

EARLY OUTLOOK ON THE CORN CROP

Listed below are the average compositional values for corn silage, HMSC and HMEC. The corn silage values listed are fairly typical. However, there have been some differences. Quite a few samples are testing 18 to 21% ADF and 30 to 35% NDF. Most of these reports have been double-checked and verified. One possible explanation for this could be that due to the drought, a lot of corn, though mature, never attained the stalk height that was common in the past. Thus, when chopped, the proportion of stalk and leaves to ear is lowered resulting in lower fiber concentrations.

Due to the drought, there has been a lot of concern about the nitrate levels in corn silage. To date, the vast majority of corn silage from the Northeast has tested very low in nitrates (average + 0.04% nitrate ion). There have been very few that have tested above .44% nitrate ion. Attached is a handout on Nitrates for your reference.

Corn silage soluble protein, on the average, is running lower than last year (43% vs. 48%). A lot of samples are running in the 29 to 34% range, with some as low as 25%. This may also be drought related.

The results for HMSC and HMEC are preliminary. As the harvest continues, updated results will become available.

The USDA reports that corn grain yields are down 34% compared to last year and soybeans down 21%.

TABLE 1.

Nutrient	Corn Silage	HMEC	HMSC
DM, %	31.7	64.3	76.5
CP, %	8.9	7.8	8.8
ADF, %	26.5	8.8	3.4
NDF, %	46.2	27.8	14.7
TDN, %	69.6	81.4	86.5
NEI, Mcal/lb.	0.73	0.87	0.91
Ca, %	0.29	0.05	0.04
P, %	0.23	0.26	0.31
Mg, %	0.19	0.13	0.13
K, %	1.23	0.46	0.40
Na, %	0.002	0.003	0.002
Fe, ppm	76.0	48.0	-
Zn, ppm	13.0	15.0	-
Cu, ppm	3.0	2.0	2.0
Mn, ppm	15.0	5.0	7.0
Mo, ppm	0.4	0.3	0.4
S, %	0.15	-	0.12
Sol. Prot. % of CP	43.0	28.0	20.0

NITRATES AND DAIRY CATTLE

General

Nitrate is a major precursor of plant protein and moves rapidly from the soil into the plant. The conversion of nitrate into protein is quick, but not instantaneous. There is a lag, which can be increased by abnormal conditions and cause excess nitrate to accumulate in the plant. Some of these conditions are heavy nitrogen fertilization, drought, low light intensity, low temperature, and plant maturity and its interaction with moisture availability. Nitrates are in lowest concentration in grain, somewhat higher in the leaves and highest in the stem and sheath.

Nitrate poisoning is really a misnomer, since nitrite, one of the products of nitrate metabolism, usually causes the problem. Nitrite converts hemoglobin to methemoglobin which is unable to transport oxygen and turns the blood a chocolate brown color. The animal begins to suffer from a lack of oxygen and may eventually die. Excitement, vigorous exercise or stressful conditions aggravate the problem and increase death losses.

Nitrate Levels in forages for cattle:

% Nitrate Ton (DM Basis)	Comment
Below 0.44	Safe to feed.
0.44 - 0.66	Safe for non-pregnant animals – Limit to 50% of ration on DM Basis for pregnant animals; animals may go off feed, have a slow drop in milk, some abortions.
0.66 - 0.88	Limit to 50% of ration on dry matter basis; Symptoms as above, some death.
0.88 - 1.54	Limit to 35 - 40% total dry matter in ration. Do Not Feed To Pregnant Animals.
1.54 - 1.76	Limit to 25% total dry matter in ration. Do Not Feed To Pregnant Animals.
Over 1.76	Toxic - Do Not Feed

Symptoms

- general weakness
- diarrhea
- frequent urination
- depressed appetite
- accelerated respiratory and pulse rates
- blue color of mucous membranes, muzzle, tongue and udder
- depressed growth or milk production
- trembling
- staggered gait
- frothing from mouth
- abortion

Recommendations

If you suspect nitrate poisoning, do the following:

1. Call your veterinarian and/or extension agent.
2. Analyze all suspect feed sources including water. Blood samples may also be taken if acute cases are indicated.
3. Estimate accurately how much of each diet component you are feeding and the nutritional adequacy of your ration.
4. After receiving the analyses back from the lab, calculate the dietary concentrations of nitrate.
5. If acute or chronic dietary levels are indicated, reformulate the rations to include the contaminated feed at a lower level or exclude

if too high in nitrate.

6. If there is nitrate contamination of the water supply, do not feed the water to non-ruminating calves or use for human consumption.

Prevention and Correction

1. Be sure of proper soil fertility – follow recommendations.
2. Emphasize weed control in your forage programs.
3. Ensiling a suspect forage will help reduce the nitrate concentration.
4. If there are high nitrate levels in one of your forages, reformulate the diets to include lower levels of this particular component.
5. Be sure your animals are receiving adequate levels of energy and protein. Include a readily available carbohydrate source such as corn.

Summary

The likelihood of acute or chronic levels of nitrates in your feeds or water is minimal. However, if you do have the indicated symptoms, it is important to follow a logical procedure of obtaining good samples of the suspected forages for complete analysis and calling your extension agent and/or veterinarian. Before doing anything, check for adequate nutrition – protein, energy and minerals.

It is important to realize that even if the forages are high in nitrates they can still be fed by reformulating your diet. Please note, however, if the nitrate contamination is of an intermediate level (.4 - .6% of the total dry matter) do not feed the forage to cows in the last 1/3 of their gestation.