

An aerial photograph of a lush green agricultural field, likely corn, with a winding road or path cutting through it. The text is overlaid on this image.

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

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Professor

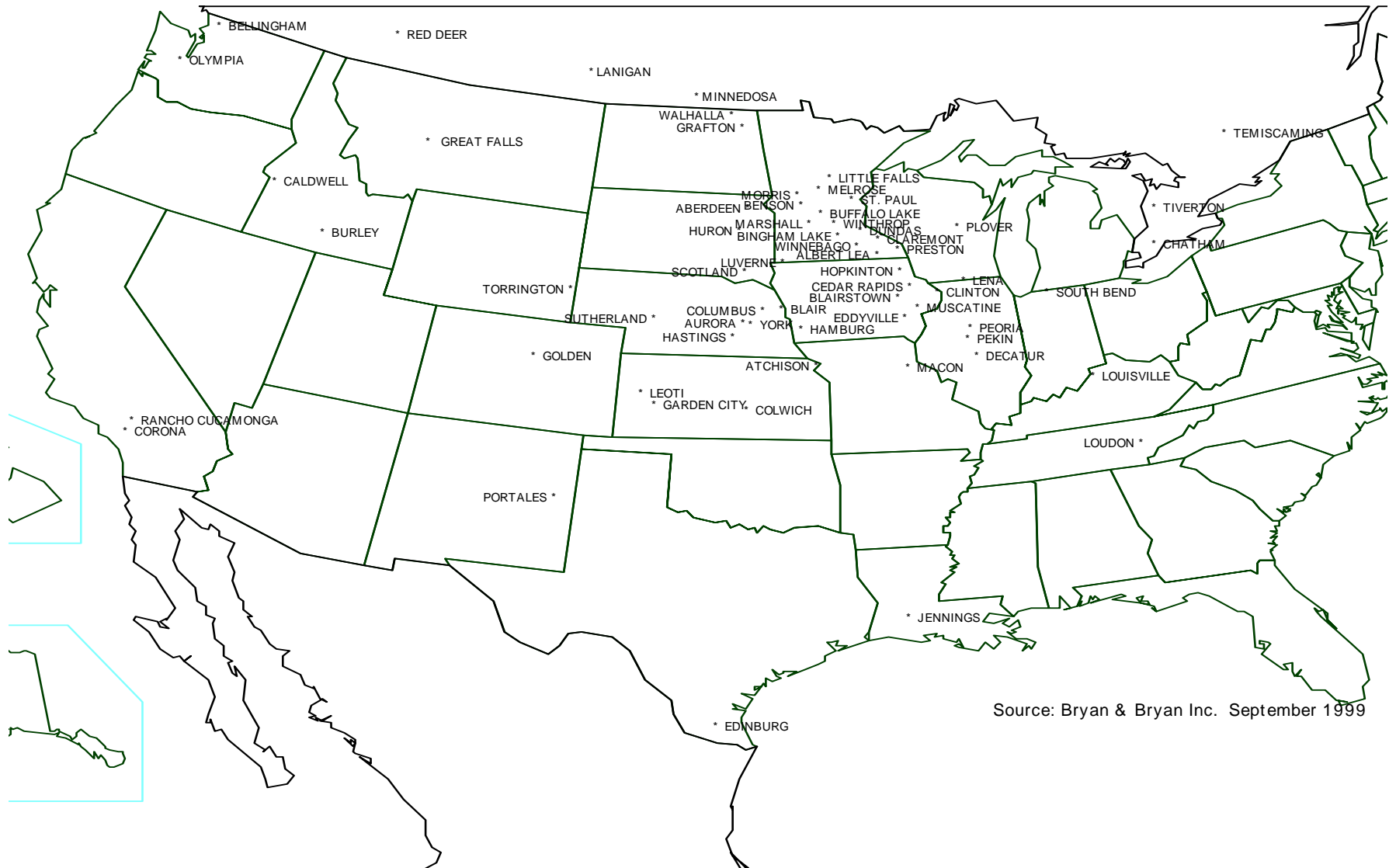
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What is DDGS?

- ◆ 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

Map of U.S. Ethanol Plants



Source: Bryan & Bryan Inc. September 1999

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

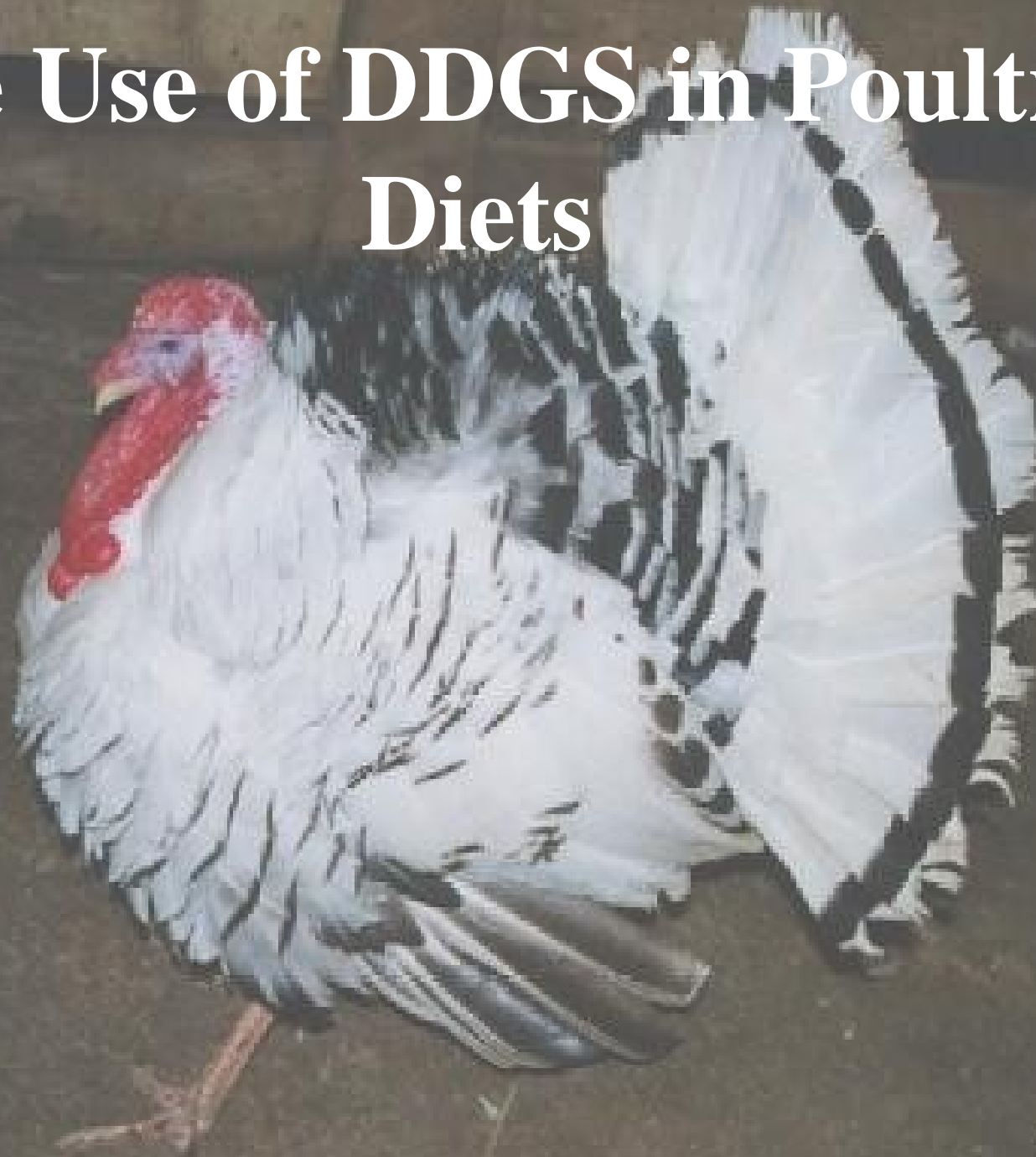
(Based Upon University of Minnesota Performance Trials)

- ◆ 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



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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



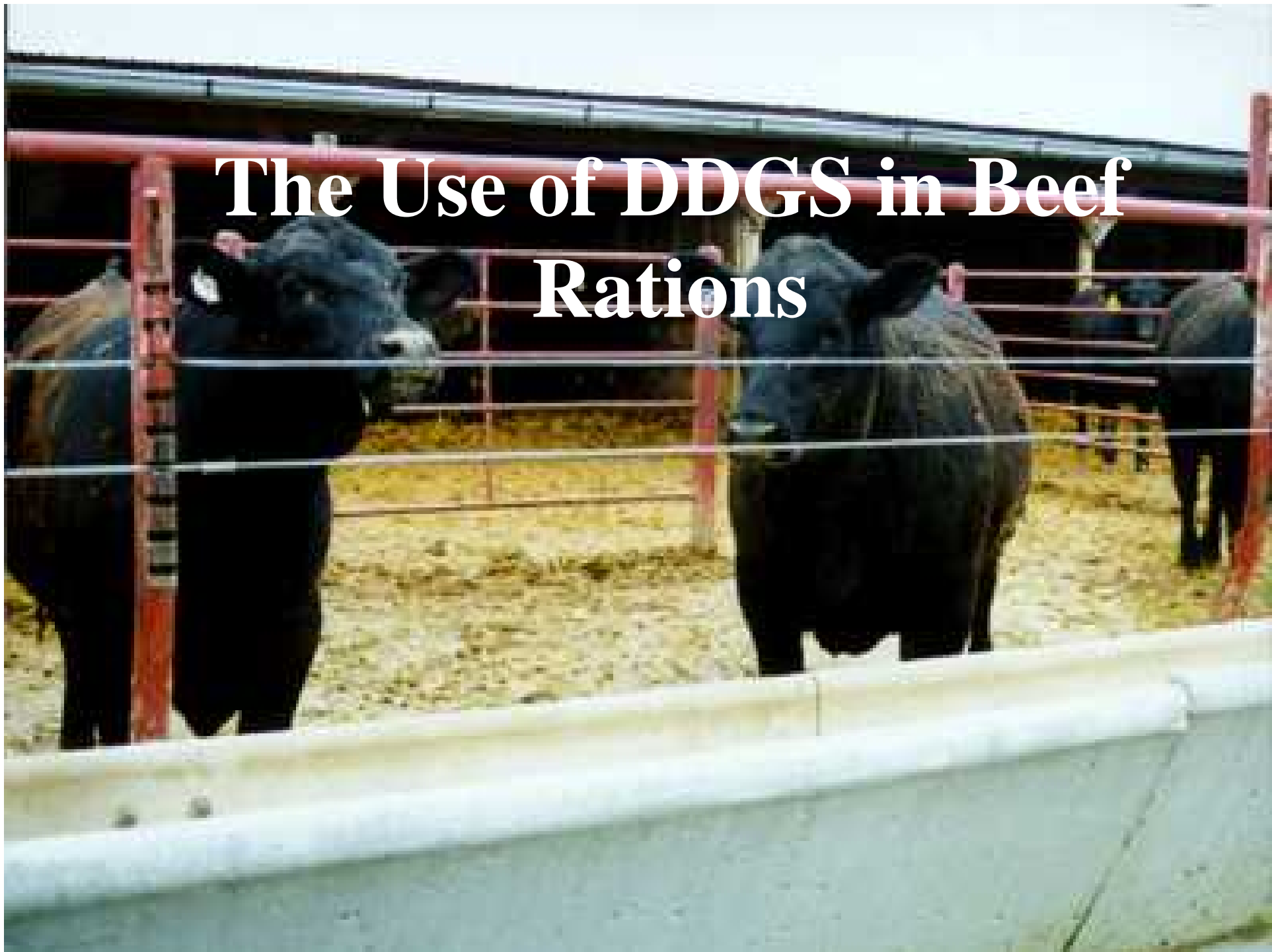
Nutritional Value of DDGS for Dairy Cows

- ◆ 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

U of M DDGS Web Site

www.ddgs.umn.edu

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