

Sampling Guidelines for Hay Testing

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L.M. Lauriault, R.P. Flynn, C.R. Glover, B. Gomez, and I.A. Ray¹

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Hay testing can be an important alfalfa hay marketing tool for sellers and buyers. Sampling technique is a significant aspect of standardized hay testing, because the analysis is valid only to the extent that the sample represents the lot of hay. A lot is defined as up to 200 tons of dry matter (approximately 225 tons of hay at 12 percent moisture) baled from the same field, cutting, and stage of maturity. Any given lot can be packaged in any form or size of bale or stack.

WHAT TO USE FOR SAMPLING

The sample for each lot should consist of cores from at least 20 bales and weigh approximately one-half pound. Cores are taken using a hollow tube probe with an inside diameter of 3/8 to 5/8 inch that can take a 12-24 inch long core. Using a probe with a greater diameter or length or taking more than 20 cores may make the sample too large. Even if the sample is large it should not be divided because stems and leaves will separate and settle creating subsamples that do not represent the lot. Send the whole sample to the laboratory. The cutting tip should be kept sharp to make coring easier and prevent the hay from wadding around the outside. Some commercial probes come with a replaceable cutting tip. For others, sharpening is best done using a round file to scallop the inside edge.

HOW AND WHERE TO SAMPLE

Sample rectangular bales of any size with the probe centered in the end of the bale. Drill horizontally into the bale. Round bales are sampled by drilling horizontally into the center of the bale's curved side. If only the bale's sides are exposed or fewer than 20 ends are exposed, as with large bales on a truck, drill on a sharp angle from as close to the end of the bale as possible and in the vertical center. Sample bales at random. There should be no predetermined reason to select a specific bale (i.e., location, color, leafiness, etc.). To sample bales still in the field, count the number of bales, divide by 20 (=n) and sample every nth bale.

For example, a farmer just baled a 120-acre circle of alfalfa. There are 4,800 small square bales in the field weighing about 75 pounds each (180 tons). Since $4,800/20=240$, the farmer will probe at least every 240th bale to get exactly 20 cores. If he makes 1-ton bales, the farmer will have 180 bales. So every 9th bale should be sampled ($180/20=9$). If those bales are not randomly distributed throughout the field, the farmer may want to take 25 or 30 cores rather than 20 to get a more random distribution. But remember, taking more cores may make the sample too large.

For stacked hay or truckloads, take an equal number of cores from each accessible side. Count the number of bale ends exposed, divide by 20 as

¹Forage agronomist, NMSU Agricultural Science Center at Tucumcari; Extension agronomist specialist–soils, NMSU Agricultural Science Center at Artesia; professor–crop improvement, NMSU Department of Agronomy and Horticulture; Extension specialist, NMSU Department of Agricultural Economics and Agricultural Business; and associate professor–alfalfa breeding, NMSU Department of Agronomy and Horticulture, respectively.

before and sample every nth bale. If the lot contains fewer than 20 small square or large round bales, core all the bales. If it less than 20 large square bales, core each bale twice, but from opposite ends, if possible. If deteriorated hay from the exterior of the bale or stack will not be fed to animals or if they can be selective in their feeding, it should not be included in the sample. Otherwise, if hay is sold based on quality or if it will be ground before feeding, deteriorated portions should be included in the sample.

WHEN TO SAMPLE

During the three weeks following baling, hay undergoes a “sweat” that results in a decline in quality. Any hay that will not be fed for more than three weeks should be sampled as close to feeding time as possible. Additionally, hay stored outside should be sampled within 2 to 4 weeks of feeding so that continued deterioration does not significantly lower bale quality from the sample taken for analysis. Take samples early in the week, seal them tightly in an airtight, polyethylene bag (e.g. zipper-type freezer bags), and immediately mail or deliver them to the laboratory, so that they will not spend the weekend in shipment. The laboratory report for “as received” or “as fed” will more accurately approximate the lot of hay for samples handled in this way. Label each sample with the lot, area where grown (field), forage type (species), cutting, stage of maturity, and special conditions (rain/sun damage, frosted, drought, etc.). Use a fine point permanent marker for labeling directly on the sample bag. It also may be helpful to include a label inside the bag, written with the fine-point permanent marker.

CONCLUSION

Remember, the analysis for a hay lot is only as good as the sample collected to represent that lot. Using proper sampling techniques, followed by analysis at a certified laboratory, is essential for an accurate test of forage quality. For more information about sampling probes and techniques or certified laboratories, visit the National Forage Testing Association Web site (www.foragetesting.org) or contact their secretary at: National Forage Testing Association, P.O. Box 451115, Omaha, NE 68145-6115, Tel.: 402-333-7485, FAX: 402-691-0636, E-mail: nfta@tconl.com

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