



## NEWS TO USE

# Nitrate Toxicity in Cattle – What can be done to help?

Nitrate toxicity generally occurs in forages grown under stress conditions, such as drought. Corn and grasses that have been heavily fertilized for optimum production and grown under drought conditions will have excessive nitrate levels in the forage when grazed or harvested for silage. Many weeds growing under drought conditions also accumulate excessive nitrate levels. Drinking water can also be high in nitrates, especially in drought conditions.

Symptoms of nitrate toxicity vary primarily on the concentration of nitrates in feedstuffs. Sub-acute toxicity may cause abortions in all stages of pregnancy. Research has demonstrated that high nitrate intake reduces fat-soluble vitamin status of cattle.

Processing cows and calves that have been grazing high-nitrate pastures can create enough additional stress that can lead to abortions and death of animals.

### What can be done to help?

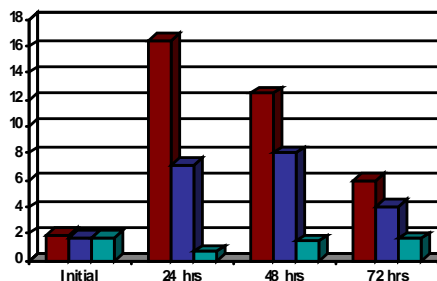
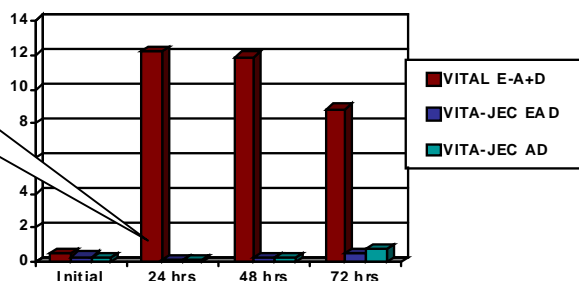
- If producers suspect nitrate toxicity, have them contact their veterinarian immediately.
- Dilute the daily nitrate intake by diluting high-nitrate feeds with feeds that are low in nitrate.
- Ensiled corn plants should not include the lower one-third of the stalk that is much higher in nitrates.
- Excessive nitrate intakes from feeds and water have been shown to increase the need to supplement with vitamin A and vitamin E. Injecting cows and weaned calves with VITAL E-A+D will provide an efficient and rapid method to increase status of vitamins A, D and E. Be sure to use injectable products that have proven bioavailability and have the right forms of fat soluble vitamins. The vitamin A activity in VITAL E-A+D is retinyl palmitate, the storage form of vitamin A. Competitive products are not bioavailable and contain retinyl propionate, which is not the storage form of vitamin A. The figures show the lack of bioavailability of two private-labeled products compared to VITAL E-A+D.

### Serum Vitamin A (ppm)

### Serum Vitamin E (ppm)

Note dramatic differences in bioavailability

All cattle injected with 500,000 I.U. vitamin A



- Newly-arrived feedlot cattle that may have been previously grazing high-nitrate containing grasses would also benefit from an injection of VITAL E-A+D.
- Mineral supplements may need to have higher levels of vitamins A and especially vitamin E, due to very low quantities of vitamin E in mineral products.

Below are websites that discuss nitrate toxicity in greater detail:

[http://www.caes.uga.edu/applications/publications/files/pdf/C%20915\\_6.PDF](http://www.caes.uga.edu/applications/publications/files/pdf/C%20915_6.PDF)

<http://animalrangeextension.montana.edu/articles/forage/annual/nit%20tox%20mt%20for%20mt200205.pdf>

<https://www.addl.purdue.edu/newsletters/1990/nitrate.shtml>

[http://pubstorage.sdstate.edu/AgBio\\_Publications/articles/ExEx4015.pdf](http://pubstorage.sdstate.edu/AgBio_Publications/articles/ExEx4015.pdf)

### Recommended injection quantities for VITAL E-A+D

Calves - 5 mL at birth, and 5 mL at weaning/processing

Cows - 8 mL