Use of “New Generation” Distiller’s Dried Grains with Solubles in Livestock and Poultry Production Systems

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What is DDGS?

- Co-product of the dry-milling ethanol industry
  - Corn DDGS - Midwestern US
  - Wheat DDGS - Canada
  - Sorghum (milo) DDGS - Great Plains US
  - Barley DDGS
  - Rye DDGS
DDGS Quality is Variable

- Color ranges from very light to very dark
- Odor ranges from sweet to smoky or burnt
- Range in concentration in selected nutrients:
  - Dry matter – 87 to 93%
  - Crude protein – 23 to 29%
  - Crude fat – 3 to 12%
  - Ash – 3 to 6%
  - Lysine – 0.59 to 0.89%

Source: Cromwell et al. (1993)
“New Generation” vs. “Old Generation” DDGS

Lower Quality, Less Digestible DDGS

High Quality, Highly Digestible DDGS
Considerations for Selecting DDGS Sources for Swine and Poultry

- Must be golden color
  - “New Generation” DDGS has higher amino acid digestibility compared to “old generation” DDGS

- Produced by new Midwestern plants
  - Higher nutrient content and digestibility than DDGS from “old generation” plants
The Use of DDGS in Swine Diets
Nutritional Value of “New Generation” DDGS for Swine

- “New Generation” DDGS is higher in digestible nutrients compared to “Old Generation” DDGS

- Economical partial replacement for:
  - corn
  - soybean meal
  - dicalcium phosphate

- Value added properties
  - reduce P excretion in manure
  - increase litter size weaned/sow
  - gut health benefits?
Maximum Inclusion Rates of “New Generation” DDGS in Swine Diets
(Based Upon University of Minnesota Performance Trials)

- Nursery pigs (> 7 kg)
  - Up to 25%

- Grow-finish pigs
  - Up to 20% (higher levels may reduce pork fat quality)

- Gestating sows
  - Up to 50%

- Lactating sows
  - Up to 20%

Assumptions: no mycotoxins
formulate on a digestible amino acid and available phosphorus basis
The Use of DDGS in Poultry Diets
Nutritional Value of DDGS for Poultry

- Must use “new generation” DDGS
  - Light color = high amino acid digestibility
- Excellent energy and available phosphorus source
- Nutritional value higher than previously thought
- Unidentified growth factors?
  - 5% DDGS resulted in 17-32% improvement in gain
  - 3% DDGS in turkey breeder hen diets increased egg numbers and hatch
- Effective partial replacement for corn and soybean meal
Recommended Inclusion Rates of DDGS for Poultry

- Broilers and Turkeys
  - 5-10% inclusion rates (Starter/Finisher)
    - Without energy adjustments
  - > 10%
    - With adjustments for lys, met, thr, trp, and energy

- Chicken Egg Layers
  - 10% inclusion rate
The Use of DDGS in Dairy Rations
Nutritional Value of DDGS for Dairy Cows

- Excellent protein source (28% crude protein)
- High in by-pass protein
- High in NDF (44%)
- Very palatable – increases dry matter intake
- Effective partial replacement for corn and soybean meal
Recommended Feeding Levels of DDGS for Dairy Cows and Replacements

- **Lactating dairy cows**
  - Up to 30% DMI under normal feeding conditions
  - > 30% DMI if BST is used

- **Calves**
  - Up to 20% DMI

- **Replacement heifers**
  - Up to 25% DMI
The Use of DDGS in Beef Rations
Nutritional Value of DDGS for Beef Cattle

- Excellent protein source (28% crude protein)
- High by-pass protein
- Excellent source of essential minerals (P and K)
- Improves rumen health
- Very palatable
- 1.8 times more value compared to soybean meal
Recommended Feeding Levels of DDGS for Beef Cattle

- Creep feeding
  - Up to 20%

- Feedlot cattle
  - Up to 40% DMI

- Receiving/starting cattle
  - Up to 20%

- Brood cows
  - Up to 35% of supplement
We have developed a DDGS web site featuring:

* research summaries
  - swine, poultry, dairy, & beef
  - DDGS quality
* presentations given
* links to other DDGS related web sites
* international audiences