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Nitrates and Dairy Cattle

Nitrate is a major precursor of plant protein. At certain times, environmental conditions can cause excessive accumulation in the plant. This includes heavy nitrogen fertilization, drought, low light intensity, and low temperatures. Crops susceptible to nitrate accumulation include sorghum, sorghum sudan, corn forage, small grain forages and weeds. Ensiling suspect forages can often reduce nitrate concentration by up to 50%.

Nitrate levels (DM Basis)

% Nitrate	ppm Nitrate Nitrogen	Comments
< 0.44	< 1012	Safe to feed
0.44 - 0.66	1012 - 1518	Safe for nonpregnant animals. Limit to 50% of ration dry matter intake. Animals may go off feed, experience a slow drop in milk production or abort in some cases.
0.66 - 0.88	1518 - 2024	Limit to 50% of ration dry matter. Above symptoms, some death.
0.88 - 1.54	2024 - 3542	Limit to 35-40% of ration dry matter. DO NOT FEED TO PREGNANT ANIMALS.
1.54 - 1.76	3542 - 4048	Limit to 25% of ration dry matter. DO NOT FEED TO PREGNANT ANIMALS.
> 1.76	**>4048**	**TOXIC - DO NOT FEED.**

Symptoms

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

Recommendations

As stated above, the most effective management strategy is to restrict the intake of high nitrate feeds. Contact your veterinarian and feed representative for assistance in reformulating your ration.