Sampling Pastures for Nutritive Analysis

With the increased use of rotationally grazed pastures and goal directed management, there is need for standardized pasture sampling methods. The method described here was developed for use by participants in The Northeast Dairy Farm Forage Demonstration Project during the 1989 to 1991 grazing seasons. The samples collected in this project were used to develop a data base of pasture quality over the Northeast and to calibrate near infrared (NIR) analysis of fresh forage samples. To have a meaningful data base it is necessary that all samples be taken the same way. This sampling method has proven to be practical in both field and laboratory.

Field Sampling

Obtaining an accurate pasture sample starts in the field. Pasture forage samples should be taken shortly before the cattle are turned into a pasture. Walk over the field and collect 30 to 50 small grab samples. The grab sample is taken by reaching down and grabbing a small section of forage between the thumb and first finger. Remove the forage at the same height that the cattle will graze the pasture. Samples need to represent what the cattle will be eating. Each grab sample should be taken at random from the forages which will be eaten by the livestock. Don't select weeds such as thistle or buttercup which will be refused. Don't bias your sample by taking a greater percentage of clover (or grass) than is in the pasture. You should take 30 to 50 grab samples over a pasture. This is necessary to get an accurate estimate of the average forage in the field. If there are decidedly different forage associations in the pasture divide your sample proportionally between the forage types by plan or by walking the field in a uniform grid. An example of such a situation would be a field having a flat and a sloping section, where there is a greater percentage of clover on the flat.

To properly identify the samples, some descriptive information is needed. Identify the three most abundant forage species in the composited forage sample. Look at both the grass, legume, and for (broad leaf weed) components. Measure the bulk height of the forage growth using the Plexiglas pasture plate and yardstick as discussed in TRIM Factsheet Number 5022 "A Pasture Plate for Estimating Forage Yield." This will provide an estimate of how much forage dry matter is available per acre at the start of grazing.

Sample Preparation

Once the sample is collected place it in a plastic bag, remove the excess air, close the bag tight, and freeze it as soon as possible. The freezing is necessary to prevent the natural plant proteins from breaking down to more soluble forms of proteins. Freezing before drying appears to break the plant cells, allowing more rapid drying and maintaining forage quality for an improved analysis.

If the sample is to be mailed to the laboratory, it should be air dried after freezing to prevent the sample from spoiling. The best way to air dry the sample to minimize spoilage is to place it on a window screen in a place out of the sun, rain or dew where the normal breezes can blow around and through it. An alternative is to place an electric fan near the sample on a screen to blow a breeze around and through it.

Forage Sample Information Sheet

The "Forage Sample Information Sheet" should be filled out. The sample collector needs to enter a name and return address for receiving the lab report. Some laboratories will send copies of the results to other people such as county agents or nutritional consultants. If you work with these individuals and want them to receive a copy of the results, make sure their names and addresses are in the appropriate places on the form. For those using the Northeast DHIA forage testing lab the following information should be included on the submission sheet:

1. Check that the sample is a fresh forage sample and if it represents "legume" (greater than 85% legume), "mixed mostly legume" (between 50 and 85% legume), or "grass" (less than 15% legume).

2. In the comments section list the codes of the three most prominent forage species in the sample being submitted. These can be listed in the comments section as "sl=", "s2=", and "s3=" respectively. Codes for forages currently used in the WVU data base are listed in Table 1.

3. Enter in the average bulk height of the pasture as measured with the pasture plate using "BH=".

4. Enter the days of regrowth since last grazing as "DR=".

5. Enter the name or number of the sampled pasture.

If sending your sample to another laboratory, this information should be included in the form appropriate for the information sheet used by the laboratory.

Sample Submission
The dried sample needs to be taken to the sample pickup point or mailed to the laboratory. After the sample is analyzed, a copy of the results will be sent to the address or addresses listed on the "Forage Sample Information Sheet."

Table 1. Identification codes of forage species listed in the Northeast Dairy Farm Forage Demonstration Project pasture data base.

Forage Type	Common Name	Species Code
Legumes	alfalfa	alf
	alsike clover	acl
	birds foot trefoil	bft
	black medic	bmd
	hop clover	hcl
	ladino clover (tall white clover)	wcl
	red clover	rcl
	vetch	vtc
	white clover	wcl
Grasses	bent grass	btg
	bluegrass	blg
	brome grass	brg
	browse	brw
	orchard grass	og
	poverty oat grass	pog
	quack grass	qkg
	redtop	rt
	sweet vernal grass	svg
	tall fescue	tf
	timothy	tim
Broadleaf weeds	dandelions	dd
	golden rods	gr
	plantains	pl

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