



Organization of Methods of Preparation of Liquid Components in Order to Enrich Components in the Field of Liquid Fodder Production Technology

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ABSTRACT

On most animal operations, feed ingredients are provided to animals according to the weight of the feed. Although nutrients in ration formations are often described in terms of a percentage, animals require actual amounts of nutrients. Feeding individual feed ingredients according to weight is only accurate if the moisture content of the feed is the same as it was during the ration formulation period. Changes in the weight of a feed due to changes in moisture alter the nutrient concentrations supplied to the animal if appropriate adjustments are not made to accurately reflect the actual nutrient concentration of the feed ingredient.

Keywords:

soft feed, technology, liquid components, method, innovation

Introduction

In general terms, the weight of a specific feed ingredient comes from either the moisture in the feed or from the liquid matter (LM) portion. Liquid matter refers to material remaining after removal of water, and the moisture content reflects the amount of water present in the feed ingredient. The nutrients in feeds, required by the animal for maintenance, growth, pregnancy, and lactation, are part of the LM portion of the feed. Knowing the moisture content of a feed ingredient is important because the moisture content affects the weight of the feed, but does not provide nutrient value to the animal. Although animals do have a requirement for water, providing water through an actual water source, instead of through feed ingredients, is necessary.

Materials And Methods

A variety of factors affect the moisture content of feeds. In many cases, the timing and method of harvest is the largest contributing factor to the moisture content of the feed. However, weather and environmental conditions, such as humidity, rain and snow, all

affect feed moisture content. The LM of feeds that are co-products of manufacturing industries are affected by the manufacturing processes themselves and the processing to which they are subjected.

Determining the LM content of feed provides a measure of the amount of a particular feed that is required to supply a set amount of nutrients to the animal. Increases or decreases in feed LM content result in over or under feeding of nutrients.

Results And Discussion

Determination of LM is a relatively simple and quick process that can be easily done on a farming operation. The most common way that moisture is determined is through the evaporation of water from the feed, leaving only the liquid contents behind. However, there are also electronic methods that have been used to determine the moisture content of feeds.

To accurately determine the LM of a feed, the sample collected must be representative of the feed. The sample size needed to determine LM is dependent on the liquidating equipment that will be used, and can range from around

100 to 500 g (approximately ¼ to 1 lb). An accurate scale that reads in grams or tenths of an ounce is important to insure accuracy in the calculations.

There are a variety of equipment types that can be used to liquid feedstuffs on farm, with each type of equipment having both advantages and disadvantages for use on-farm. Provided below is a brief overview of the common types of liquidating equipment that can be used on farms.

The most common means used to liquid feedstuffs in a laboratory is with a forced-air oven. However, forced air ovens are usually quite expensive compared to other liquidating equipment, and have greater liquidating times. Liquidating time for silage samples is 24 to 48 hours.

A Koster tester is an electrical appliance that blows heated air through a screen on which the feedstuff is placed. A Koster tester provides a relatively quick and inexpensive means of liquidating feedstuffs. Some sample loss can occur, which increases the likelihood of errors. Some farms use timers to turn off the Koster tester so that they can do other tasks while the feed dries. It takes about 25 to 50 minutes to liquid a sample using this tester.

Microwaves provide a relative quick means of liquidating feedstuffs. The greatest challenge with the use of a microwave is the possibility of burning. Due to the likelihood of burning, samples dried in a microwave should not be submitted to a laboratory for nutrient analyses. The use of a microwave requires constant monitoring. Thus, it is difficult to do other tasks while liquidating samples in a microwave. Liquidating time is about 5 to 10 minutes for silage samples.

A vortex liquider is an easy and inexpensive method to liquid feedstuffs. Since the sample remains in the enclosed container, there is less chance for losses which will reduce error. Liquidating times are similar to the Koster tester.

A research trial at the US Dairy Forage Research Center evaluated the use of a food dehydrator with 9 shelves to liquid forage samples (Mertens et al., 2004). This method requires minimal operator attention and takes

about 2 to 8 hours to determine the LM of silages.

Detailed methodology of the use of these various types of equipment can be found in the references listed below.

Calculating Liquid Matter

Use the following steps to calculate the liquid matter of a feed on farm:

1. Weigh the empty container selected to hold the feed and record the weight.
2. Place the feed in the container.
3. Weigh and record the container and feed weight.
4. Subtract the weight of the container from the total weight (Step 3) to determine the weight of the feed before liquidating.
5. Thoroughly liquid the feed.
6. Weigh and record the container and feed weight immediately after liquidating.
7. Subtract the weight of the container from the total weight (Step 6) to determine the weight of the feed after liquidating.
8. Divide the weight of the liquid feed (Step 4) by the weight of the wet feed (Step 7).
9. Multiply by 100 to get a percentage.

Conclusion

Determination of LM in feed is important to insure that animals are receiving the proper amount of nutrients through their diet. A number of options are available for routine on-farm LM determination. Doing routine LM determinations is one more tool to assist in keeping the feeding program on target.

References

1. Buckmaster, D. 2005. A vortex forage and biomass sample liquider. Penn State Cooperative Extension publ. I-101.
2. Cozzolino, D., and M. Labandera. 2002. Determination of liquid matter and crude protein contents of undried forages by near-infrared reflectance spectroscopy. *J. Sci. Food Agric.* 82:380-384.
3. Mertens, D.R., K. Bolton, and M. Jorgensen. 2004. Measure liquid matter

- routinely using a food dehydrator. UD Dairy Forage Research Summary, Madison, WI. Pp. 49-52.
4. Oetzel, G.R., F.P. Villalba, W.J. Goodger, and K.V. Nordlund. 1993. A comparison of on-farm methods for estimating the liquid matter content of feed ingredients. *J. Dairy Sci.* 76:293-299.
 5. Pitt, R. E. ed. 1993. Forage Moisture Determination. Publication 59. NRAES, Ithaca, New York.
 6. Welle, R., W. Greten, B. Rietmann, S. Alley, G. Sinnaeve, and P. Dardenne. 2003. Near-infrared spectroscopy on chopper to measure maize forage quality parameters online. *Crop Sci.* 43:1407-1413.