Corn Ethanol Plants, Oil Extraction, and the Changes in Nutrient Composition of Distillers Grains?

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DDGS Symposium

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ILLUMINATE® Status

• Introduced four years ago to swine segment
  – Used in feeding about 40-50 million pigs/yr (50%)
  – Used in several large poultry systems nationwide
  – Ruminant model being finalized

Right Source finds Right Value for Livestock Producer
ILLUMINATE® Process

Sampling
• Feed Mills
• Ethanol Plants

Central Laboratory
• NIR
• Wet Chem
• HPLC
• Digestibility Assay

NUTRIQUEST Database/Brill
• Energy Equations
• Digestible AA
• Available P
• Relative Values

Lab Results

Loadings or Formulas

Client
NUTRIQUEST Procedure

- DDGS samples were obtained from ILLUMINATE® customers and ethanol plants as normal course of business.
- Approximately 130 plants were used in the 2011 and 2012 estimates while 134 for current estimates.
- Considered oil extraction if less than 10% oil (crude fat, as fed basis), while some areas will be producing some high 9% oil products without oil extraction.
- Sample analysis are via NIR calibrations supported by wet chemistry.
Measurements:

- Proximate type assays (NIR): Crude Protein, Crude Fat, Crude Fiber, Dry Matter
- Minerals (WC/NIR): Ash, Phosphorus, S, Na, Zn, Cu, Mg, Mn, and Fe
- Other assays as base (WC/NIR): Starch, ADF, NDF, residual sugars, ADICP, NDICP, and more being added.
- Amino Acids (NIR): (Lys, Met, Thr, Trp, Val, Ile, Leu, and more)
- Digestibility (Today involves adjusted IDEA assay, with other components for validation).
- Physical assays (WC/NIR): Particle Size, Std Dev, Flowability Index
- Energy (WC/Calculations): Gross energy, animal energy values (Swine ME and NE, Poultry TME and AME) based on calculations from analytical components.
Objective

To gain insight into the prevalence of oil extraction of DDGS over the last 24 months.

- Format:
  - Show status of April 2011
  - Show Status of April, 2012
  - Show status of April, 2013
NUTRIQUEST Survey Results
Data Coverage by NUTRIQUEST

Number of ethanol plants per State in ILLUMINATE® in April 2011
(132 plants)

* Some states not included due to sample size
Data Coverage by NUTRIQUEST

Percentage of ethanol plants in each state with different oil levels from ILLUMINATE® in April 2011

- > 10%
- 10-9%
- 9-8%
- 8-7%
- < 7%

Graph showing the percentage of ethanol plants in each state with different oil levels.
Data Coverage by NUTRIQUEST

Number of ethanol plants per State in ILLUMINATE® in March 2013 (134 Plants)

- IA: 35
- IL: 8
- IN: 9
- MI: 4
- MN: 18
- MO: 4
- ND: 11
- NE: 11
- NY: 2
- OH: 6
- SD: 15
- WI: 5
Data Coverage by NUTRIQUEST

Percentage of ethanol plants in each state at different oil levels from ILLUMINATE® in March 2013

- > 10%
- 10-9%
- 9-8%
- 8-7%
- < 7%

States: IA, IL, IN, MI, MN, MO, ND, NE, NY, OH, SD, WI

Years: 2011, Apr-12, Jul-12, Apr-13
Data Coverage by NUTRIQUEST

Percentage of ethanol plants per State  Less than 9 %

- < 9% Oil 2011
- < 9% Oil July 2012
- < 9% Oil April 2012
- < 9% Oil April 2013

If assuming 10% fat and less are deoiled then 85% of plants
Summary

• In the last 2 years plants extracting oil at less than 9% has increase by 4 fold.

• Overall impact was a average drop from 10.0% oil average in 2011, then to 9.0% oil average in April 2012, and 8.1% today.

• Total Oil removed from Corn is estimated to be 873 Million lbs of oil or 436,000 tons at $900/ton = $392 million dollars of corn oil removed.

• Expectation is that ethanol plants will continue to improve the processes and remove another 1 % oil in 2013, but progress has been very slow so far.
Thank you!