DDGS – A World of Opportunities

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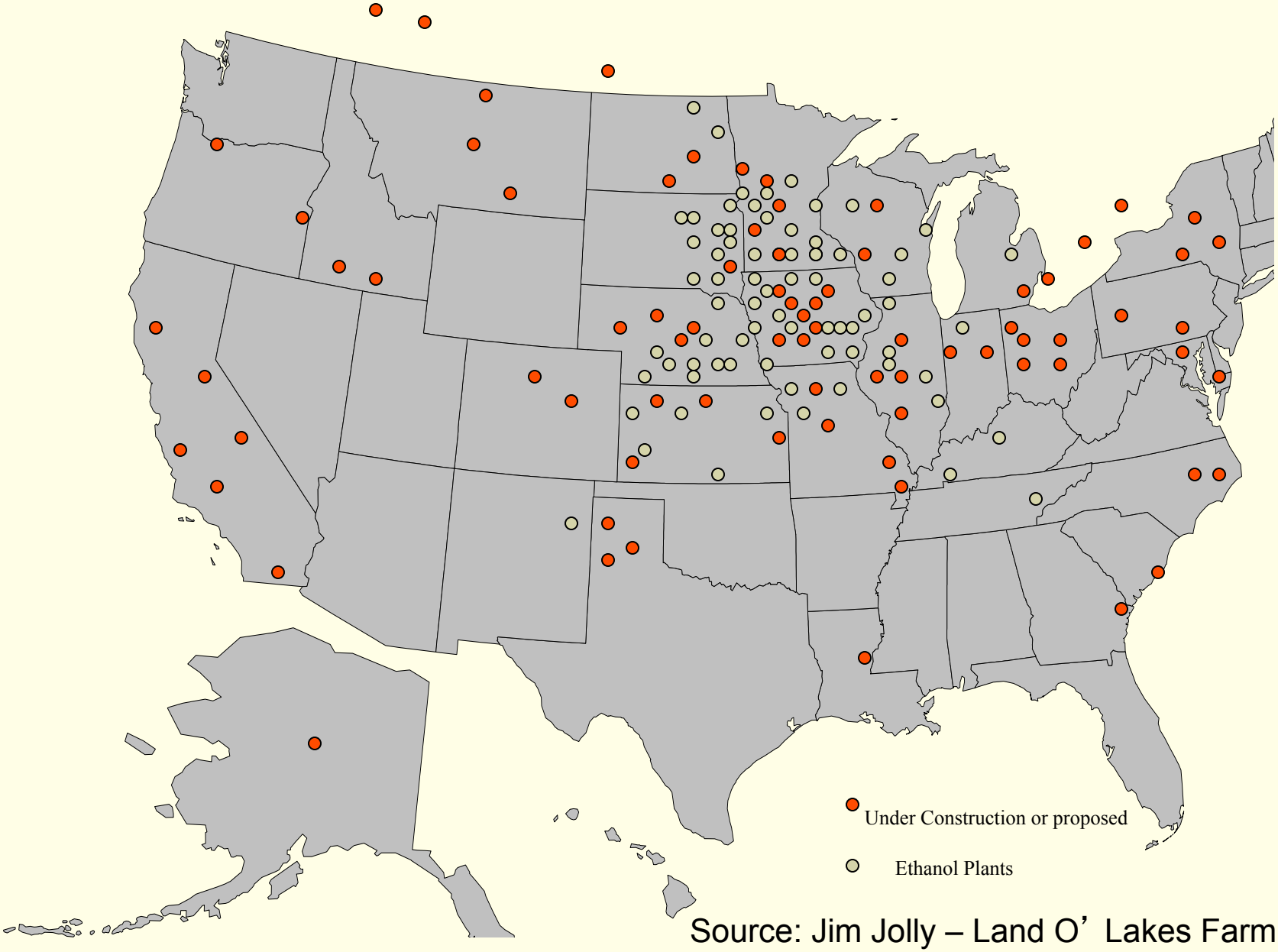
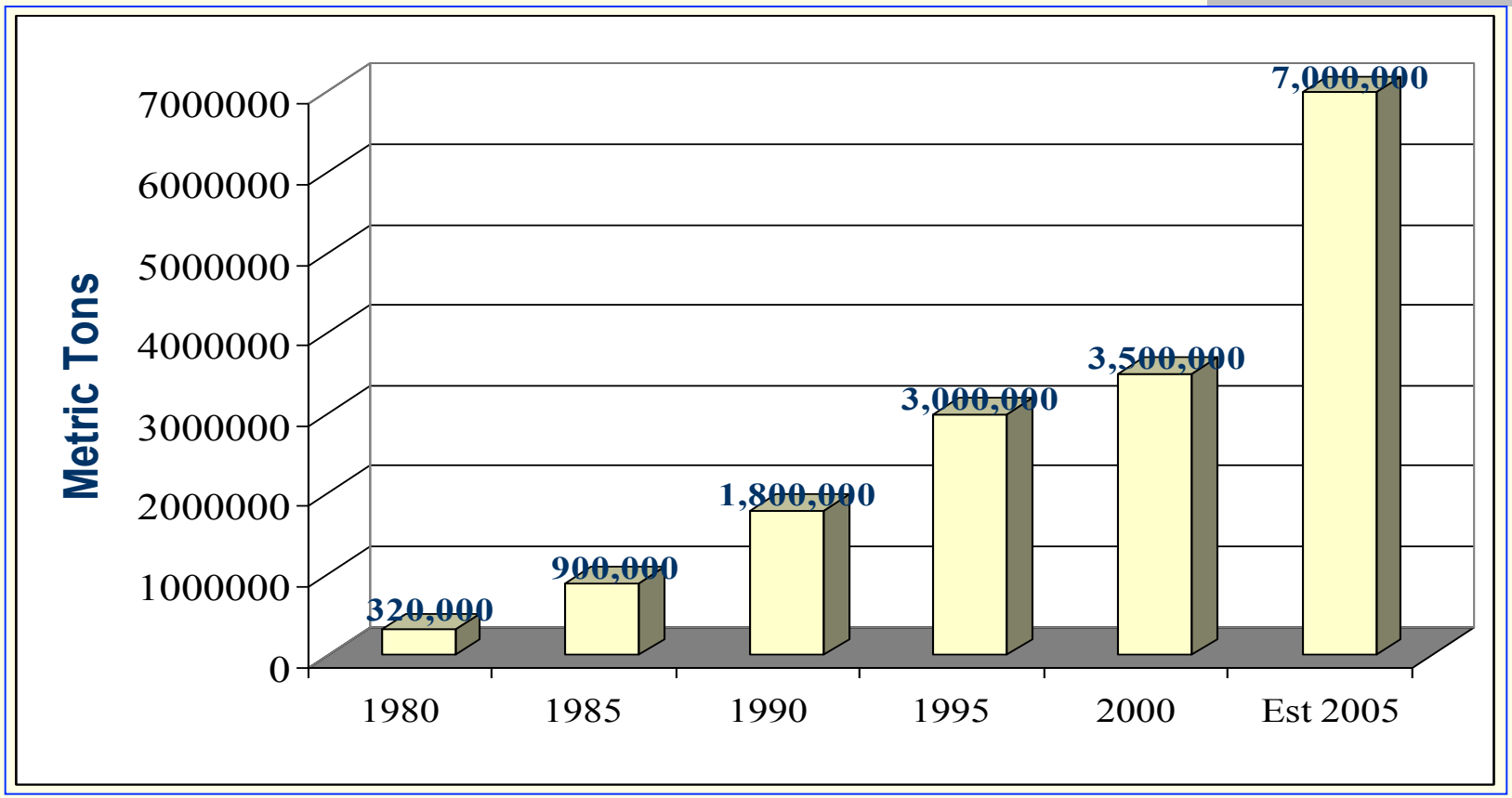
Ethanol Plants June 16, 2004



Source: Jim Jolly – Land O' Lakes Farmland Feed

U.S. DDGS Production



Source: Steve Markham – Commodity Specialists Company

Research Sells DDGS

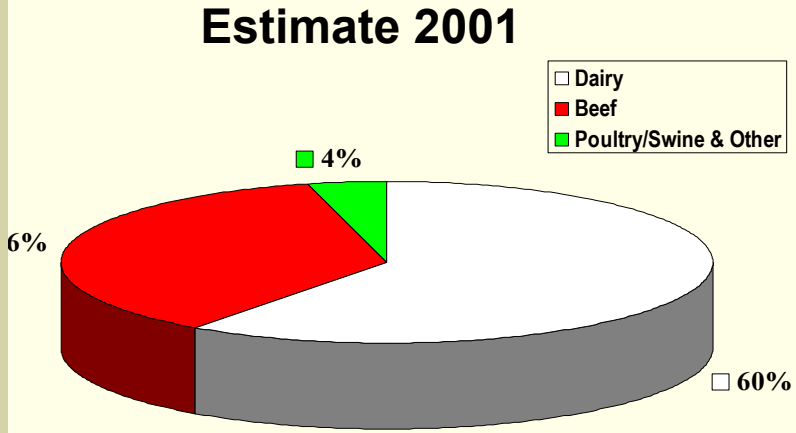
What Nutritionists Want to Know

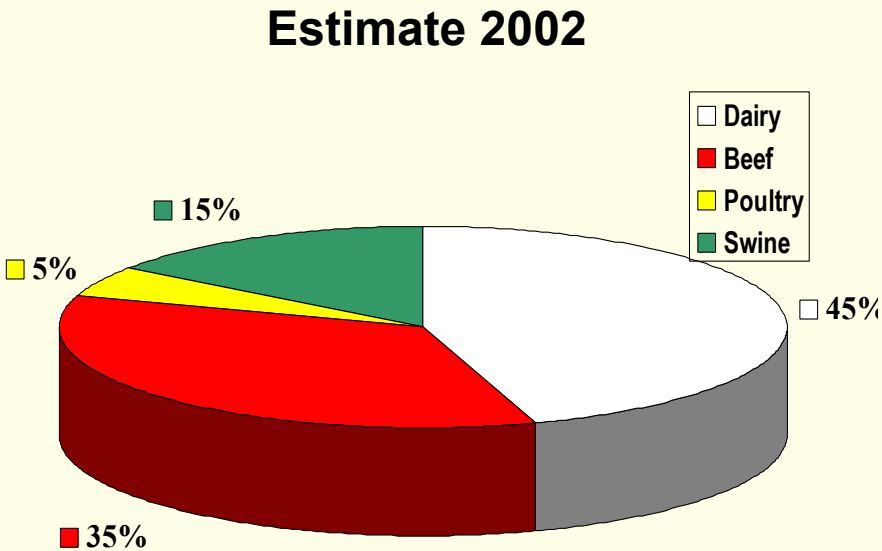
- **Nutrient content and digestibility** of feed ingredients.
- **Predictability and consistency** of nutrients and supply.
- **Cost** relative to competing ingredients.
- Maximum **recommended feeding levels**.

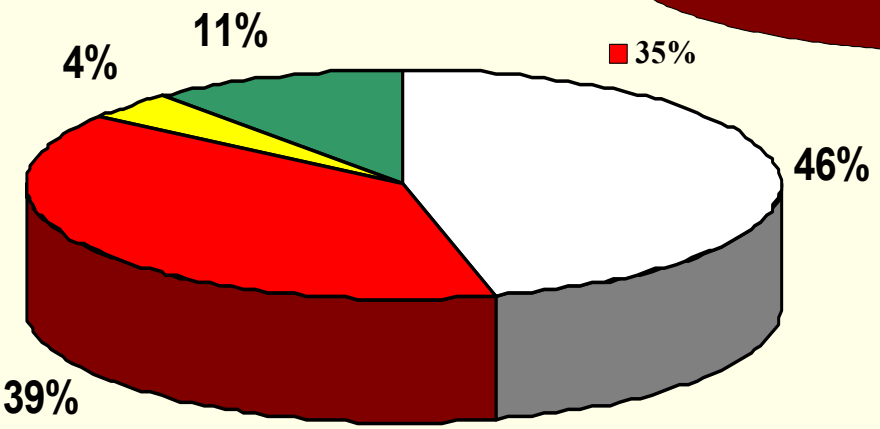
What Nutritionists Want to Know

- Knowledge of **limitations of use**.
- Knowledge of potential safety or **risk factors**.
- **Handling, transport, manufacturing, and storage characteristics.**

U.S. DDGS Consumption







Estimate 2003

Dairy
Beef
Poultry
Swine

CSC 2004

4 Million MT of DDGS Produced in the U.S. Would Disappear If…

- Every broiler, layer, and turkey ate 0.05 lbs/day

OR

- Every beef steer, cow, and calf ate 2.4 lbs/day

OR

- Every dairy cow ate 4 lbs/ day

OR

- Every hog ate 0.42 lbs/day

Do We Need to Develop International Demand for DDGS?

- Yes
- Why?
  - The U.S. ethanol industry continues to grow at a rapid rate
    - Increasing amount of DDGS available
    - 100% U.S. acceptance will not occur
  - The largest growth in the livestock and poultry industry will occur in:
    - Eastern EU
    - South America
    - Asia

Projected Development of Pork Production in Selected Countries Between 2002 and 2012 (1,000 MT)

Country	2002	2007	2012	Increase %
China	43,163	47,729	53,155	23.1
Rep. of Korea	**1,161**	**1,377**	**1,541**	**32.7**
Philippines	**1,095**	**1,200**	**1,253**	**14.4**
Japan	1,200	1,224	1,213	1.1
Taiwan	915	983	1,009	10.3
Thailand	**501**	**559**	**587**	**17.2**
Indonesia	413	480	520	25.9
EU	17,930	18,370	19,040	6.2
USA	8,969	9,396	9,857	9.9
Brazil	**2,356**	**2,723**	**3,038**	**28.9**

Source: Food and Agricultural Policy Research Institute (2002)

Projected Development of Broiler Production in Selected Countries Between 2002 and 2012 (1,000 MT)

Country	2002	2007	2012	% Change
China	5,460	6,317	7,221	+ 32.3
Thailand	**1,320**	**1,574**	**1,679**	**+ 27.2**
Japan	1,040	1,086	1,071	- 1.3
Philippines	**602**	**708**	**758**	**+ 25.9**
Indonesia	**565**	**654**	**738**	**+ 30.6**
Taiwan	611	640	670	+ 9.7
Republic of Korea	**433**	**541**	**628**	**+ 45.0**
EU	14,509	16,110	17,565	+ 21.1
USA	7,040	8,020	9,180	+ 30.4
Brazil	**6,750**	**6,952**	**7,305**	**+ 8.2**

Source: Food and Agricultural Policy Research Institute (2002)

Projected Regional Development of Egg Production Between 2001 and 2030 (Million MT)

Country	2002	2007	2012	% Increase
Africa	2.08	3.21	5.13	146.6
North America and Central America	7.81	8.76	10.74	37.5
South America	**2.92**	**4.13**	**5.82**	**99.3**
Asia	**33.92**	**43.37**	**56.62**	**66.9**
Europe	9.65	10.64	11.22	16.3
Oceania	0.22	0.34	0.41	86.4
World	56.60	70.45	89.94	58.9

Source: GILLIN (2002)

What Are the Best DDGS Markets?

- It depends on…
  - Freight costs
  - Size and projected growth of livestock and poultry industry
  - Regulatory concerns
    - GMO
    - GMP certification
    - Antimicrobial residues
  - Tariffs
  - Availability and price of competing ingredients
  - Use in cattle or swine and poultry feeds
  - Volume of shipment

What Are the Best DDGS Markets?

- **Europe**
  - largest long-term importer of DDGS
  - limited future growth
- **Canada**
  - undeveloped market with large livestock and poultry industry
  - freight advantage
- **Latin America**
  - expanding market with greater potential
- **Mexico**
  - developing market with growing livestock and poultry industry
  - freight advantage

What Are the Best DDGS Markets?

- **Asia**
  - Tremendous growth in swine and poultry production expected
    - increased need for imported feed ingredients
  - Freight disadvantage
  - Prefer containers due to handling contraints
  - Product definition and tariffs are being established in some countries
  - Greatest success
    - Southeast Asia
    - Taiwan
  - Overlooked opportunities?
    - Thailand
    - Republic of Korea
  - Greatest challenge?
    - China
    - Japan

Current and Potential DDGS Export Markets

- **Current**
  1. Ireland
  2. Denmark
  3. United Kingdom
  4. Spain
  5. Portugal
  6. Columbia
  7. Mexico
  8. Canada
  9. Germany
  10. Costa Rica

- **Potential**
  1. China*
  2. Brazil*
  3. Philippines
  4. Japan
  5. Thailand*
  6. Republic of Korea*
  7. Taiwan
  8. Vietnam
  9. Malaysia
  10. Indonesia

* No significant USGC DDGS promotion efforts have occurred in these countries

What Are the Challenges?

1. **Flowability**
   - refusal of transloaders to handle DDGS from several sources
   - delayed container shipments from the west coast
2. **High freight costs**
3. **Availability of consistent supply**
   - need a system to directly connect customers to suppliers
   - poor customer service from US suppliers
   - difficult to find reliable exporters that market high quality, golden DDGS

What Are the Challenges?

4. **No grading system** to differentiate quality and price
5. **Inconsistent quality**
   - nutrient content
   - color
   - particle size
6. **Price has been too high**
7. **Critical research** is needed to improve DDGS acceptance
8. **High degree of technical support** is needed

What Are the Challenges?

9. Image that the **export market is a "dumping ground"** for low quality U.S. ingredients

10. U.S. suppliers **don't know/mistrust customers**
    - Some customers back out of commitments when price decreases

11. U.S. suppliers view the **export market as a residual market**
    - only export when there is a surplus in the domestic market

12. **Misrepresenting** quality and nutrient specifications and **blending DDGS** with other ingredients

13. **Tariffs**

Critical Research to Improve DDGS Acceptance in the Export Market

- Methods/additives to improve **flowability**
- Methods for **pelleting** DDGS
- Presence/detection of **antimicrobial residues**
- **Xanthophyll** content and stability
- Stability and **shelf life** under various climatic conditions
- **Aquaculture feeding trials** with various types of fish
- **Nutrient profile comparisons** of international DDGS sources

What Does the Industry Need to Do?

- Determine the commitment to export DDGS
- Correctly define your product
- Know your product and how customers can optimize its use
- Improve customer support and technical assistance
- Fund research to support current export market development efforts
- Implement quality standards to help customers differentiate among sources and prices
- Implement a national DDGS certification program

What Does the U.S. Grains Council Need To Do?

- Devote more resources
  - technical support
  - research
  - education
- Initiate market development efforts in new countries with rapid growth in livestock and poultry
- Assemble a technical team
  - develop new definitions for distiller's by-products
  - develop quality standards
    - by-product vs co-product vs product
  - develop a certification program
- Actively work with government officials to minimize tariffs on imported DDGS

www.ddgs.umn.edu