

## Beware of Nitrates in Corn Silage

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Dry conditions this fall have increased the chances that nitrates may be building up in your corn. High levels of nitrates in corn silage can be toxic to animals. Nitrate levels vary greatly depending upon a variety of factors, but are most frequently found where high nitrogen rates were applied to the field or when a drought-stressed crop is chopped within three days following a rain. Since the fermentation process will decrease nitrate levels by about 50 percent, ensiling the crop is preferred over green chopping or grazing. During fermentation nitrates are lost as silo gas. This gas is hazardous to people and animals; do not enter the silo without proper ventilation.

During favorable growing conditions, the corn plant takes in nitrates and plant enzymes convert the nitrates into proteins. Unfavorable conditions slow growth and the conversion process leaving nitrates to buildup in the plant. The highest nitrate concentrations occur in the lower portions of the plant. If moisture conditions improve, the conversion process accelerates and within a few days nitrate levels in the plant return to normal.

A number of management options can be used to reduce or prevent high nitrate levels in corn silage. Start by applying nitrogen at recommended rates being sure to factor in manure applications and legume credits. Work to minimize plant stresses due to other nutrient imbalances, diseases, insects and weeds. Attempt to harvest on bright sunny days when corn enzymes are the most active. Raise the cutter bar to leave 10 to 12 inches of stalk in the field. When feeding, dilute high nitrate corn silage with low nitrate feeds such as grains or legume hay. Introduce drought-stressed corn silage into the ration slowly so the cows' rumen bacteria can adapt to it.

If drought-stressed corn is ensiled at the proper moisture content and other steps are followed to provide good quality silage, nitrate testing should not be necessary. However, if you're at all in doubt, have the forage analyzed before feeding. When dealing with drought-stressed corn, it's wise to follow precautions regarding the dangers of nitrate toxicity to livestock and silo gasses to humans. If plants contain nitrates, a brown cloud may develop around your silo. This cloud contains highly toxic gases that people and livestock should avoid.

For additional information on drought-stressed corn issues check out the following website: <http://www.uwex.edu/ces/ag/issues/drought2003/>.

