Comparing Prices for Wet to Dry Byproducts

UK Cooperative Extension Service

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Question: I can purchase dry corn gluten feed for $115/ton or wet corn gluten feed for $45/ton delivered. Is the wet by-product economically worth considering at this price?

<u>Step A</u>: In order to compare these two by-products, we need to compare them at the same dry matter (moisture) concentration.

Assumptions for Step A:
1. Wet CGF contains 40% dry matter (DM) or 60% moisture.
2. Dry CGF contains 90% dry matter (DM) or 10% moisture.

(Note: All equations shown use the cancellation of units to arrive at the answer with the correct units.)

Part 1: Convert price per ton of dry CGF on an as fed basis to price per ton on a dry matter basis (DM).

$$\left(\frac{\$115}{2000 \; lbs \; dry \; CGF \; as \; fed}\right)\left(\frac{100 \; lbs \; dry \; CGF \; as \; fed}{90 \; lbs \; dry \; CGF \; DM}\right)\left(\frac{2000 \; lbs \; DM \; dry \; CGF}{1 \; ton \; DM \; dry \; CGF}\right)$$

= $128/ton of DM of dry CGF

Part 2: Convert price per ton of dry CGF dry matter to price per ton of wet CGF as fed.

$$\left(\frac{\$128}{2000 \; lbs \; DM}\right)\left(\frac{40 \; lbs \; dry \; CGF \; DM}{100 \; lbs \; wet \; CGF \; as \; fed}\right)\left(\frac{2000 \; lbs \; wet \; CGF \; as \; fed}{1 \; ton \; wet \; CGF \; as \; fed}\right)$$

Result: Equivalent cost per ton of wet CGF delivered = $51/ton as fed

Thus, it would appear from this first step that the wet corn gluten feed would be economical
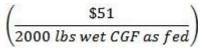
Step B: Account for Feed Shrink

We need to take into account the amount of shrink to calculate if the wet corn gluten feed by-product is worth considering.

The percentage of shrink refers to the percentage of the by-product which is lost between when the feed is delivered to the farm and when it is fed to the cows. Losses due to shrink must be accounted for when calculating a value. These losses come from losses due to drying (evaporation of water in the by-product), spoilage, spilled feed, rodents and birds and other losses on farm. With wet by-products these loses can be substantial.

Assumptions for Step B:

Losses in a feed bin for dry CGF are approximately 5% compared to 15 to 40% losses of wet feeds stored covered or uncovered. In this example, I have assumed a shrink of 30% for wet CGF.

Part 1: Calculate value of a pound of wet CGF delivered to the farm.

$$\left(\frac{\$51}{2000 \; lbs \; wet \; CGF \; as \; fed} \right)$$

= $0.0255/lb as fed of wet CGF delivered

Part 2. Calculate the value of the 30% shrink losses with wet CGF compared to 5% shrink loss with dry CGF per ton of delivered feed.

Dry CGF - 100 lbs/DM lost on farm due to shrink per ton.

Wet CGF - 600 lbs/DM lost on farm due to shrink per ton.

Therefore: an additional 500 lbs/ton delivered is lost with wet CGF is fed compared to dry CGF is fed.

($0.0255/lb wet CGF delivered to the farm) X (500 lbs/ton delivered)

= $12.75 lost/ton delivered

Part 3: Subtract the value of the shrink losses from the price value of wet CGF calculated in Step 1, Part 2.

Result: Value of Wet CGF

$$\left(\frac{\$51}{Ton\ delivered}\right) - \left(\frac{\$13}{Ton\ delivered}\right) \qquad = \$38/ton\ delivered$$

Thus, if wet corn gluten feed could be purchased for less than $38/ton delivered to the farm, it would be more economical than dry corn gluten feed priced at $115/ton.

In this example , the wet corn gluten feed is not economical to consider.

(When by-products are properly dried, the amount of undegradable or bypass protein generally increases. These calculations do not take this into account.)