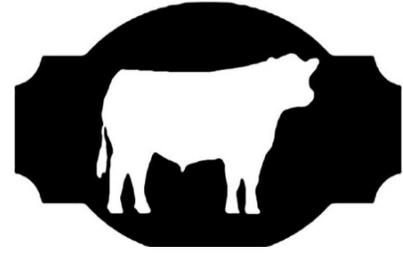




Oregon State
University



Beef Cattle Sciences

Beef Extension Forage Evaluation Program

Sample Collection and Submission

Welcome to the OSU – Beef Extension Forage Evaluation. This program consists of receiving forage samples for nutritional evaluation, and providing a nutritional recommendation based on forage quality and animal requirements. The goal of this program is help producers with strategies and decisions regarding a key factor within cattle operations – nutritional management. Please carefully follow these guidelines when collecting and submitting forage samples for evaluation:

Taking an accurate forage sample

The success of this program depends on the samples submitted for analysis. These samples must be representative of the forages that your animals are actually consuming! Inadequate sample collection will result in inaccurate analysis and misleading values, resulting in incorrect interpretation and nutritional recommendations.

Sample each field. Make sure that you collect samples from each field or pasture that provides forage to your cattle. Forage quality varies according to species, soil characteristics, stage of maturity, rain damage, harvest loss, and season. Do not combine forages from different areas or seasons (likely differing in quality) into one composite sample – you won't replicate the same exact mixture when feeding cattle. Instead, collect and submit samples from each field.

Collecting hay samples. First and foremost, collect approximately 25 to 30 samples per field, making sure that you are representing several areas within this field. The more samples taken, the more representative the sample will be! For baled hay, collect samples from several bales from the same lot using a hay probe. If you don't have one, we recommend ordering the Penn State Forage Sampler probe (NASCO - Phone: 414-563-2446), or you can contact your local OSU Extension Office. Insert the hay probe full depth into the end of a rectangular bale or the rounded side of a round bale; that will give you a representative sample of both stems and leaves. For loose and chopped hay, you can hand-collect samples. Mix thoroughly all samples from the same field in a large container, and spread it evenly onto a flat surface. Divide into 9 quadrants (such as a tic-tac-toe grid), and collect samples from all 3 quadrants within the mid-grid (vertical or horizontal). Store into a 1-quart Ziploc plastic bag. Make sure that you, to the best of your ability, collect a composite sample that is representative as possible of the original sample. Pay special attention to particle size separation. The accuracy of your results depends on it!

Collecting haylage, silage, and pasture samples. Haylage and silage samples can be hand-collected when forage is being ensiled or during feeding. Collect 25 to 30 samples from different areas

of the silo (as much variation as possible), avoiding spoiled areas. Mix thoroughly all samples, and collect 2-quarts of the composite sample. Pasture samples can be collected manually or using scissors, cutting at the height animals are grazing. Remember; collect samples that represent the entire pasture! A recommend method is walking from end to end of the pasture in a “Z” pattern, collecting samples in random spots as frequent as necessary to come up 25 to 30 samples per pasture. For large pastures, it is recommended to divide into smaller areas (max 10 acres). Mix thoroughly all samples, and collect 2-quarts of the composite sample as previously described. For haylage, silage, and pasture samples, it is imperative that you keep them in a freezer, and dry the sample (instructions in the next section) before submitting for analysis. Otherwise, samples will mold and results will be inaccurate.

Drying haylage, silage, and pasture samples

The easiest way to dry a forage sample is using a microwave. Drying the sample will not only prevent mold and consequent inaccurate evaluation, but will also provide the dry matter content of the sample, which is required for diet formulation and to calculate if the amount of forage available is adequate. The equipment needed is 1) small scale (weighs to 0.1 gram), a paper plate (preferably large with edges, like a clean pizza cardboard), cup of water, and regular kitchen microwave oven. To dry the sample, follow these guidelines:

1. Place the paper plate on the scale and record the weight.
2. Transfer forage sample (2-quarts) to the plate and weigh it. Make sure that sample is evenly spread in plate
3. Place a glass $\frac{3}{4}$ full of water in the back corner of the oven to prevent damage. Maintain the water level throughout the drying process.
4. Place the paper plate with forage into the microwave oven. Set power to 80%.
5. Run the microwave for 7 minutes if drying grass samples. Silages (i.e. corn and sorghum) should be initially dried for 14 minutes. Reweigh the plate with forage and record the weight.
6. Stir the sample carefully to avoid spilling any forage, and return to the microwave. Dry for an additional 2 minutes, reweigh, and record weight.
7. Continue to stir and dry at 1 minute intervals. When the change in weight is less than one gram, your sample is dry!
8. Avoid charring the sample. This may occur if the microwave was set too high, the forage was dried too long, or all the water had evaporated out of the glass. The procedure must be rerun if the sample becomes charred. A fire is always possible, so don't leave during the drying process.
9. Use the following equation to calculate the dry matter content of the sample
$$\text{Dry matter (\%)} = \frac{(\text{dry forage weight} - \text{plate weight}) \times 100}{(\text{wet forage weight} - \text{plate weight})}$$
10. Record the dry matter content of each sample. Store dried samples in a 1-quart plastic bag. They are ready for submission!

When receiving your results, you will notice that dry matter of the sample is not 100%. This happens because the sample absorbs moisture during shipping. Nevertheless, make sure that you use the dry matter value calculated using the microwave when planning your nutritional programs!

Submitting your samples for evaluation

Mail samples and order form (as many as necessary) to the address provided. Make sure that samples are properly identified and sealed tightly to prevent contamination. Evaluation results, recommendation report, and supporting documents will be mailed within 3 weeks after samples are received.

If you have questions about the OSU – Beef Extension Forage Evaluation program, do not hesitate in contacting **David Bohnert** at the EOARC – Burns (dave.bohnert@oregonstate.edu or 541-573-8910). Additional information about this program is also available at the Beef Cattle Sciences website (<http://beefcattle.ans.oregonstate.edu/>).

THANKS FOR SUPPORTING THE OSU - BEEF EXTENSION FORAGE EVALUATION PROGRAM

