



NUTRITION NOTES

Innovation + Research from Kent Nutrition Group

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DRY MATTER, MATTERS!

What is dry matter? Understanding what this is and how to use it is important to the success of a feeding program. In short, dry matter is that portion of a feedstuff that is not water. To test for it, weigh a sample of the feedstuff, evaporate the moisture, and then weigh again. The starting weight, before any moisture is removed, is the “as fed” weight. The weight after all moisture is removed is the weight of the dry matter. The simplest way to remove the moisture is by using an inexpensive microwave oven. Don’t do this in the kitchen! The odor will drive everyone away.

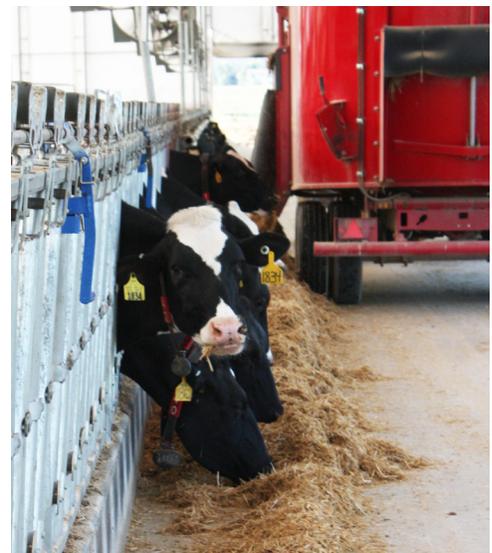


Weigh the sample on a paper plate using a digital scale that allows the plate to be tared to zero. Once tared, weigh and spread out 100 grams of forage on the plate. Working with 100 grams allows percent dry matter and moisture to be determined without using a calculator. When testing wet forages, start by microwaving the sample for 2 minutes then carefully weigh and remix. Repeat, but this time microwave for only 30 seconds. Keep repeating until the weight changes by no more than 1 gram. At this point moisture has been removed and the sample is dry.

The remaining material represents the grams of dry matter in the sample, but since we started with 100 grams, it also is the percent dry matter. For example, if 60 grams remains, the sample is 60% dry matter and 40% moisture. For samples that are very wet, the length of time of the initial microwaving can be increased, but as the process is repeated, be careful not to burn the sample. Alternative methods for determining dry matter are by use of a dehydrator, Koster Tester®, or even a hand held NIR tester. Often the method used is to send samples to a lab. This gives accurate results but takes days to get a result. It is best to do regular on-farm testing because forage dry matters are constantly changing.

The feed industry is required to know what the dry matter of grain ingredients are. This is because mixed feeds must be accompanied by a tag which guarantees “as fed” nutrient content. Remember, as fed is with the moisture still in the feed. It is required to be on an as fed basis to deter the addition of water to increase weight while still meeting dry matter nutrient guarantees. Generally, grain and byproduct ingredients are between 87 and 90% dry matter. They will always contain about 10% moisture due to ambient moisture absorption from the air. A 90% dry matter feed with an as fed protein guarantee of 20% will test 22.2% protein on a dry matter basis ($20/.90=22.2$).

Changes to on-farm forage dry matter represent the single largest variable in a dairy cow’s diet. The dry matter of a forage is dependent upon many factors: forage type, growing season, stage of maturity when harvested, weather when harvested, storage conditions, silo management, and even last night’s weather. Bottom line, it is constantly changing! One would think that it wouldn’t matter. If a forage were to get



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wetter, cows will simply drink less from the waterer. Yes, they probably would drink less, but their nutrient intake would most likely go down. Most cows are fed a total mixed ration (TMR) where forages and grains are weighed and mixed together so that each mouthful supplies a balanced portion of required nutrients.

For nutrient needs to be met, a predetermined amount of the TMR must be consumed. When the recipe for the TMR is designed, it is based on the nutrient and dry matter content of each ingredient. If a forage gets wetter and the same number of pounds are added, more water and less dry matter is supplied. The nutrients are in the dry matter portion of the feed, not the water. For the wetter forage to supply the same nutrients, more “as fed” pounds need to be added. By contrast, if it gets drier, fewer “as fed” pounds of that forage should be fed.



Bottom line, the dry matter of forages needs to be checked and changes compensated for on a regular basis. Not doing so represents a major profit leak. Day-to-day variation in bulk tank milk weights can be proof that forage dry matters vary. With routine dry matter adjustments to the diet, milk tank fluctuations will largely disappear. Checking and compensating for dry matter changes costs little; yet economic returns are great.