

Fact Sheets for Feeding Distillers Grains in:

- **Finishing Beef Cattle Diets**
- **Dairy Beef Cattle Diets**
- **Dairy Diets**

While these fact sheets highlight corn distillers grains, research has shown no difference between corn and grain sorghum-based distillers grains.

The Advantages of Using Corn Distillers Grains with Solubles in Finishing Beef Cattle Diets

Wet corn distillers grains with solubles (WDGS) is an excellent feed for finishing cattle

Research at Iowa State University as well as other universities has shown that WDGS can be added to corn-based rations for finishing cattle at levels ranging from 10 to 40% of total ration dry matter. WDGS is palatable and readily consumed by cattle. Because the concentration of starch is less than corn grain, WDGS is less likely to cause subacute acidosis in cattle fed low-roughage rations. Quality and yield grades of carcasses from cattle fed WDGS are similar to those fed corn grain. Feeding WDGS did not change sensory values of steaks. When added at levels ranging from 10 to 25% of ration dry matter, WDGS has greater apparent energy value than corn grain. When used to replace part of the corn and supplemental protein, WDGS improves feed conversion and reduces feed cost of gain when cost of WDGS (including transportation and storage) is equal to or less than cost of corn on a dry basis. For each \$0.25 increase in corn price/bu, the value of WDGS (30% dry matter) as a feed for finishing cattle increases \$3.75/ton.

Dry distillers grains with solubles (DDGS) can be fed to finishing cattle to replace protein supplement and corn

DDGS has an apparent energy value equal to corn grain when fed to finishing cattle at levels ranging from 10% to 20% of total ration dry matter. DDGS also is palatable and readily consumed by cattle. Feeding DDGS does not change quality or yield grades of carcasses. Feed cost of gain will be reduced if the cost of DDGS is not greater than cost of corn grain on a dry basis. For each \$0.25 increase in corn price/bu, the value of DDGS (90% dry matter) as a feed for finishing cattle increases \$9.50/ton.

Condensed distillers grains with solubles (CDS) has a value as a feed for finishing cattle

CDS is a liquid that typically contains 30% dry matter. When CDS is fed to finishing cattle at 10% or less of ration dry matter, its apparent energy value is equal to or somewhat greater than corn grain.

Feeding at levels greater than 10% of ration dry matter might reduce feed intake. Feeding CDS has not changed quality or yield grades of carcasses. For each \$0.25 increase in corn price/bu, the value of CDS (30% dry matter) as a feed for finishing cattle increases \$3.00/ton.

Corn distillers grains (DG) as feeds for other classes of cattle

Less research has been done with other classes of cattle, but the coproducts are excellent feeds to supplement energy and protein of lower quality forages. Because of the low starch content of DG, these feeds have fewer negative effects than high starch feeds on fiber digestion in the rumen. When fed to supplement low phosphorus forages, the phosphorus in DG will be of value. Potential uses of coproducts include creep feed for calves, supplements for grazing cattle, and supplements for low quality forages such as crop residues that might be fed to growing calves, wintering beef cows or developing beef heifers.

Keys to feeding distillers grains (DG) to beef cattle

- When price of DG is low compared with corn grain, there are greater profits from feeding higher levels.
- Make changes in the ration to account for the nutrients being supplied by DG, namely protein and phosphorus.

- Maintain adequate quantities of effective fiber in rations containing DG for finishing cattle.
- Keep the supply of WDGS fresh.
- CDS should be mixed when stored for longer periods of time.
- Feed finishing cattle to similar final weights as those not fed DG.

For additional information on feeding distillers grains to cattle contact:

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The Advantages of Using Corn Distiller's Dried Grains with Solubles in Dairy Beef Diets

An Economical Addition to Dairy Beef Diets:

Dry distillers grains with solubles is an excellent feed for growing Holstein steers. 10, 20 or 40% of the ration dry matter as dry distillers grains with solubles could be fed to growing Holstein steers from 425-700 lbs. without affecting feed intake or gain. Feeding wet distillers grains with solubles tended to decrease feed intake of the growing steers, but improved feed conversion. Feed cost of gain was reduced 6% when com was priced at \$2.25/bu and dry distillers grains at \$85/ton. At the same prices, feeding wet distillers grains reduced cost of gain 13%.

Wet or dry distillers grains can be fed to growing and finishing Holstein steers. During a 299-day feeding trial, feeding dry distillers grains at 10, 20 or 40% of ration dry matter did not affect feedlot performance or cost of gain. Steers fed 10% wet distillers grains were 4% more efficient and had 5% lower feed cost of gain. Feeding 40% of ration dry matter as wet distillers grains reduced feed intake and rate of gain with similar feed conversion and cost of gain.

Feeding distillers grains to growing and finishing Holstein steers can increase profits. With com prices at \$2.25/bu, there is profit from feeding 10, 20 or 40% distillers grains to growing Holstein steers if the price of distillers grains is less than \$100/ton (\$33/ton for wet distillers grains with 30% dry matter). When price of distillers grains is low compared with com, there are greater profits from feeding higher levels. During the growing and finishing period with com at \$2.25/bu, the price of dry distillers grains had to be less than \$85/ton to profitably include it in the ration. Feeding 10 or 20% wet distillers grains to growing and finishing Holstein steers continued to be profitable with the price of the wet grains at \$33/ton.

Feeding wet or dry distillers grains does not affect carcass value:

Feeding 10, 20 or 40% dry distillers grains or 10 and 20% wet distillers grains did not affect carcass weight, marbling or yield grades. Steers fed 40% wet distillers grains had lighter carcasses but similar marbling and yield grades. Carcass value based on grade and yield or a marketing grid with premiums or discounts for quality and yield grades was not affected by feeding wet or dry distillers grains.

Keys to feeding distillers grains to Holstein steers

- Make changes in the ration to account for the nutrients supplied by distillers grains, namely protein and phosphorus.
- Maintain adequate quantities of effective fiber in the rations containing distillers grains.
- Keep the supply of wet distillers grains fresh.
- Feed the steers to similar final weight as those not fed distillers grains.

For additional information on feeding distillers dried grains to dairy beef contact:

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The Advantages of Using Corn Distillers Grains with Solubles in Dairy Diets

- **An economical addition to dairy diets**
- **A very good protein and energy source for dairy rations**
- **The protein in new generation distillers grains with solubles (DGS):**
 - More than 30% dry matter
 - A good source of ruminally undegradable (bypass) protein
 - A good quality protein although lysine is the first limiting amino acid
 - Production by dairy cows fed DGS as the protein supplement is as high as or higher than when fed soybean meal

- **The energy in new generation DGS:**
 - 10 to 15% higher than previously reported for distillers grains
 - More energy per pound than in corn
 - Replacing the starch in corn with the highly digestible fiber and fat in DGS may decrease digestive upsets

- **Recommend feeding a maximum of - 20% of ration dry matter as DGS**
 - Can usually formulate nutritionally balanced diets - At more than 20-25% of ration dry matter (DM):
 - May decrease DM intake, especially if wet distillers grains
 - May decrease milk production when fed in high amounts
 - May feed excess protein and possible excess phosphorus

- **Wet versus dried distillers grains:**
 - Nutrient content is the same for both
 - Storage and handling are considerations with wet distillers grains

- **New considerations with feeding wet distillers grains**
 - Can store in silo bags for extended periods of time
 - Can blend with soyhulls, beet pulp or corn silage

- **Considerations when selecting suppliers of distillers grains:**
 - Uniform nutrient content and quality
 - Watch for evidence of heat damage
 - "Modified" distillers grains may have certain fractions blended back into distillers grains. One needs to be aware of the nutrient content of such products so that total rations can be properly formulated using the modified distillers grains. Such products may actually be a higher value product to the producer, but one also wants a consistent product from one batch to the next.

For additional information on feeding distillers grains to dairy cattle contact:

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The Advantages of Using Corn Distiller's Dried Grains with Solubles in Swine Diets

Corn Distiller's Dried Grains with Solubles is an Economical Addition to Swine Diets

In one ton of complete feed, adding 200 lbs of Corn Distiller's Dried Grains with Solubles (and 3 lbs of limestone) to a finisher diet will replace approximately:

177 lbs of corn 20 lbs of soybean meal 44%

6 lbs of dicalcium phosphate

Calculate the opportunity cost of using Corn Distiller's Dried Grains with Solubles in swine diets as follows:

Additions:

+ Corn Distiller's Dried
Grains with Solubles

+Limestone

200 lbs. x price/lb = \$

3 lbs. x price/lb = \$

TOTAL A = \$

Subtractions:

-Com

- Soybean Meal 44% - Dicalcium Phosphate

177 lbs. x price/lb = \$ 20 lbs. x price/lb = \$

6 lbs. x price/lb = \$

TOTALS = \$

Opportunity Cost:

Total S - Total A = Opportunity cost of Corn Distiller's Dried Grains with Solubles/lb x
200 lbs/ton = Opportunity cost/ton of complete feed

"New Generation" Ethanol Plants Produce Higher Quality Corn Distiller's Dried Grains with Solubles

Corn Distiller's Dried Grains with Solubles have more digestible energy, amino acids, and phosphorus than other DOGS sources produced in the ethanol industry. This makes

Corn Distiller's Dried Grains with Solubles an excellent alternative ingredient for livestock rations.

. Corn Distiller's Dried Grains with Solubles Can Be Effectively Used in Swine Diets With Maximum Dietary Inclusion Rates of:

Nursery Pigs (> 15 lbs) 25%

Grow-finish pigs 20%

Lactating sows 0% Gestating sows 50%

. Feeding High Levels of Corn Distiller's Dried Grains with Solubles to Sows Has Been Shown to Increase Litter Size Weaned Recent research results from the University of

Minnesota have shown that feeding high levels of Corn Distiller's Dried Grains with Solubles in gestation and/or lactation in a previous reproductive cycle, increases litter size weaned in the subsequent reproductive cycle compared to sows fed typical com-soybean meal diets.

. Feeding Diets Containing Corn Distiller's Dried Grains with Solubles May Improve Gut Health of Pigs

Studies are currently underway at the University of Minnesota to determine if adding Corn Distiller's Dried Grains with Solubles to diets for growing pigs reduces the incidence and severity of ileitis (*Lawsonia intracellularis*).

. Corn Distiller's Dried Grains with Solubles Reduces Phosphorus Excretion in Manure and Does Not Adversely Affect Air Quality in Confinement Swine Facilities

Corn Distiller's Dried Grains with Solubles contains 0.70 % available P, which is 18 times more than the available P in corn (0.04 %). This means that the natural phosphorus in Corn Distiller's Dried Grains with Solubles is better digested and absorbed by the pig than phosphorus in corn and soybean meal. The end result is less need for dietary phosphorus supplementation and a reduction in P excretion in manure.

University of Minnesota research has shown that ammonia, hydrogen sulfide, and odor emissions from swine manure from grow-finish pigs fed a diet containing Corn Distiller's Dried Grains with Solubles are the same as when conventional comsoybean meal based diets are fed to swine.

. The Greatest Nutritional and Economic Value from Using DDGS in Swine Diets is Achieved when Diets are Formulated on a Digestible Amino Acid and an Available Phosphorus Basis.

. Nutrient Profiles and Digestibility Coefficients are Available for Each Ethanol Plant Producing Corn Distiller's Dried Grains with Solubles.

For more information on DDGS research and getting the most out of Corn Distiller's Dried Grains with Solubles in swine feeding programs visit our DDGS web site at www.dd~s.lmn.edu

or contact: Dr. Jerry Shurson

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