Using Distillers Grains in the Dairy Ration

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Introduction

- **Distillers grains is a good energy and protein feed source to include in livestock rations.**
- **Several different terms will be used throughout this presentation:**

  CDG: Corn Distillers Grains

  DDG: Dried Distillers Grains

  DDGS: DDG + Solubles
- **This presentation will review the results of recent research at SDSU and elsewhere with feeding distillers grains , both wet and dried, to dairy cattle.**

The Composition of Distillers Grains

Item	% of DM
Crude Protein	30-36
RUP, % of CP	47-57
NE_L, Mcal/lb	1.00
Fat	9.8
ADF	19.0
NDF	38.0
Ca	0.15
P	0.83

Protein in Distillers Grains

- **> 30% of DM; more than old "book values"**
  - ***Similar for DDG & DDGS***
- **Good source of Ruminally Undegradable Protein (~55% RUP)**
  - ***RUP is slightly less for wet vs. dried DG***
- **Protein quality:**
  - ***Fairly good quality***
  - ***Lysine is the first limiting amino acid***

Production Response When Fed CDG

- **The same as[1,2,3] or greater[4] than when fed SBM**
- **Increased[4] or no change[5] when supplemented with RPLM**
- **Similar to when fed a blend of protein supplements (SBM, FM, CDG)[5]**

[1] Schingoethe et al., J. Dairy Sci. 66:345, 1983 (Wet CDG)

[2] Schingoethe et al., J. Dairy Sci. 82:574, 1999 (Wet CDG)

[3] Owen & Larson, J. Dairy Sci. 74:972, 1991 (Dried CDG)

[4] Nichols et al., J. Dairy Sci. 81:482, 1998 (Dried CDG)

[5] Liu et al., J. Dairy Sci. 83: 2075, 2000 (Dried CDG)

Whiskey or Fuel Ethanol Distillers Grains?[1]

When fed DDGS from Whiskey or Fuel Ethanol Plants:

- **Similar milk production whether DDGS was from whiskey or ethanol manufacturing**
- **Higher production than when fed SBM**
- **If DDGS was dark (heat damaged?), production was the same as when fed SBM**

[1] Powers et al., J. Dairy Sci.78:388, 1995

Determining the Energy Value of Wet Corn Distillers Grains

Energy in CDG

- **Today's CDG contains 7-11% more energy than "book values"**

  DE = 1.84 Mcal/lb vs. 1.72

  ME = 1.64 Mcal/lb vs. 1.53

  NE_L = 1.00 Mcal/lb vs. 0.90

Brouk, et al. J. Dairy Sci. 77 (Suppl. 1): 234, 1994

Wet vs. Dried CDG

- **Nutrient content of DM is the same for both**
- **Considerations with wet CDG:**
  1) ***Can usually store only 5-7 days***
  2) ***May need preservatives (e.g. propionic acid or other organic acids, etc.)***
  3) ***Limited economical hauling distances***
  4) ***Rations may be too wet which could limit total DM intake, especially if ensiled forages are also fed***

Current Research to Increase the "Shelf Life" of Wet CDG

- **Storage in silo bags**

  K. Tjardes & C. Wright, SDSU, 2001

- **Blend with soyhulls**

  K. Kalscheur & A. Garcia, SDSU, 2001

- **Preservatives**

  Various industry groups

How Much CDG Can be Fed?

- **Recommend max. of ~ 20% of ration DM**

  e.g. ~10-13 lb/d of Dried; ~30-40 lb/d of Wet

  Usually no palatability problems

  Can usually formulate nutritionally balanced diets

- **At 30% of DM:**

  May decrease DMI, especially if Wet CDG

  May feed excess protein

Example Ration Considerations

- **Diets containing 50:50 forage:concentrate**

  1) If equal proportions of Alfalfa & Corn Silage*:*

  CDG can replace most or all protein suppl.

  2) If mostly corn silage:

  More CDG can be fed but may need some other protein supplement, check Lys, & P

  3) If mostly alfalfa:

  Less CDG likely needed to supply diet CP

Other Corn Products as Feeds

- **Corn Gluten Meal**

  High Protein (60%) & High RUP (55% of CP)

- **Corn Gluten Feed**

  Med. Protein (25%), Low RUP (25% of CP), Good Energy (NE_L = 0.86 Mcal/lb)

- **Corn Distillers Solubles**

  Med. Protein (18% CP),

  Good Energy (21% EE; NE_L ~0.91 Mcal/lb)

  Often blended with CDG as CDG+Solubles

Conclusions

- **CDG is a good protein and energy feed to include in rations of dairy cattle.**
- **The nutrient content of the dry matter in CDG is essentially the same for both wet & dried CDG.**
- **The nutrient content is similar for CDG & DDGS although DDGS contains more P.**

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