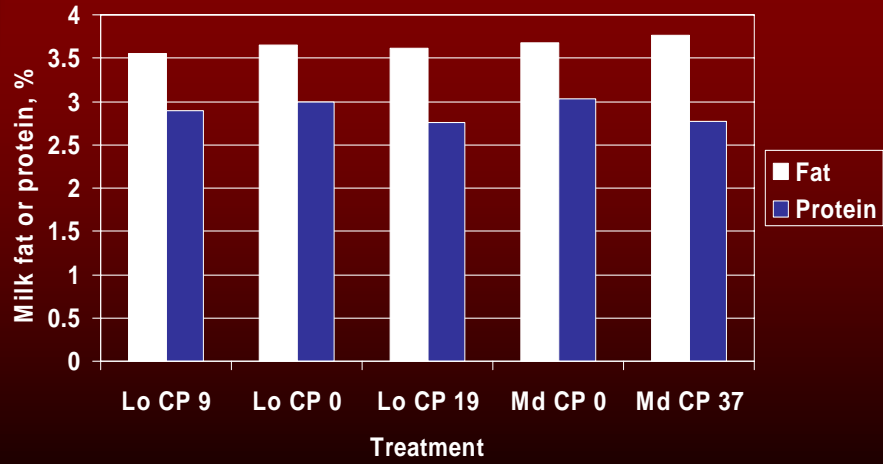
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Owen and Larson, 1991 (Ammoniated corn silage 50% diet DM)



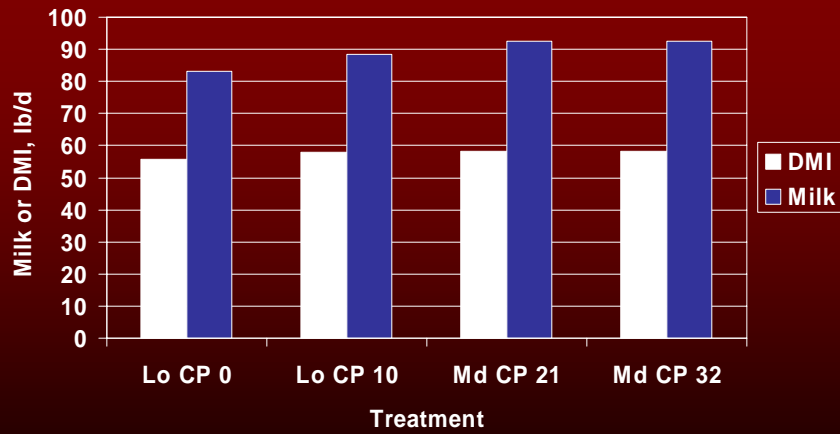
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Owen and Larson, 1991
 (Ammoniated corn silage 50% diet DM)



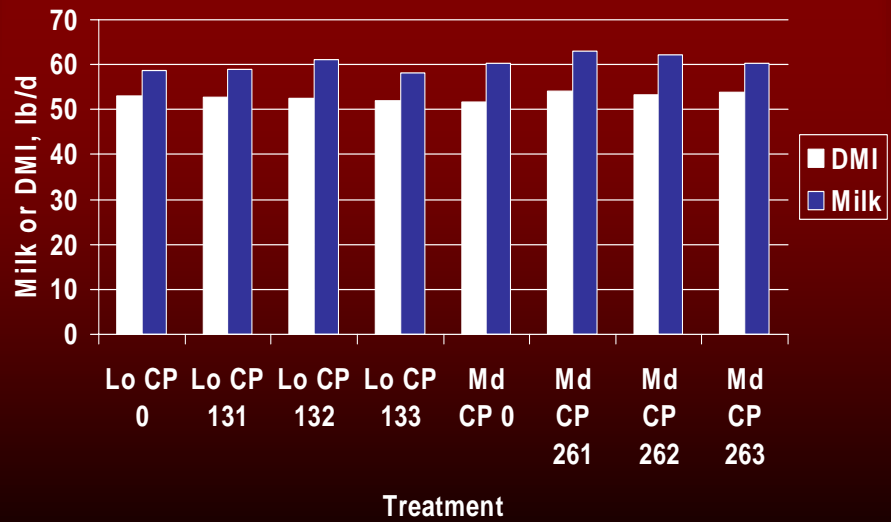
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Grings et al., 1992
 (Alfalfa 39% diet DM)



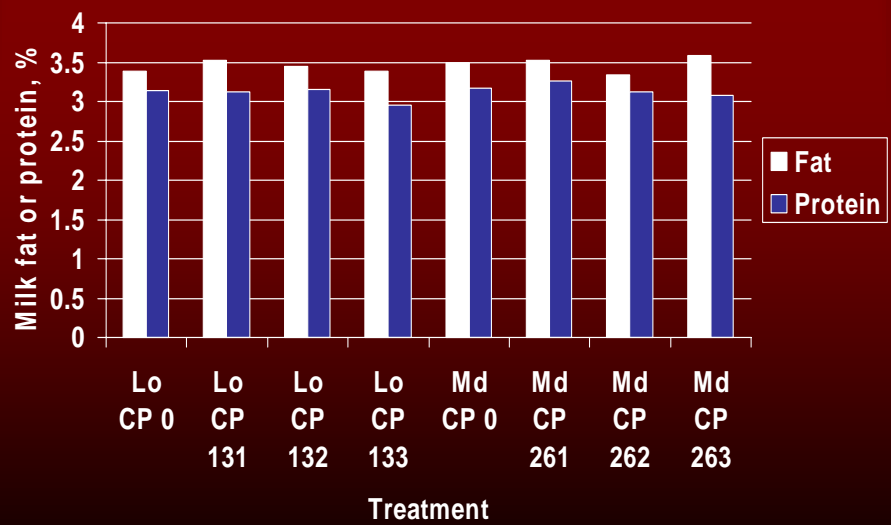
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Powers et al., 1995
(Corn silage 50% diet DM)



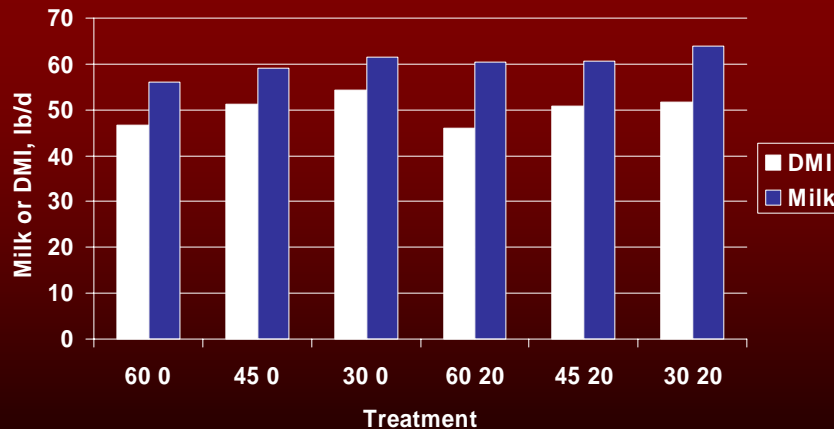
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Powers et al., 1995
(Corn silage 50% diet DM)



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Staples et al., 1995 (corn silage 30%, 45%, 60% diet DM)



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Recommendations

- ❖ **Research suggests DDGS can comprise between 20% and 26% of the diet DM**
 - **Limiting factors: CP, RUP and lysine content**
 - ✓ Balance for RUP, RDP, CP and lysine
 - ✓ Limit CP coming from corn sources to less than 60% of total CP
 - Corn grain, silage, DDGS, gluten meal, gluten feed
- ❖ **DDGS replaces forage NDF at 66% effectiveness**
 - For every 1 lb forage replaced, use 1.5 lb NDF from DDGS

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DDGS Research in Ruminants

❖ NCR-88 Beef Growing-Finishing Systems

- Summarized studies in 1984 (NCR No. 297)
 - ✓ Characterization of fermentation by-products
 - Higher protein concentration than corn
 - Similar or greater RUP
 - Similar energy concentration as corn
 - ✓ DDGS as a protein source
 - Replacement for other protein sources
 - » When combined with urea of equal value as SBM
 - As a bypass source
 - » Fortified with urea > urea alone
 - » More efficient protein source when combined with urea than SBM
 - ✓ DDGS as an energy source
 - “if abundant supplies of wet distillers’ grains should become available—as a result, for example, of increased production of fuel alcohol—this by-product could be used as an energy source in livestock feeds.”

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Beef Feedlot Research

❖ Focus of most of the DDGS and WDGS work

- No complications with composition of gain
- Typically require lower fiber and CP concentrations

❖ Variable

- Crude protein sources
- Crude protein concentrations
- Age and/or weight at feedlot entry

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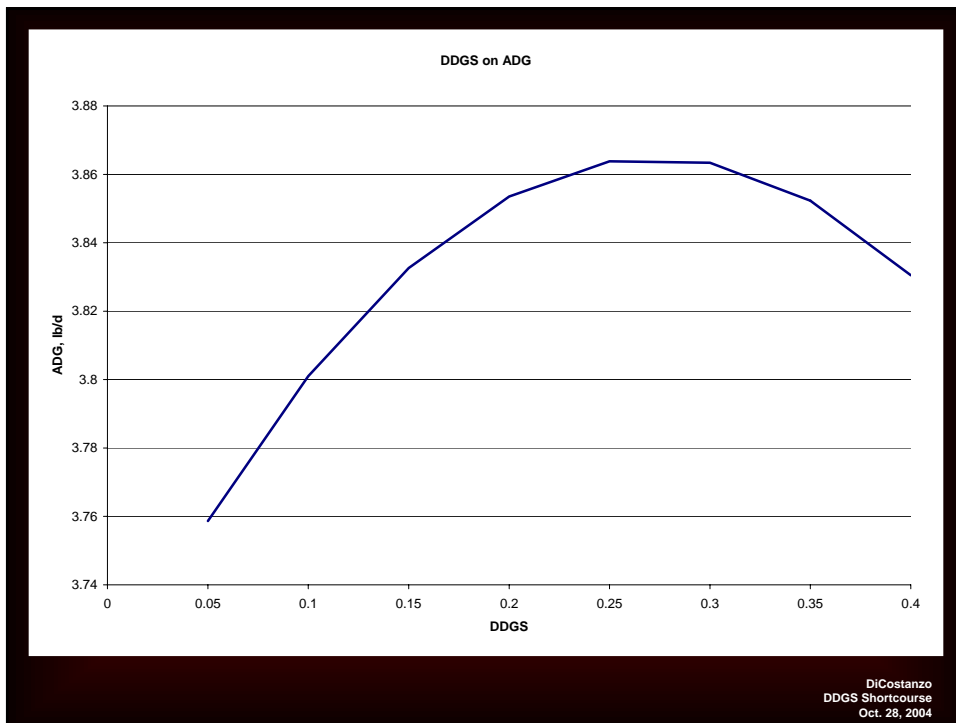
Research

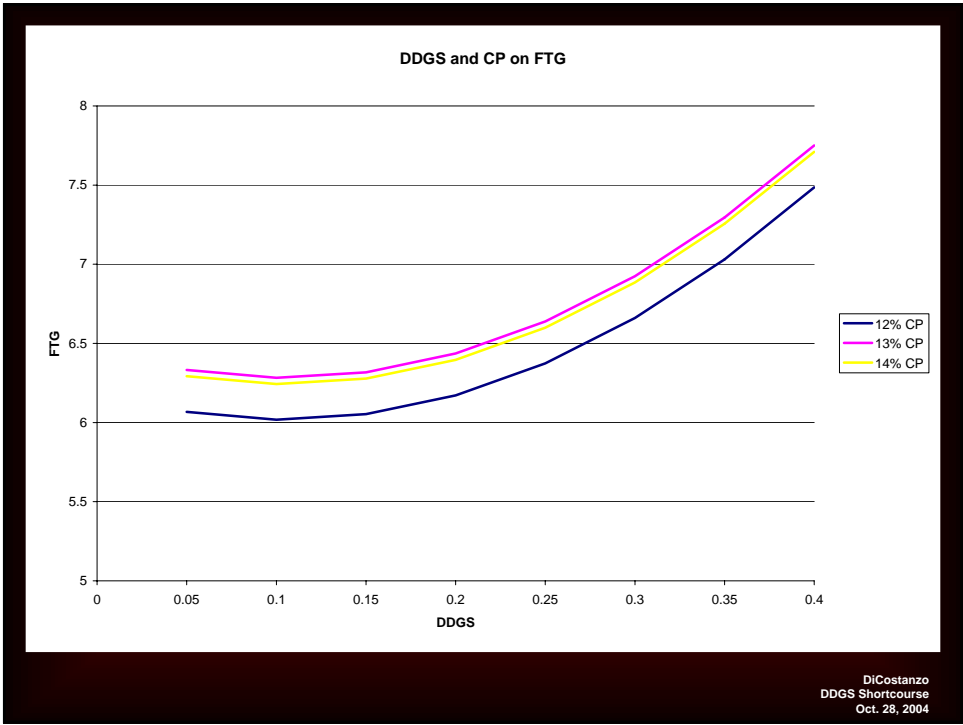
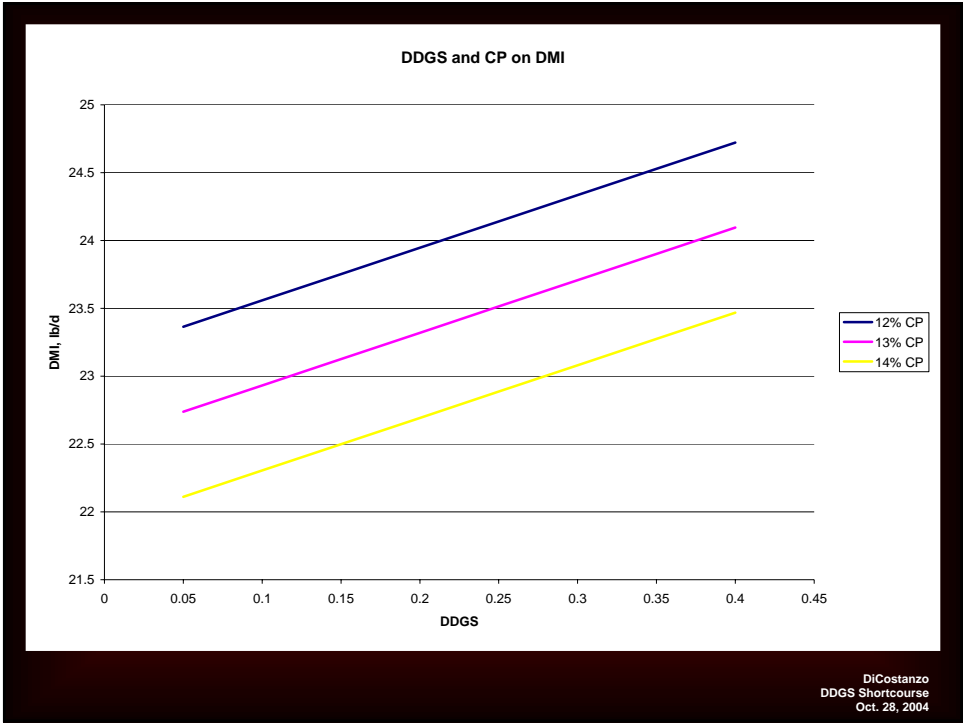
❖ Data from studies conducted since 1990

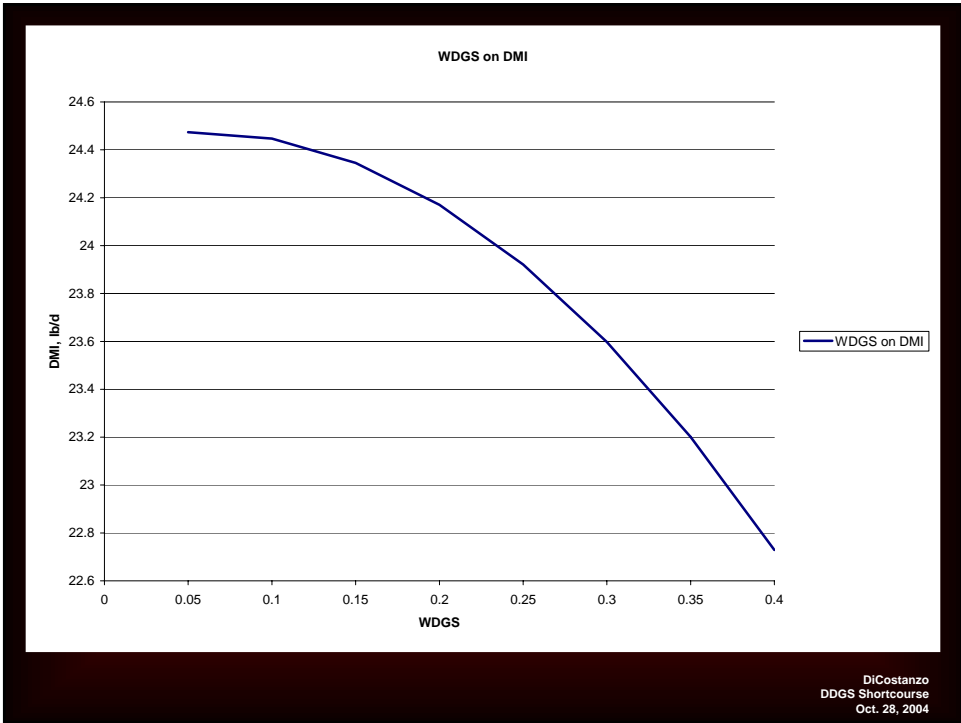
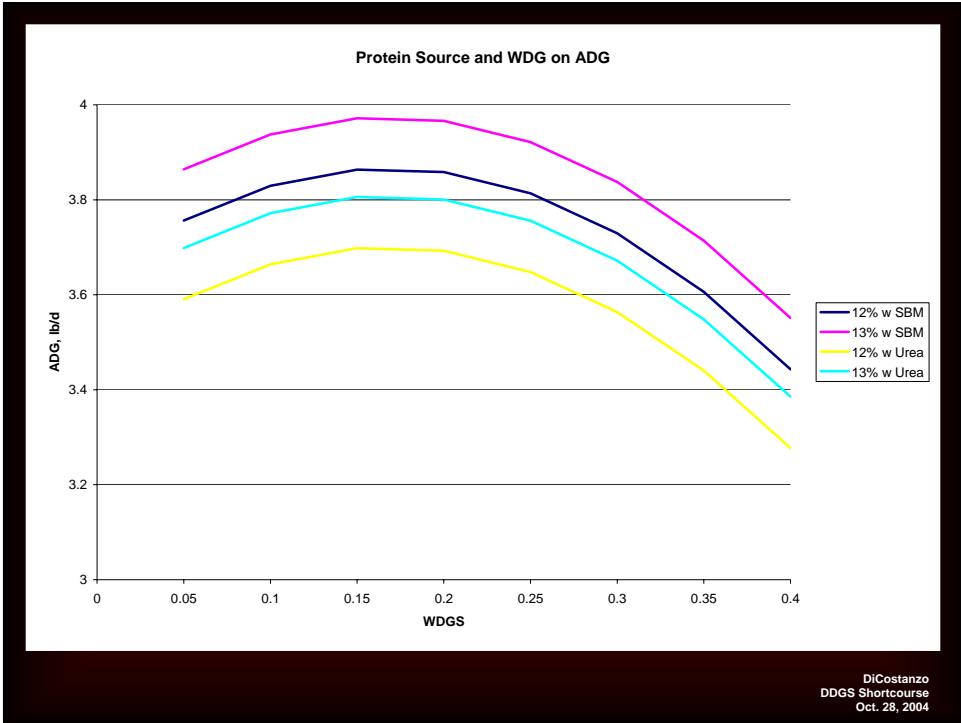
❖ 264 pens housing 1,541 head of cattle

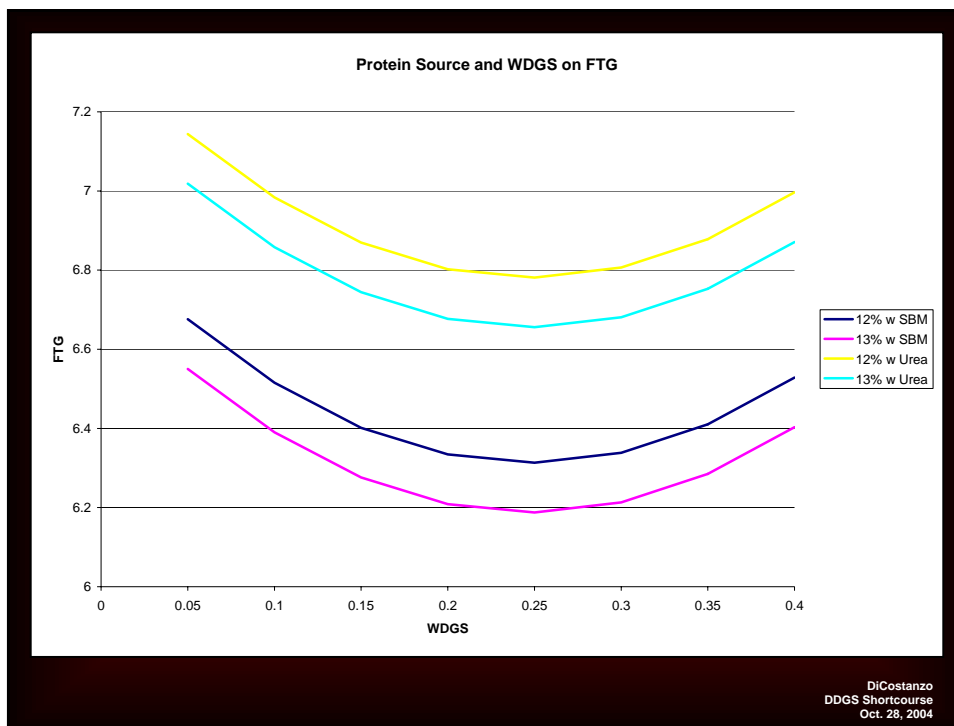
❖ 796 lb (361 kg) initial weight

❖ NE, IA, KS, SD









Recommendations

- ❖ Feed between 25% and 30% DDGS for enhanced gain
- ❖ Intake response is linear, and greater at lower dietary CP
- ❖ Feed 10% DDGS for enhanced feed conversion
- ❖ Feed conversion response is greater at lower dietary CP



Thank You!

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