



Analyze Corn Silage

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Unusual weather conditions last summer and fall have left many producers with a forage crop that is anything but normal or consistent. Some dairy producers feeding a ration high in corn silage are experiencing lower than expected milk production than in previous years. Lower than normal crude protein values, along with highly variable fiber values, were observed early this fall.

Based on data obtained from the Northeast DHIA lab, there also appeared to be a tendency for lower than expected soluble protein and degradable protein values in corn silage. For these reasons, Penn State investigated soluble and degradable protein fractions, in addition to total crude protein, acid detergent fiber (ADF), and neutral detergent fiber (NDF) in Pennsylvania corn silage samples.

Thirty-three corn silage samples were collected from southeast, northeast, northwest, and central Pennsylvania. Investigators attempted to collect samples that showed some of the

variation found among farms this fall.

Moisture contents were typical of most years, ranging from 60 percent to 70 percent. The average soluble protein was similar to values found by the Northeast DHIA lab last year, yet 10 percent lower than what is considered normal when comparing the analysis to Penn StateUs Feeds Library values (40.6 versus 50 percent of the crude protein), as shown in Tables 1 and 2.

It is important to note that we found a tremendous amount of variation in the soluble protein values ranged from 15.6 percent to 53.7 percent soluble protein. This emphasizes the need for including soluble protein when testing corn silage.

Degradable protein was fairly consistent among samples and close to the expected normal range of 70 to 75 percent of the crude protein as seen on both NEDHIA and NRC tables. While crude protein, ADF, and NDF fell within normally expected levels, samples again varied widely. Fifty-five percent of the samples had less than eight percent crude protein, and NDF ranged from a low of 42 percent to a high of 67

Table 1. Expected nutrient content of corn silage.

	Crude protein	Soluble protein	Degradable protein	ADF	NDF
Corn silage NRC	8.1	50*	69.0	28	51.0
Corn silage NEDHIA Standard	8.6	42	70.5	28	47.7
Deviation	1.4	10	11	4.8	6.4

* Expected soluble protein level is based on The Pennsylvania State University Feeds Library.

Table 2. Corn silage results from all regions in Pennsylvania December 1992.

	Average	Std. Dev**	Low	High
Crude protein	8.3	1.5	5.9	12.2
Soluble protein	40.6	7.9	15.6	53.7
Degradable protein	75.7	4.0	65.9	80.8
ADF	29.1	4.8	21.3	43.5
NDF	52.2	5.7	42.0	67.4

**Std. Dev = standard deviation

percent.

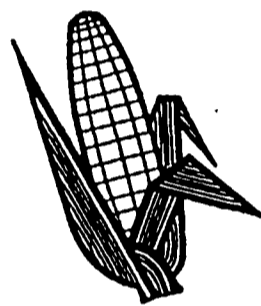
The bottom line is that it is more imperative than ever to sample and test corn silage made in 1992 for all nutrients normally analyzed, including the protein fractions.

Ration balancing and attention to corn silage quality, with emphasis on soluble and degradable protein fractions, will be extremely important this year in maintaining normal to high milk production. If average corn silage energy values are being used in ration programming, they should be discounted by at least five per-

cent because of the immature grain content.

Producers feeding large amounts of corn silage with low protein solubility values should consider including ingredients

to increase protein solubility. Soluble protein should be at least 28 percent of the crude protein in the total ration dry matter, with the optimum range being between 30 and 34 percent.



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