Application of Renewable Energy Co-products in Feed --- A Poultry Feed Perspective

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UTILIZATION OF BYPRODUCTS

- Nutrient type and concentration (+ or -)
  - Digestibility
- Product variability
- Presence of contaminants (bird health; production of food)
- Handling characteristics & supply
- Interactions with other ingredients in feed
- Cost (vs competing ingredients/supplements)
UTILIZATION OF BYPRODUCTS

Research to confirm best fit and limitations

What does the turkey tell us about the product?

RESEARCH TO ENHANCE UTILIZATION OF COPRODUCTS IN MN TURKEY FEEDS

DDGS
- Dry product form
- Residual – corn fermentation
- Source of amino acids and energy
- Partial substitution for corn and SBM in feed

Crude glycerin
- Liquid
- Residual – biodiesel production
- Glycerol
- Source of energy
- Partial substitution for corn
UTILIZATION OF DDGS—WHAT IS KNOWN

- Corn DDGS composition
  - Protein, fat, fiber, phosphorus, xanthophylls
- Processing
  - Heating and amino acid digestibility
  - Heating and phosphorus availability
- Usage levels
  - Age and poultry type
    - 5-30% possible

RESEARCH TO STUDY MINERAL EXCESS

- Dietary Electrolyte Balance (DEB)
  - Sodium, chloride, potassium, sulfur
- Source of electrolytes
  - Corn, ethanol production process
  - Other feed ingredients and supplements
- Impact of Imbalance
  - Flock performance, excreta condition, skeletal integrity (welfare issue)
RESEARCH QUESTION – IS DEB A CONCERN IN FEEDS WITH DDGS?

▪ “Short Answer” – It depends……
  – Not an issue in corn/soy diets
  – Can be an issue when
    ▪ Diet also contains canola meal (high sulfur)
    ▪ Diet chloride level is excessive

GLYCERIN-BIODIESEL PRODUCTION

▪ Glycerol
▪ Free fatty acids
▪ Sodium, potassium
▪ Methanol
USE OF CRUDE GLYCERIN IN MARKET TURKEY DIETS

- Glycerin Addition
  - No negative effects on performance to market with level of 6% with correction in diet protein level
  - Pellet quality improved with glycerin addition

RELATIVE VALUE OF GLYCERIN UNDER HIGH FEED OR INGREDIENT COST (% OF LOW FEED COST)
IMPORTANCE OF RESEARCH FINDINGS-RENEWABLE ENERGY COPRODUCT FEEDING

- Coproduct feeds-high level of characterization
  - Performance; poultry health
- Processing conditions can affect final feeding value
  - Communications between plant, supplier, and nutritionist
- Value is relative to other ingredients

DDGS FEEDING RECOMMENDATIONS

- High inclusion levels requires additional information (> 10%)
  - Amino acid digestibility
  - AA specs should include tryp, arg, val, iso
    - Met vs Met + Cys
    - Use care in use of supplemental thr
      - Less than 6% of requirement
    - Lowered protein regimens
  - Fat Content (Metabolizable energy)
  - Electrolytes Na, Cl, K, S (DEB)
- Funding and supplies provided by
  - AURI/MN Corn/MN Soybean Association
  - Central Bi Products
  - CSC
- Technical support
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