

# Experiences With Developing a Commercial Swine Feeding Program Utilizing DDGS

Kevin Herkelman, Ph.D.

Swine Technical Service Nutritionist

Land O' Lakes Feed

[klherkelman@landolakes.com](mailto:klherkelman@landolakes.com)

# DDGS Presentation Outline

- Who is Land O'Lakes?
- Background
  - Product Availability
  - Value of DDGS for Swine vs. other species
- Factors Influencing Value of DDGS in Swine Diets
  - Nutrient Content
  - Product Variation
  - Price
  - Other Factors
- Closeouts from Commercial Units Using DDGS
- Market Positioning

# Who is Land O'Lakes?

- National food and agricultural cooperative
- Owned by >7,000 producer members and 1,300 local community cooperatives
- Land O'Lakes provides member co-ops:
  - Feed
  - Seed
  - Plant food
  - Crop protection products

# Who is Land O'Lakes?

- Headquarters in Arden Hills, Minnesota
- Annual sales > \$6 Billion (2001)
- >6,000 employees
- Process >10 Billion pounds milk annually
- Market >300 Dairy Products worldwide
- In U.S., #1 marketer of branded butter and deli cheese.

# Who is Land O'Lakes?

- Purina Mills is part of our system in the U.S.
- Leading Manufacturer in North America of:
  - Dairy, beef and swine feed
  - Alfalfa seed
  - Plant and crop protection products

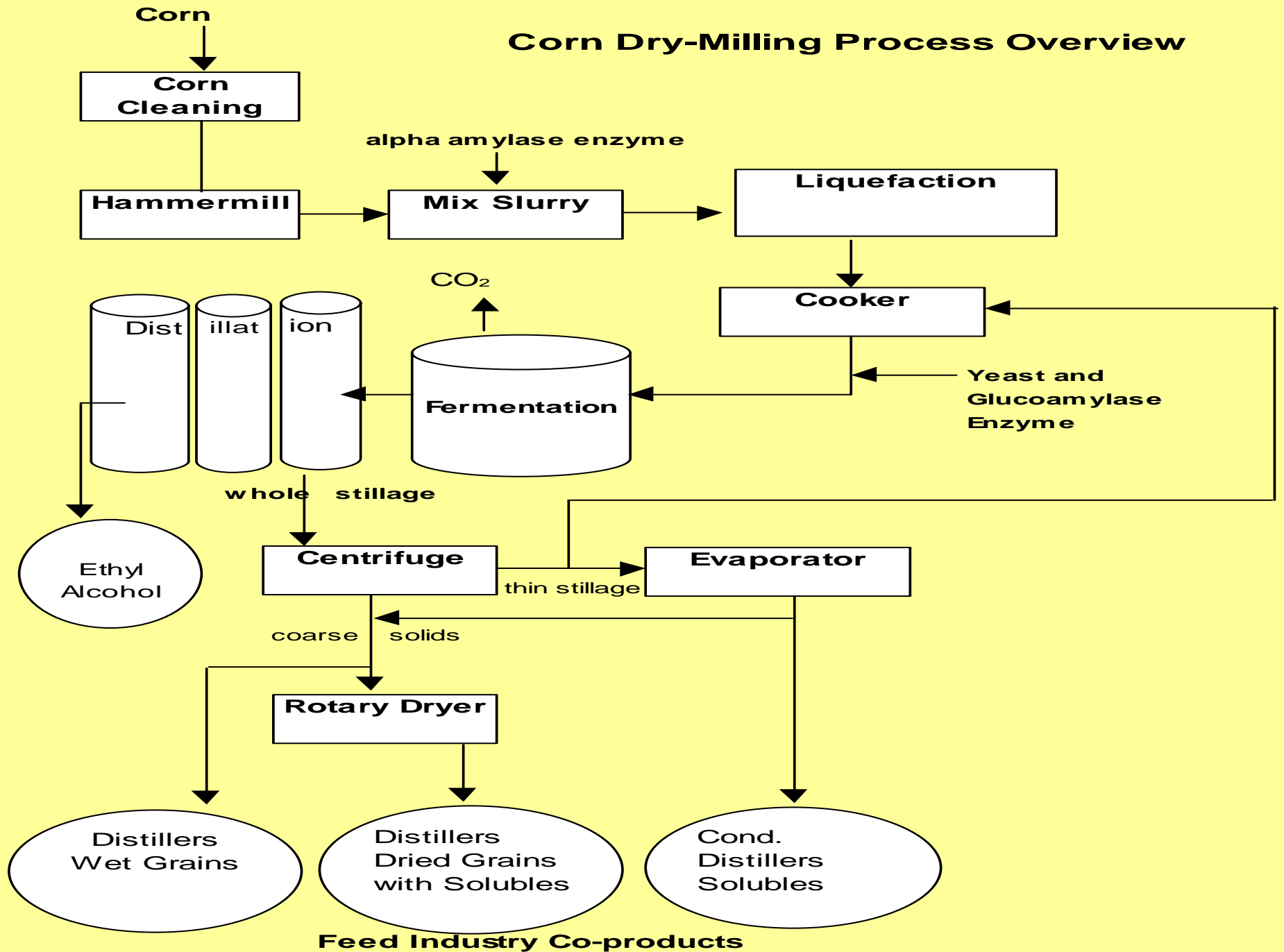
# LongView Animal Nutrition Center

- 1,188 acre Research Farm
- 45 min. west of St. Louis, MO
- R&D for: Dairy, swine, beef, horse, dog, cat, rabbit, deer, lab animal (mice, rats, and ferret) feeds.
- **Focus:** New products and cutting edge technology.

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# Corn Dry-Milling Process Overview



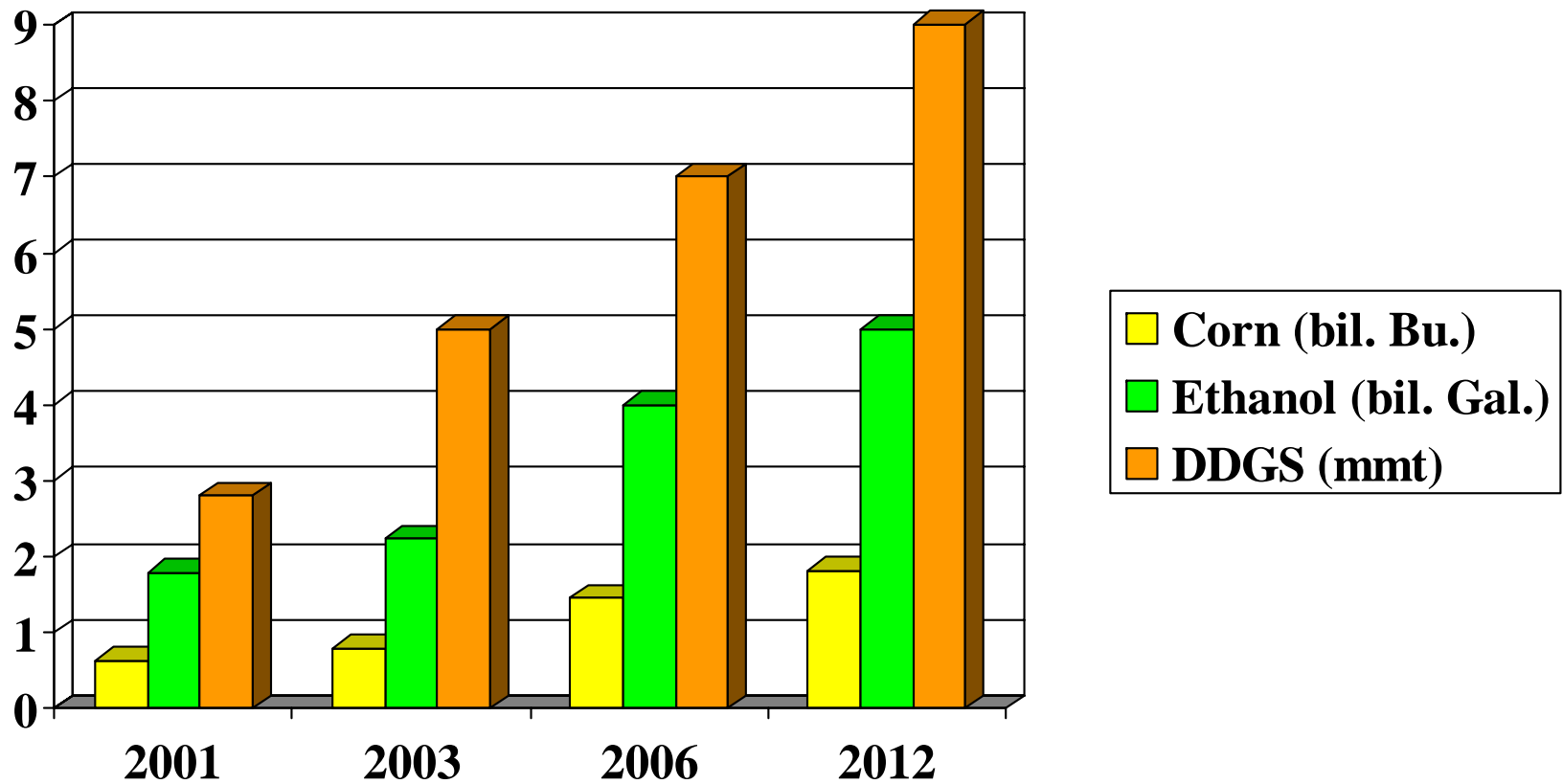


# Distiller's Dried Grains with Solubles



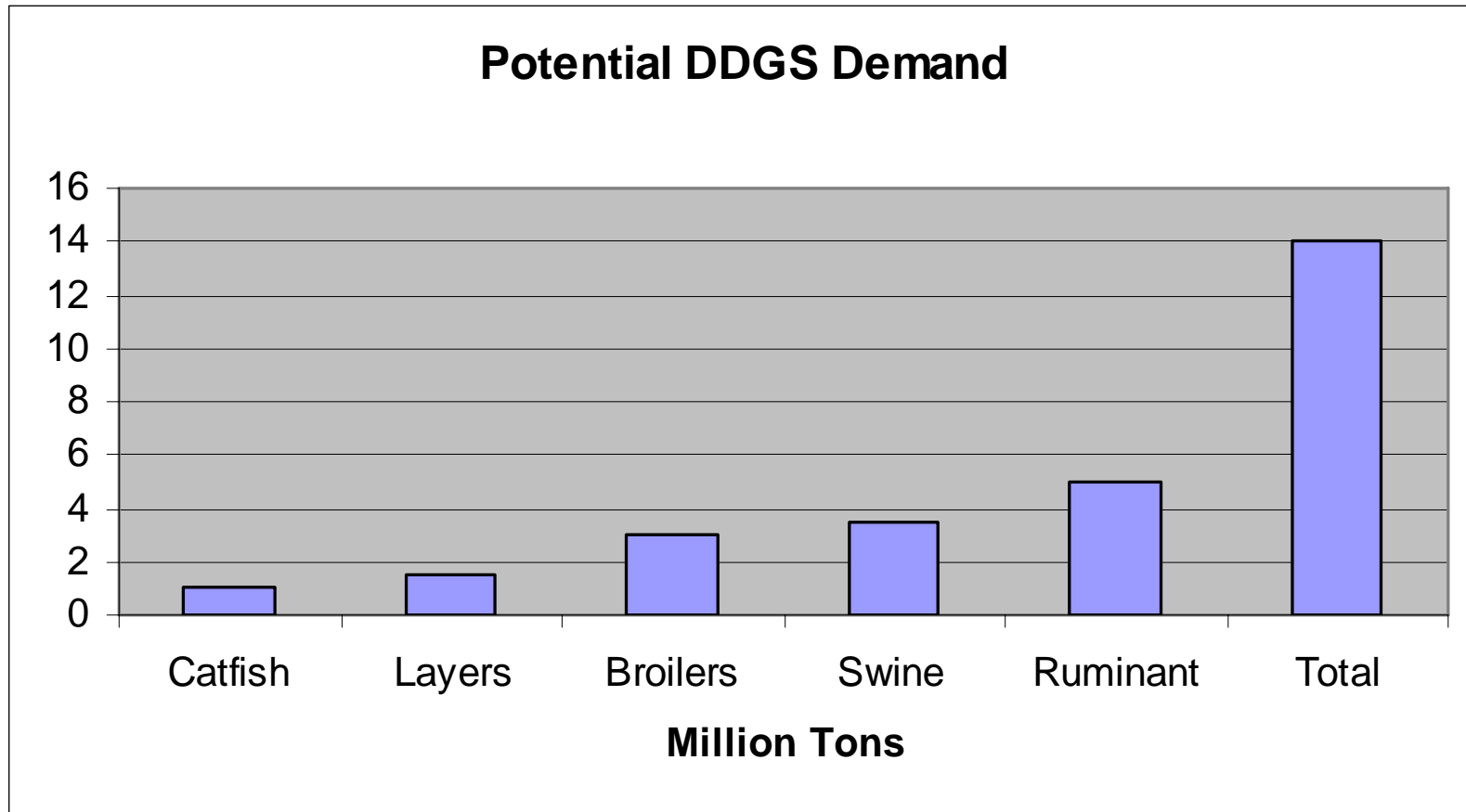
# United States Ethanol Outlook

Land O' Lakes 2002



# Potential use of DDGS

(Land O' Lakes 2002)



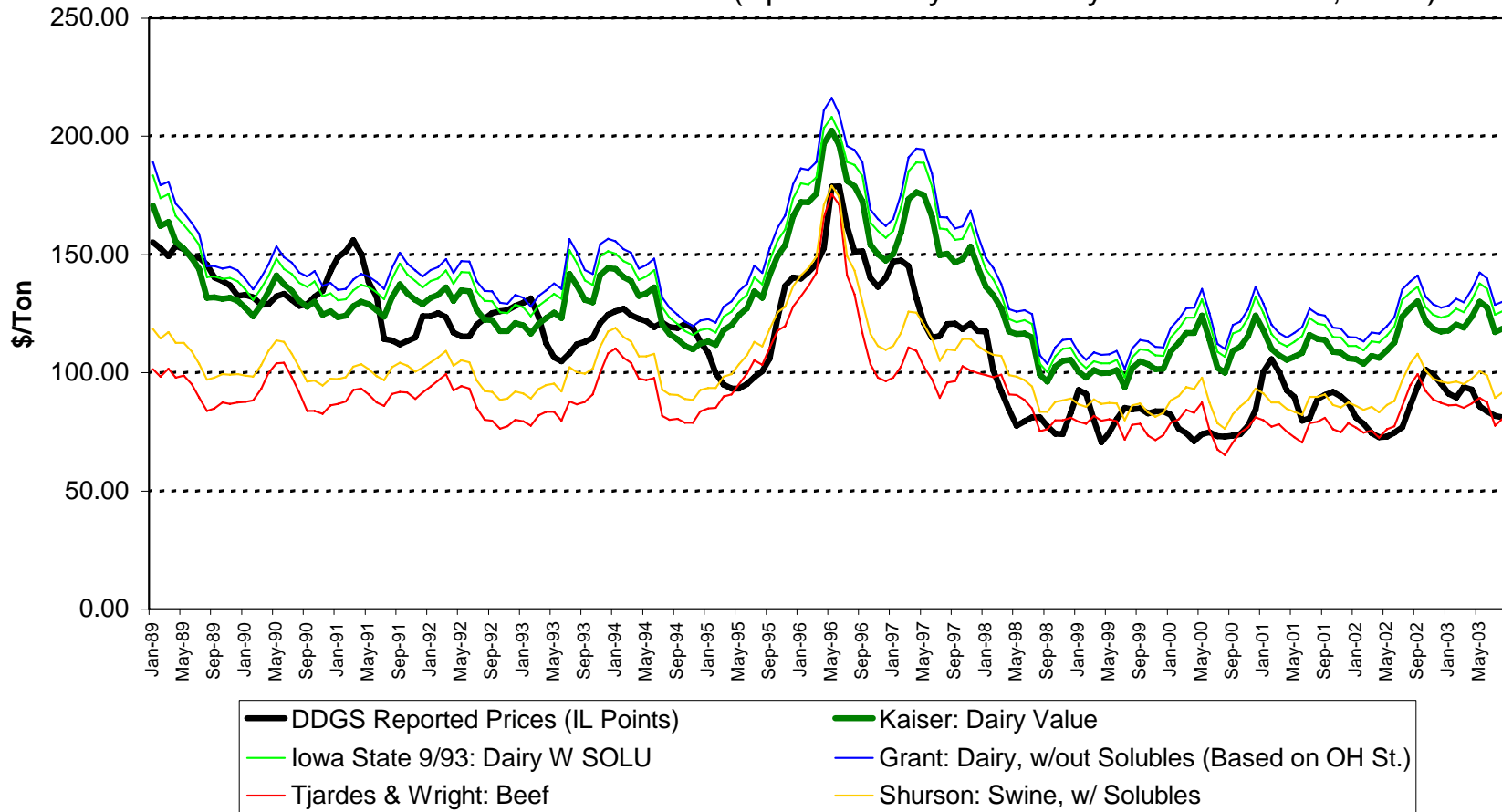
## U.S. Ethanol Production Facilities

-  Ethanol Production Facility
-  Under Construction



# DDGS: USDA Reported Prices vs. Theoretical Nutritional Value

(Sparks Study funded by Land O' Lakes, 2003)



# DDGS Value Comparison

## Assumptions:

- Corn                   \$2.00 / bu
- SBM                   \$175.00 / ton
- Urea                   \$360.00 / ton
- Non-ruminant diets corn/SBM
- Ruminant diets typical diets with competing by-products.

|                         |               |
|-------------------------|---------------|
| <b>Dairy Lactation</b>  | <b>114.24</b> |
| <b>Poultry Finisher</b> | <b>100.09</b> |
| <b>Layer Diet</b>       | <b>104.66</b> |
| <b>Swine G-F Diet</b>   | <b>96.34</b>  |
| <b>Beef Feedlot</b>     | <b>108.00</b> |

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  - **Price**
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# DDGS – A Concentration of Nutrients in Corn:

- 56 pounds of corn.
- Remove the starch.
- Contains remnants of enzymes and yeast added for fermentation.
- Non-Starch nutrients concentrated into 17-18 pounds of DDGS



# DDGS Value Comparison:

## **NRC vs. “New Generation” DDGS**

|               | DDGS (NRC) | “New Gen” DDGS |
|---------------|------------|----------------|
| ME, kcal/lb   | 1,282      | 1,452          |
| C. Protein, % | 27.7       | 26.9           |
| C. Fat, %     | 8.4        | 9.7            |
| Lysine, %     | .62        | .76            |
| Dig. Lys., %  | .29        | .40            |
| P, %          | .77        | .79            |
| Av. P, %      | .59        | .63            |

## Assumptions:

Corn = \$1.99/bu

Hi-Pro SBM = \$142.60/ton

L-Lysine.HCl = \$90/cwt

No added fat

### Shadow Price of NRC vs “New Generation” DDGS

|                            | NRC DDGS    | “New Gen” DDGS |
|----------------------------|-------------|----------------|
| Shadow Price               | \$86.98/ton | \$89.75/ton    |
| Amount Used                | 33 lb/ton   | 84 lb/ton      |
| Price to Use<br>200 lb/ton | \$55.20/ton | \$87.20/ton    |

## Assumptions:

Corn = \$1.99/bu

Hi-Pro SBM = \$142.60/ton

L-Lysine.HCl = \$90/cwt

No added fat

### NRC vs "New Gen" DDGS at Current DDGS Mkt Price

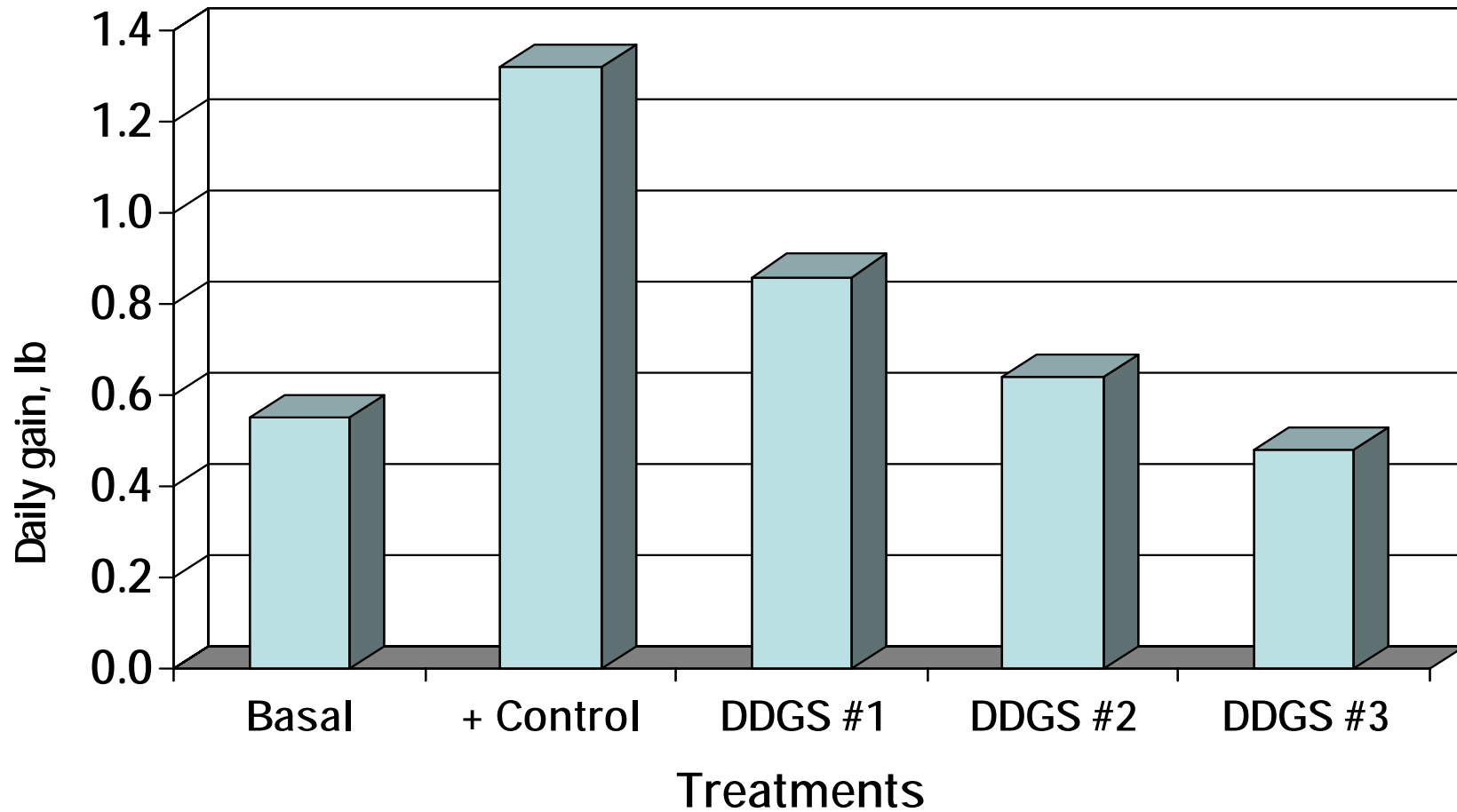
|                             | NRC DDGS    | "New Gen" DDGS |
|-----------------------------|-------------|----------------|
| DDGS Price                  | \$83.60/ton | \$83.60/ton    |
| Amount Used                 | 56 lb/ton   | 200 lb/ton     |
| Diet Cost<br>(\$92.50 CSBM) | \$92.43/ton | \$91.98/ton    |

# **DDGS Collected Over Time from One South Dakota Plant**

- **Variable products**
  - **Lysine: .78% (average of 11 samples)**
  - **Ranged from .65 to .97% lysine**
- **If mycotoxins in corn, still present  
in DDGS**

**Thaler, 2002**

# Growth Rate of Pigs Fed 3 Blends of DDGS

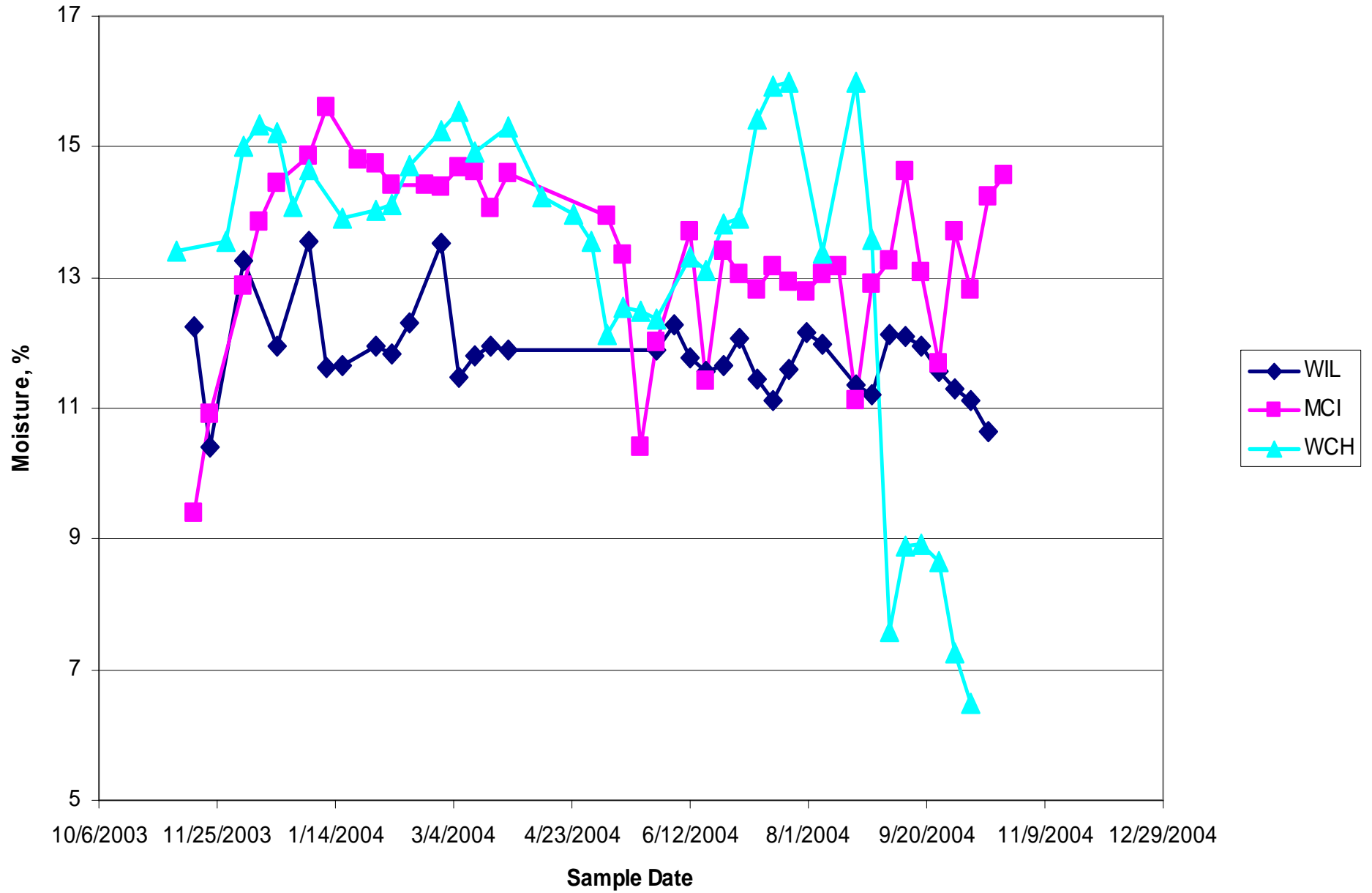


Cromwell et al., 1993

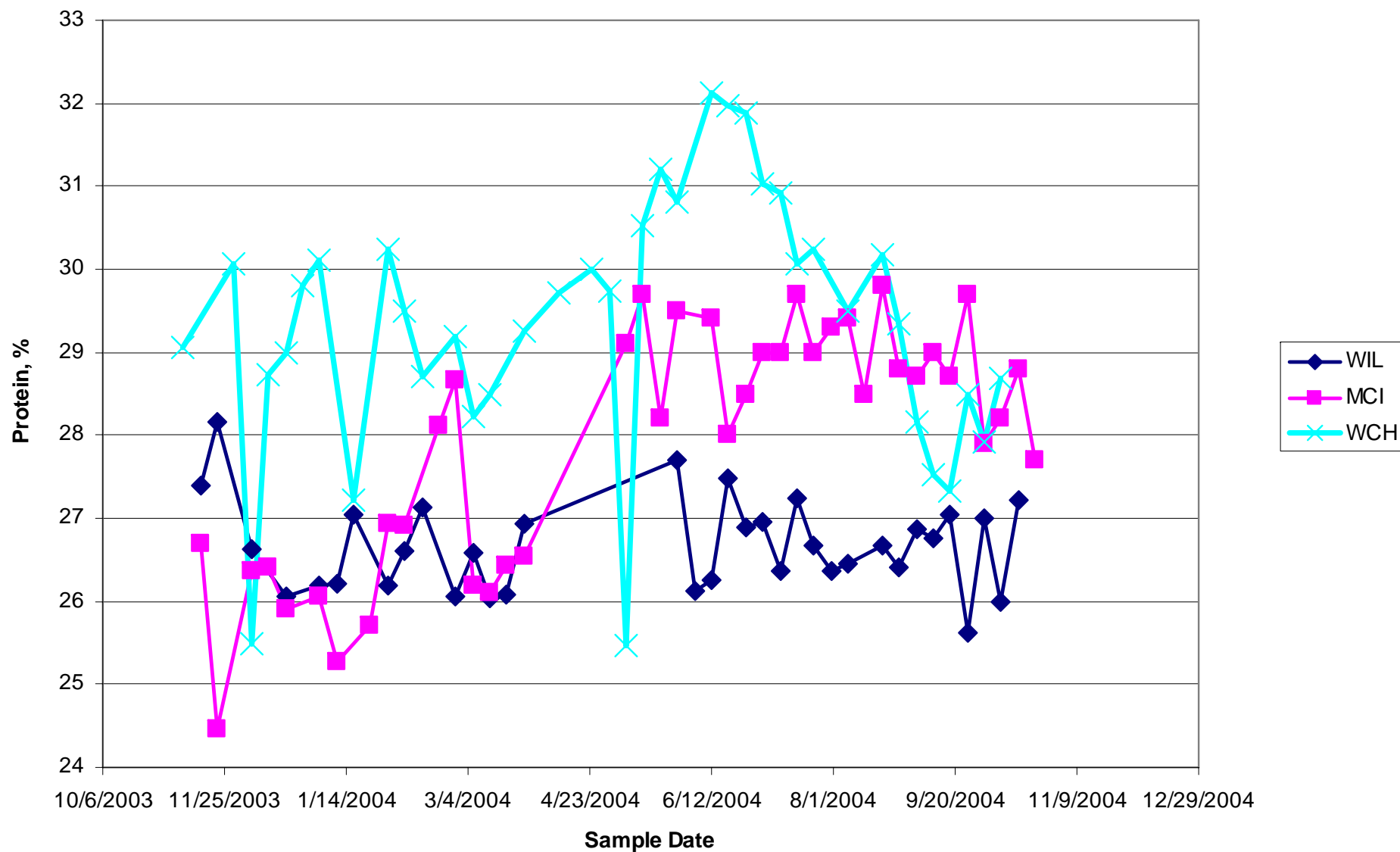
# Sources of Variation

1. Quality of grain
2. The fermentation process
3. Percent of the soluble production blended with the wet grains during the drying process

### DDGS Moisture by Plant

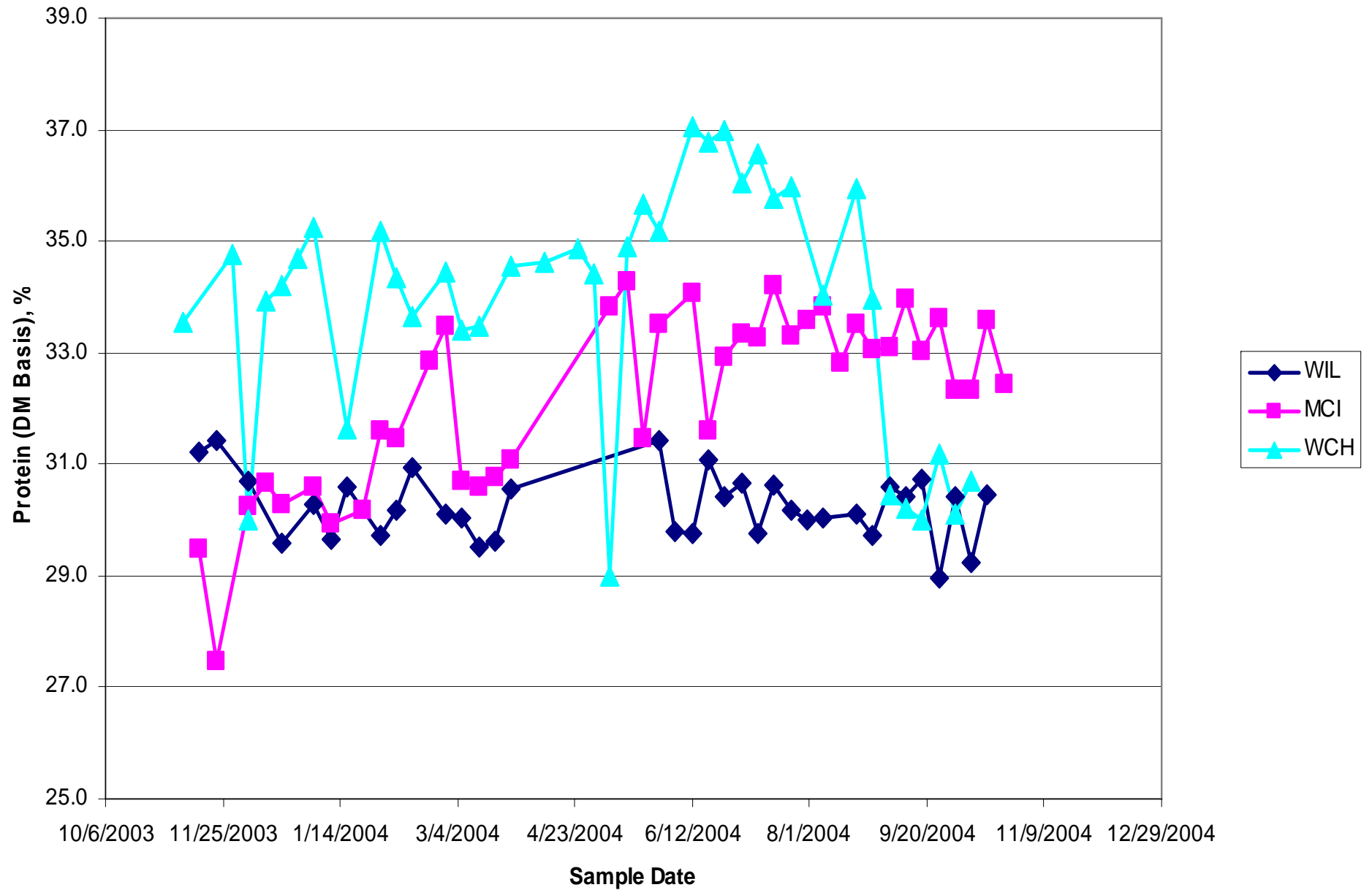


DDGS Protein (As-Fed Basis) by Plant

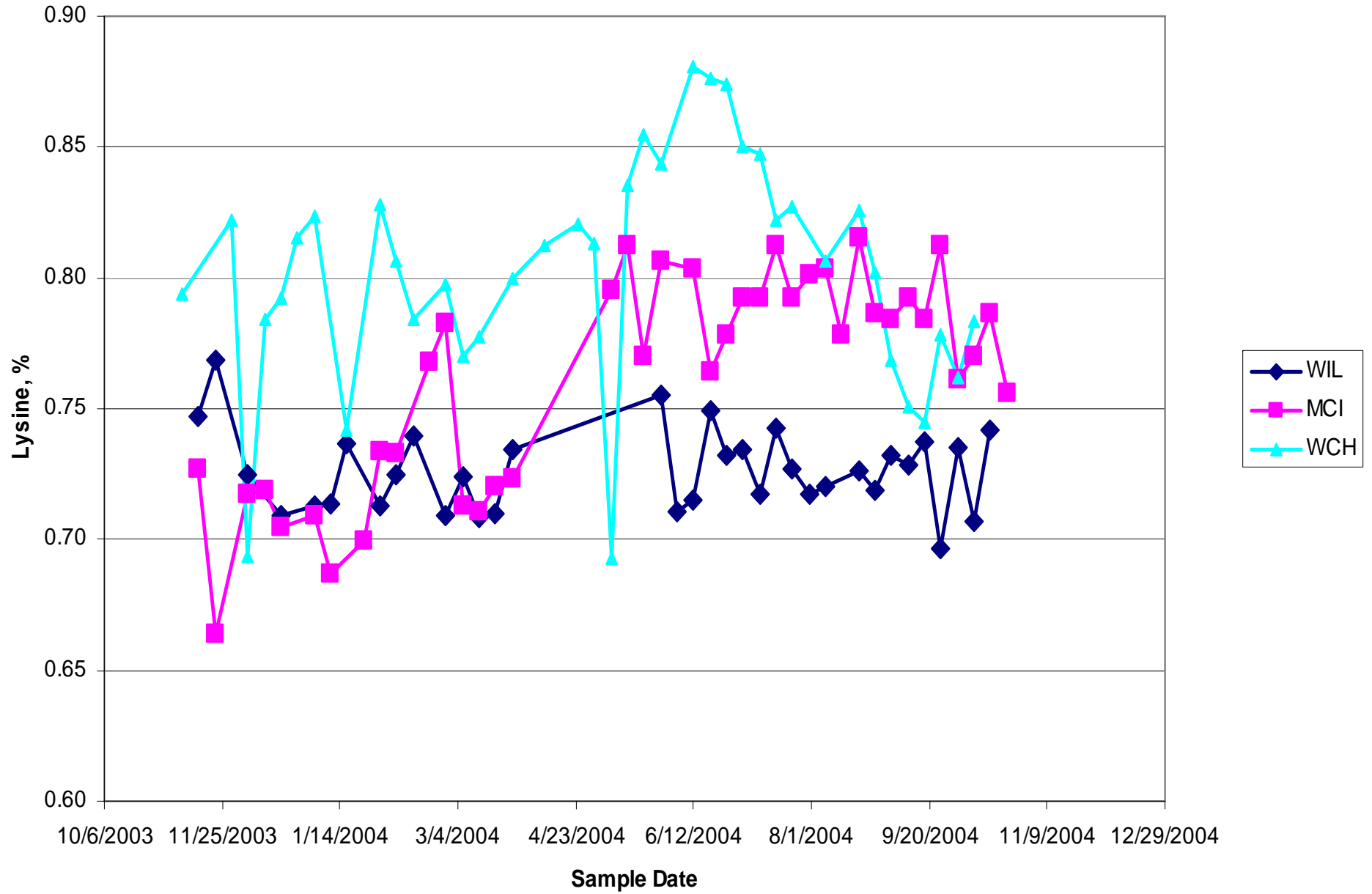




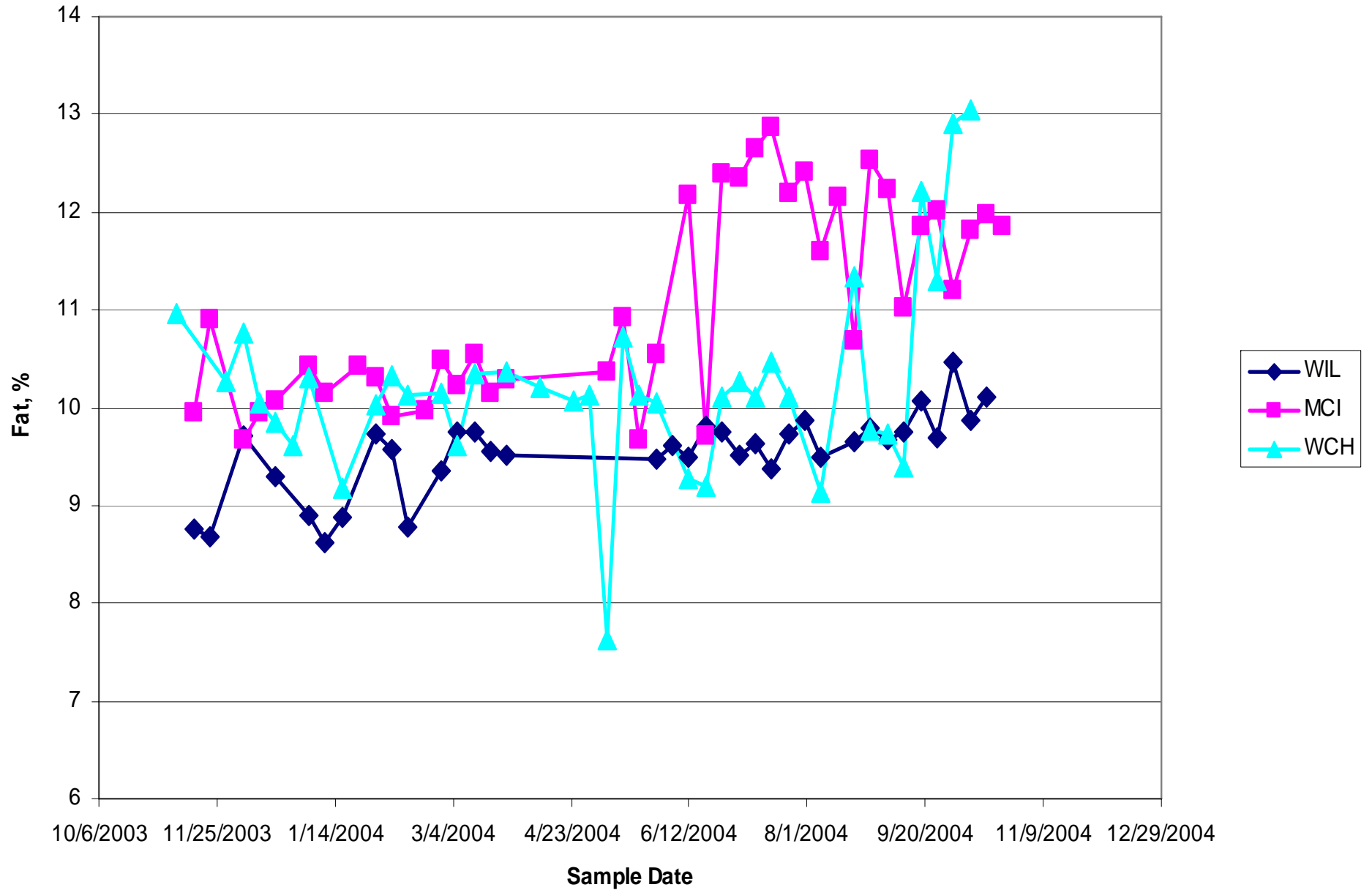
DDGS Protein (DM Basis) by Plant



DDGS Lysine by Plant



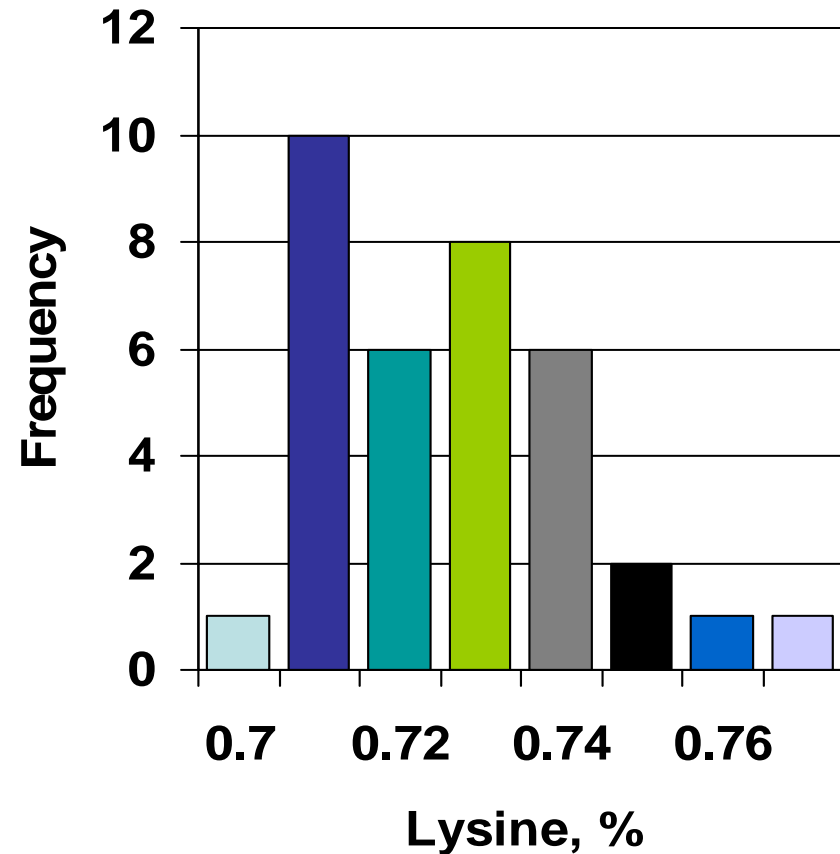
DDGS Fat (As-Fed Basis) by Plant



# DDGS Lysine at Plant "A"

## Plant "A" DDGS

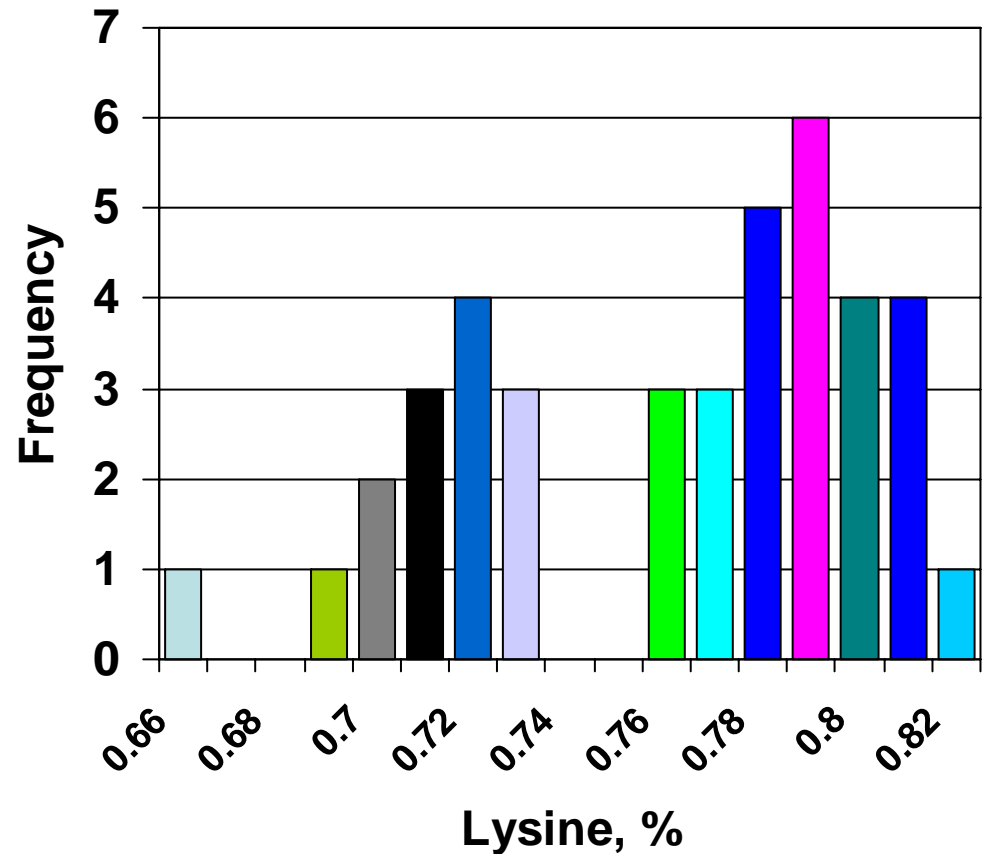
- Average = .73%
- Minimum = .70%
- Maximum = .77%
- Std Dev. = 0.02



# DDGS Lysine at Plant "B"

## Plant "B" DDGS

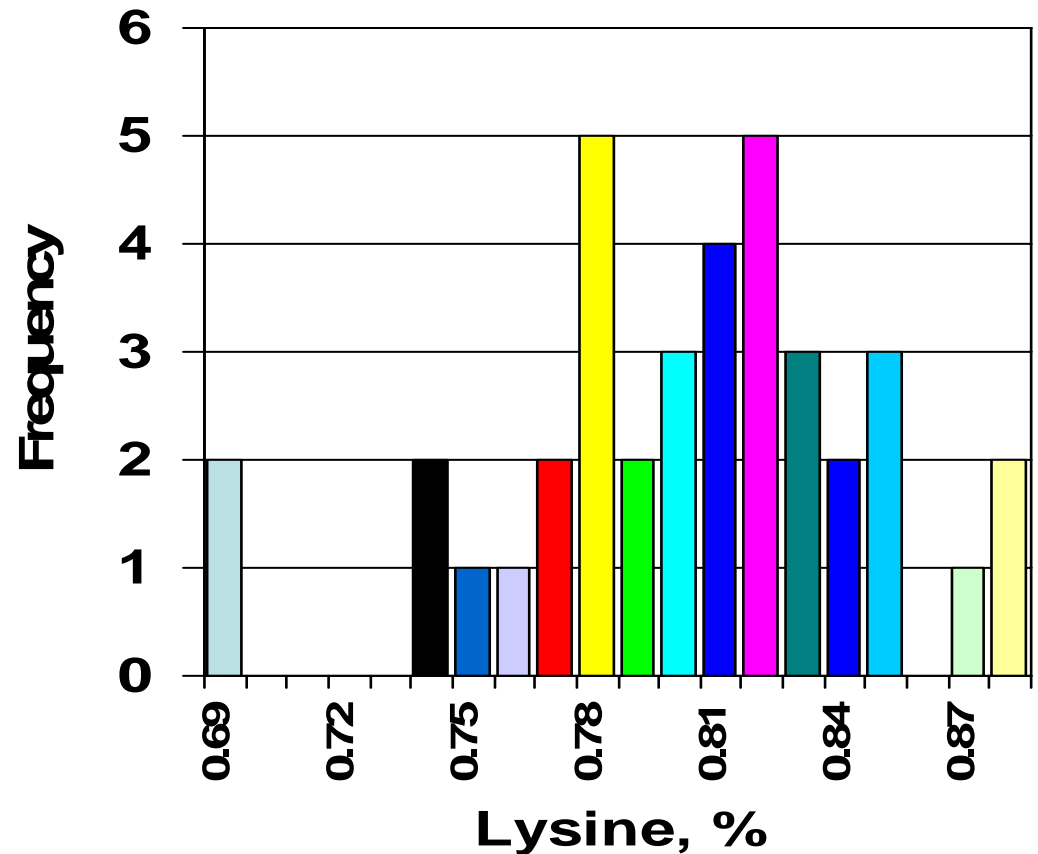
- Average = .76%
- Minimum = .66%
- Maximum = .82%
- Std Dev. = 0.04



# DDGS Lysine at Plant "C"

## Plant "C" DDGS

- Average = .80%
- Minimum = .69%
- Maximum = .88%
- Std Dev. = 0.04



## Value of Using 200 lb/ton of New Generation DDGS

| <b>Ingredient Prices</b>       | <b>\$/ton</b> | <b>\$/bu</b> |
|--------------------------------|---------------|--------------|
| Corn                           | 71.07         | 1.99         |
| Hi-Pro Soybean Meal            | 142.60        |              |
| Monocalcium Phosphate, 21%     | 217.00        |              |
| DDGS (New Generation)          | 83.60         |              |
| Limestone                      | 28.00         |              |
|                                |               |              |
|                                |               |              |
| Savings from using 200 lb DDGS | 0.44          | /ton         |
|                                |               |              |
| Break-Even Price for DDGS      | \$ 88.01      | /ton DDGS    |

# Other Factors Influencing Use of DDGS:

- Manure Management:
  - Increased phosphorus and nitrogen an issue
  - Trace minerals also concentrated
    - Significance?
- Dried products required in most feeding systems for non-ruminants
- Mycotoxins can survive process
- Bulk density, micron size, and flowability
- Pellet durability – when applicable



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# **Practical Products for DDGS**

- Higher Calcium, lower Phosphorus premix**
- Lowers cost of supplementation**
- Environmentally-friendly**
- Added lysine &/or phytase further reduces protein and phosphorus**

## **Grow-Finish Pigs Fed Diets Containing DDGS**

|                         | <b>No DDGS</b> | <b>10% DDGS</b> |
|-------------------------|----------------|-----------------|
| <b>Pigs in</b>          | <b>993</b>     | <b>988</b>      |
| <b>Pigs Out</b>         | <b>979</b>     | <b>971</b>      |
| <b>Daily Gain, lb</b>   | <b>1.63</b>    | <b>1.62</b>     |
| <b>Feed:Gain</b>        | <b>2.75</b>    | <b>2.74</b>     |
| <b>Feed cost, \$/hd</b> | <b>\$32.69</b> | <b>\$32.53</b>  |

Source: Land O'Lakes Farmland Feed

# Recent Closeout Summaries:

| <b>5290 pigs on 10% DDGS Rations:</b> |        |
|---------------------------------------|--------|
| Average Daily Gain                    | 1.61   |
| Feed Conversion                       | 2.76   |
| Feed Cost/Pound Gain                  | \$0.16 |
| % Culls                               | 0.80%  |
| Cull Avg. Wt.                         | 109.65 |
| Death Loss %                          | 2.73%  |
| Average Daily Consumption             | 4.45   |

# Close out performance 10% DDGS diets:

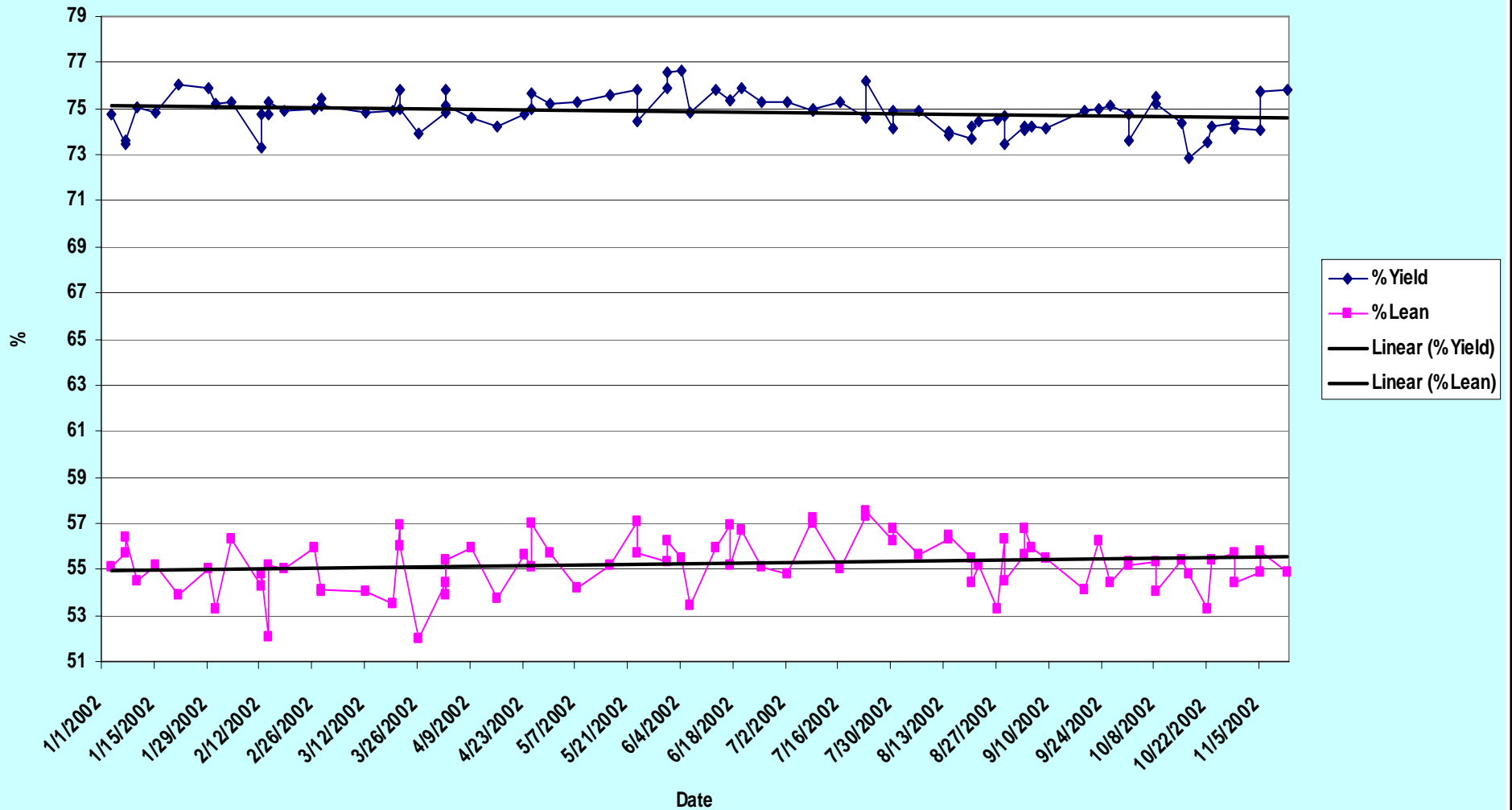
Fall 2003

|                   | # in          | # out         | Wt in       | Wt out       | DL          | ADG         | F/G         | ADC         | Days       |
|-------------------|---------------|---------------|-------------|--------------|-------------|-------------|-------------|-------------|------------|
| <b>Farm 1:</b>    |               |               |             |              |             |             |             |             |            |
| <b>Averages</b>   |               |               | <b>58.7</b> | <b>253.0</b> | <b>3.35</b> | <b>1.71</b> | <b>2.79</b> | <b>4.79</b> | <b>113</b> |
| <b>Total head</b> | <b>24,676</b> | <b>23,852</b> |             |              |             |             |             |             |            |
| <b>Farm 2:</b>    |               |               |             |              |             |             |             |             |            |
| <b>Averages</b>   |               |               | <b>47.2</b> | <b>265.2</b> | <b>2.88</b> | <b>1.75</b> | <b>2.86</b> | <b>5.00</b> | <b>124</b> |
| <b>Total head</b> | <b>8,798</b>  | <b>8,545</b>  |             |              |             |             |             |             |            |
| <b>Farm 3:</b>    |               |               |             |              |             |             |             |             |            |
| <b>Averages</b>   |               |               | <b>51.5</b> | <b>259.2</b> | <b>2.33</b> | <b>1.74</b> | <b>2.76</b> | <b>4.82</b> | <b>119</b> |
| <b>Total head</b> | <b>13,887</b> | <b>13,563</b> |             |              |             |             |             |             |            |

# +11,000 pigs yield & lean data from 2002

## Incorporated 10% DDGS in diets mid-year

% Lean, BF, % Yield

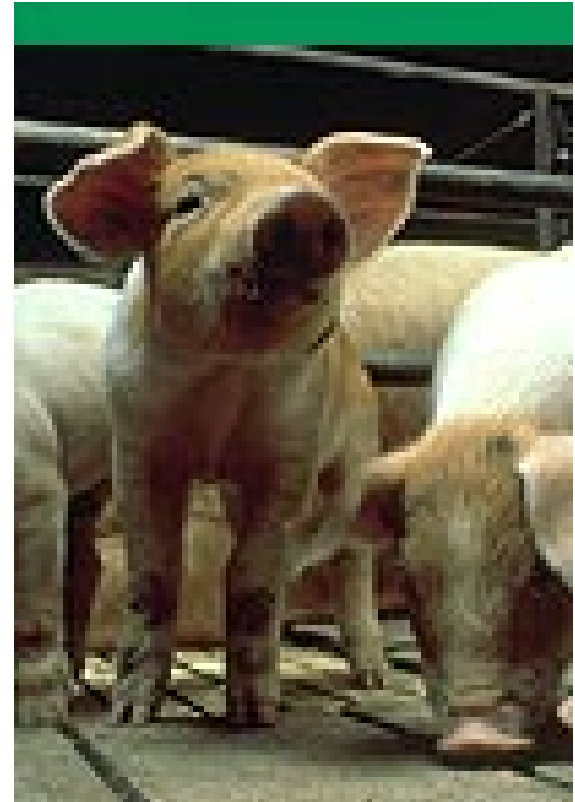


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# DDGS for Swine

- Competitive price
- Increasing availability
- Improved quality, consistency
- Observed health benefits





# DDGS Market Positioning

- Understand the product
- Appropriately position DDGS by species

# DDGS Market Positioning

- Feed Sales force understands ingredient well enough to help livestock producers realize benefit and to make best use of related feed products
- DDGS marketer helps direct DDGS to most appropriate end-user
- DDGS producer and end-user benefit from utilizing comparative nutritional value of DDGS

# Land O' Lakes Feed DDGS Marketing

- The growth of the dry-mill ethanol industry provides marketing opportunity for DDGS.
- LOL Feed is actively involved in marketing ethanol co-products for ethanol plants.
- LOL Feed has a staff of full-time DDGS marketers led by National DDGS Marketing Director, Jim Jolly.

# Summary – Feed Perspective

- Corn DDGS is an excellent feed ingredient
- Quality of Corn DDGS has Improved with New Generation Plants.
- Increased supply of DDGS has made it cost competitive (including nonruminants)
- Other co-products compete for space in rations.
- Product consistency and uniformity is an important issue
- Rapid lab analysis has been beneficial

# For more information about DDGS from Land O' Lakes Feed contact:

- Land O' Lakes Feed DDGS Marketing:

Jim Jolly

800-333-9774

651-765-5658

[jdjolly@landolakes.com](mailto:jdjolly@landolakes.com)

- Land O' Lakes Feed DDGS technical support:

Dr. Harold Tilstra

507-283-4198

[Hdtilstra@landolakes.com](mailto:Hdtilstra@landolakes.com)

Dr. Kevin Herkelman

651-765-5522

[klherkelman@landolakes.com](mailto:klherkelman@landolakes.com)