Taking a Good Sample

An analysis is only as good as the sample submitted. Taking a good representative sample of your feed is the first and most critical step of the analysis process, yet it is often the step that is the most taken for granted. Following good sampling procedures will help insure that your analytical results truly reflect the nutrient composition of your sample and will be useful in developing your feeding program. Poorly taken samples can result in decisions that lead to either over or under feeding. Both of these can be costly in terms of money and/or lost production.

The key to submitting a good sample is to collect several subsamples to form a composite. Remember, the one pound sample that you submit for analysis is going represent several tons of feed. Thus, you want to be sure that it represents a good cross-section of the feed, not just one bale. Table 1. below is from a study displaying the importance of collecting a representative sample. Twenty individual bales from the same lot of hay were probed and analyzed. The table shows the variability between bales and the implications can that be drawn from analyzing only one bale. For example, if you sampled the worst bale in the lot, feeding recommendations based on this information would result in overfeeding and increased feed cost. At the end of the study, all of the individual samples were combined to form a bulk composite sample. The results of the composite are equivalent to the arithmatic average of all the samples demonstrating that compositing multiple subsamples is the best way to get an accurate picture of the forage in question.

Guidelines

Hay – hays of different types, cuttings or lots should be sampled separately. Using a Penn State Forage Sampler (or other suitable hay probe), bore 12 - 20 bales selected at random through the small square end. Combine all core samples and submit for analysis.

Silage – collect only freshly unloaded material. Grab handfuls of silage from 12-20 locations in the unloaded silo pile, feed bunk or from in front of 12-20 cows. For bunker or trench silos, collect 12 -20 samples from across the face of freshly exposed material. Sampling locations should vary from top to bottom and left to right. All subsamples should be combined and thoroughly mixed in a clean plastic bucket to form a composite sample. Submit one pound (0.5 kg) of the composite for analysis.

Another option is to load a mixer wagon with silage, blend for a few minutes, then grab a sample from the discharge.

Total Mixed Rations – collect only freshly blended rations. Grab 12-20 handfuls of the mix from different locations in the feed bunk or from in front of 12-20 cows. All subsamples should be mixed in a clean plastic bucket to form a composite. Submit a one pound (0.5 kg) sample of the composite for analysis.

Pasture – randomly select 12-20 sites where the animals have been grazing and clip a handful of forage at grazing height. All subsamples

should combined and thoroughly mixed in a clean plastic bucket to form a composite (further cutting the forage into 2 - 3 inch (5 - 8 cm) pieces aids in blending). Take a one pound (0.5 kg) sample, pack tightly in a plastic bag and freeze for 12 hours prior to submitting for analysis. Freezing will help prevent marked chemical changes due to respiration or fermentation.

Grains and Ingredients – Bin storage: randomly collect 12-20 samples as the grain is discharged and combine in a clean plastic bucket. Flat storage: grab 12-20 samples from various sites and combine in a clean plastic bucket. Thoroughly blend composite and submit one pound (0.5 kg) sample for analysis. Note: whenever possible, a grain probe should be used to take a sample.

Table 1. Quality test of single bales of alfalfa hay.

Bale No.	DM%	CP%	ADF%	NDF%	RFV
1	87.9	18.2	35.3	44.6	128
2	86.7	18.4	35.8	48.7	117
3	86.6	18.4	36.1	44.3	128
4	87.3	18.9	32.5	39.0	152
5	88.4	19.8	31.4	38.3	156
6	87.1	19.8	32.7	41.5	142
7	85.9	20.3	32.7	40.0	148
8	88.0	20.3	31.5	38.5	156
9	85.6	20.3	36.9	54.1	103
10	85.5	20.4	32.1	40.6	146
11	87.4	20.5	32.0	39.2	152
12	86.9	20.5	32.5	39.1	151
13	86.4	20.8	31.5	41.2	145
14	86.2	20.8	33.4	42.0	139
15	88.0	21.2	30.3	35.7	170
16	84.7	21.3	31.4	38.5	156
17	86.8	21.4	29.3	33.9	181
18	89.9	21.5	28.6	33.7	184
19	85.2	21.8	32.1	40.3	148
20	87.8	22.4	29.4	37.0	166
Minimum	84.7	18.2	28.6	33.7	103
Maximum	89.9	22.4	36.9	54.1	184
Average	**86.9**	**20.4**	**32.4**	**40.5**	**148**
Composite	**88.1**	**20.7**	**31.5**	**40.7**	**147**

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