

METHODS & ECONOMICS OF STORAGE & EXTENDING THE SHELF-LIFE OF WET DISTILLERS GRAINS¹

Rick Rasby, Galen Erickson, and Terry Klopfenstein
University of Nebraska, Lincoln, NE

Introduction

For many small to medium sized cow/calf, dairy, and feedlot producers, price and availability of distillers grains are out of sync to when supplemental feeds are needed. The availability of distillers grains are greatest and the price is the lowest in the summer time of the year. However, usage must occur as delivered with semi-load quantities used on a weekly basis. As a result, smaller operations are limited on using wet distillers grains plus solubles.

Rationale for Demonstration Project

Based on some small-scale mixing and evaluation of WDGS amended with dry forages, dry by-products, or dry grain, it has been determined that adding small amounts of dry, bulky feedstuffs to WDGS may solve these challenges with storage in silo bags and/or bunkers. By conducting this demonstration project, we were able to give producers guidelines about how to store wet distillers grains for a long period of time. In addition, this project would allow us to be better prepared to help producers determine which feed stuffs to use and at what inclusion levels to ensure WDGS can be stored.

Description of Demonstration Project

Successful outcome will be adequate storage (no spoilage) and packing density in either silo bags or bunker storage. Bunker storage will be evaluated based on packing pressure allowed with equipment packing WDGS without loss or equipment sinking into pile. The only risk is that spoilage will occur and render the bags or bunkers unfit for feeding. When bagging these different mixes, the bagger was held at a constant pressure of 300 PSI. A skid loader with rubber tracks was used for packing as well as a payloader.

Storage in a Silo Bag

Grass Hay: We concluded that the minimum level of grass hay in a mixture with WDGS for bagging would be 15% on a dry matter basis. At this level, the bag was 4 feet and 7 inches high and 14 feet wide. It did not seem to put much pressure on the sides of the bag.

Alfalfa Hay: Alfalfa hay is recommended at 22.5% (dry matter basis) when mixing it with wet distillers grains to be stored in a silo bag. At this level, the bag was 4 feet and 5 inches tall and 13 feet wide. At this level, the dry matter of the product is 41.26%.

Wheat Straw: Wheat straw required the least amount of forage on a dry matter basis compared to the other two forages used in this experiment. The recommended level for bagging is 12.5% on a dry matter basis. At this level, the bag was 4 feet and 11 inches high by 13 feet and 8 inches wide. The dry matter of this mixed product was 36.87%.

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Dry Distillers Grains: The mixture of dry distillers grains and wet distillers grains appeared to do a very nice job of bagging during this experiment. The recommended level of bagging dry distiller grains is 50% on a dry matter basis. This had a mixture dry matter of 49.35%. When bagged, it was 4 feet and 11 inches high. It was 13 feet and 6 inches wide. This bagged just a littler better than the wheat straw did.

Wet Corn Gluten Feed: Because the bag split open for this product, a recommend level would be 60% (dry matter basis) wet corn gluten feed on a dry matter basis. For this to work, the pressure on the bagger would have to be decreased from what was used during this experiment. What that pressure should be set at is not known as of now.

Modified Wet Distillers Grains plus Solubles: Some plant produce a product that is 50% moisture; therefore 50% dry matter called modified distillers grains. Modified distillers grains will bag by itself without any additional forages added.

Storage in a Bunker

From this experiment, 25% (dry matter basis) wheat straw was mixed with WDGS. Because the scale was too small, it is unclear what the optimum wheat straw level is, but appeared to be greater than 25%.

With the larger-scale experiment with two loads of WDGS with grass hay, 30% grass hay (DM basis) worked and required less bulk or storage space. However, 40% worked even better and would pack better with larger, heavier equipment. We used a skid-loader with tracks that probably resulted in a lower level of grass hay than in a commercial setting.

We have bunkered WDGS with corn stalk residue. The stalks were wetter than anticipate and we used a 7 inch screen in the grinder. Use a 5 or 4 inch screen would reduce particle size and make excluding air form the bunker easier. In this experiment, 30% (dry matter basis) corn stalk residue was mixed with WDGS.

Costs

Costs to bag or bunker WDGS will vary. Input cost for bagging will include the cost of the WDGS, forage, mixing equipment costs (fuel, labor, rental cost if equipment is rented or owned machinery costs), and bagging costs. Input cost for bunkering will include the cost of the WDGS, forage, mixing equipment costs (fuel, labor, rental cost if equipment is rented), packing costs (fuel, labor, machinery costs), and bunker costs. Some producers will cover the bunker with plastic, but that is not necessary if there is a good pack. In the summer of 2006, a producers that bunkered WDGS and straw (60% WDGS:40% straw DM basis), calculated total cost of \$36/ton. The bunker was covered with plastic. The bunkered material was 40% dry matter; therefore, cost on 100% dry matter basis was \$90/ton.