Winter Feed Estimator: A Practical Tool for the Beef Cow-calf Producer

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Producers often estimate hay needs for their beef cow herd based on rules of thumb and neighbor's advice that may not be accurate for their individual operation. One common approach is to allow two round rolls for every cow to be supplemented during the winter. While this may get you started, somewhere along the way there is likely to be a system failure. The focus of this paper and the supporting slide chart are to provide a simple approach for estimating dry matter feed requirements of the beef herd and then converting those requirements into an estimate of required hay or silage round rolls.

Factors Affecting Interpretation

With a practical tool it not feasible to consider and account for all of the possible variables that might affect the feeding value of particular forages. However, some specific issues are important.

Nutrient value

Nutritional quality of conserved forages can be measured by a variety of terms and can be highly variable even when all other factors appear constant. Forage species, fertilization program, growing conditions, and harvest management all interact to affect forage quality. While these variables need to be taken into consideration, the feed estimations in this tool are based on cow dry matter requirements only. It is assumed that the nutritional quality of the feedstuffs (ie. stored forages) is adequate for meeting the daily requirements of the herd. Additional supplementation may be required if the forage quality is low or the livestock requirements exceed the nutritional value of the harvested forages.

Moisture measurements

Dry matter content is the portion of feed remaining when all of the moisture is removed. Hay probes for measuring bale moisture can be used to make an estimation of moisture however the results are only marginally accurate. Submitting a sample to a forage testing laboratory is the best approach for measuring moisture content. In addition to moisture, the test will also provide important nutritional information. Production lots should be sampled independently for both physical and nutritional parameters.

Alternative nutrient supplies

The use of other feedstuffs to supply dry matter and nutrients will affect the accuracy of these numbers. Standing forages (either stockpiled or cool season annuals), supplements, and other provided feeds may dramatically reduce the stored forage requirements. The herd requirements haven't changed but the nutrient source has.

Feeding/ storage systems

Ideally forages would be protected from nutrient losses during storage. The calculations in this tool assume no loss during storage or feeding. In this scenario feeding and storage losses would be minimized. Deviations from optimal storage and feeding can result in dry matter losses over 50%. Keep in mind that the outer six inches of a five foot diameter bale is 34% of the total mass and the outer twelve inches is over 60% of a bale weight.

Bale size determinations

Most bales are marketed based on assumed weights. Large bales are assumed to be over 1,000 pounds and small bales are assumed less than 800 pounds. In a study on storage losses, bale weights were averaged to establish a baseline. All bales came from the same baler and the dimensions were roughly 4x5 feet. The average weight of the bales was 785 pounds, 215 pounds less than anticipated 1,000 pounds. Overestimation of bale weight can be a serious issue. The best way to estimate bale weight is by weighing a representative sample utilizing a set of truck scales.

Animal condition and management

In this tool, body condition score (BCS) is assumed to be adequate (mean = 5) on the BCS scale of 1 to 9 and remain constant. Management to improve or decrease average herd body condition by manipulating supplementation will necessitate further interpretation of the stored forage estimation.

Frame score estimations

Producers often misjudge the frame size and body weight of their cattle. Keen managers utilize outside data to improve the accuracy of their estimations. Access to a set of scales removes the guess work. Alternatively, purchasing records, sale weights of culled cattle, or an unbiased expert may help. Once weight averages are determined the frame score can be used to place cattle into the small, medium, or large frame category. Be sure that averages are really herd averages by collecting data on a large number of individuals.

Utilizing the Winter Feed Estimator

For this tool, daily dry matter intake requirements are calculated as 2.5% of body weight. For example, a cow with a body weight of 1,150 is a medium framed cow; her daily dry matter requirements are (1,150 x 0.025 = 28.75) about 29 pounds per day.

Step 1. (Dry Matter Estimator *side*)
Pick a Frame Size based average cow body weight (Small, Medium, or Large).

Step 2.
Slide chart to appropriate number of cattle (top of chart "Determine Number of Cattle").

Step 3.
Estimate number of weeks to be fed. Based on past years experiences and/ or predictive seasonal weather forecasts, try to accurately determine current year feeding needs.

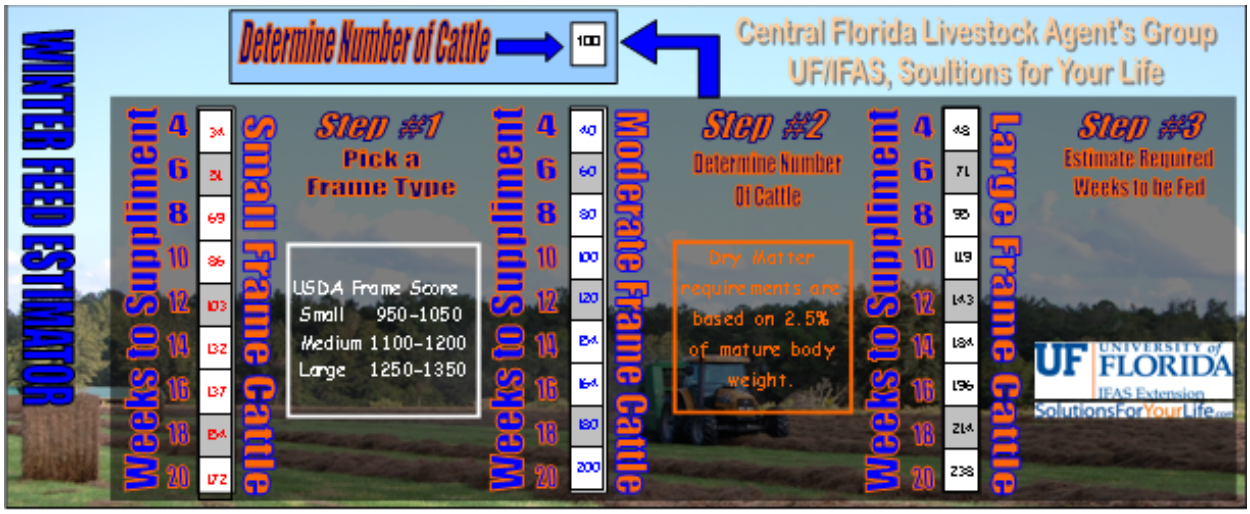
Read the value in the appropriate frame score column. This is the estimated number of tons of conserved forage required. Carry this number over to the other side.

Step 4. (Dry Matter Conversion *side*)
Select bale size as produced (cured hay on left or balage on the right).

Step 5.
Find the nearest required tons in either the "Cured Hay" or "Balage" column (Orange print and arrows) then read the required bales based on measured moisture content. You may need to use a multiplication factor for large amounts of forage required.

Many producers are shocked by the estimated needs, but they accurately reflect the dry matter / bale requirements of a typical cow-calf herd to supply all of the feed requirements. Adjustments can be made based on individual situations and alternatives can be planned to reduce your dependency on stored forages. Utilizing this tool can help to accurately plan cow-herd forage needs. For more information contact your local county extension agent.

Example of the sliding scale tool described in the proposed EDIS document. The tool will be a laminated sliding scale approximately 10 x 4 inches and double sided.
There are 10 different herd size options (10, 20, 30, 40, 50, 100, 200, 300, 400, 500)



There are 5 different bale size options for both hay (600, 800, 1000, 1200, 1400) and balage (800, 1000, 1200, 1400, 1600).