

Proper Sampling for Nitrate in Feedstuffs



Common Plants that Accumulate Nitrate

Crops	Weeds
Barley	Canada Thistle
Corn	Jimsonweed
Flax	Johnson Grass
Millet	Lamb's quarters
Oats	Russian Thistle
Wheat	Smartweed
Rapeseed	Wild Sunflower
Rye	Dock
Turnips	Kochia
Radishes	Nightshade
Soybean	Pigweed
Sudan grass	
Sugar Beets	
Sweet clover	
Sorghum	

Nitrate Sampling of Plants and Forages

Nitrate levels can vary widely within a field or hay lot, so collecting a representative sample is important. The sample should represent the forage the animal is actually eating.

What to send

- Submit approximately 1 gallon of fresh forage or hay in a clean bag.
- Do not include roots.

Hay or baled forage

- Use a hay probe to collect cores from at least 10 bales from the same cutting/lot.
- Combine the cores to make one representative sample.

Corn stalks, pasture, or other standing forage

- Cut plants at the height the animal would normally consume.
- Collect samples from 4–5 locations across the field and combine them into one sample.
- If some areas appear more drought-stressed or contain more nitrate-accumulating weeds (such as pigweed, dock, Canada thistle, or lamb's quarters), consider submitting a separate sample from those areas.

Nitrate Testing

Nitrate toxicosis is a concern for livestock and can occur when animals ingest forage or feed (or water) with a high nitrate content. The NDSU-VDL tests for nitrate in feed samples by a quantitative for nitrate levels by ion selective electrode. It is important that a proper and representative sample is sent into the diagnostic Lab for testing.

Storage and Shipping

Proper handling is important because nitrate levels can change after the sample is collected.

- Fresh or moist forage: Place in a plastic bag and keep cold or freeze until shipped.
- Green/immature plants: Freeze overnight and ship on ice packs when possible.
- Dry hay: May be kept at room temperature overnight before shipping.
- Ship samples as soon as possible, preferably overnight.
- Avoid shipping late in the week to prevent delays in testing.
- Do not allow fresh samples to remain warm for extended periods, as nitrate levels can decrease during storage.
- **Important:** If sampling crops for livestock feed or grazing, also consider any recent herbicide or pesticide applications and applicable livestock withdrawal intervals.

NDSU VETERINARY DIAGNOSTIC
LABORATORY

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