

MAKING A DIFFERENCE

NDSU EXTENSION
SERVICE

NORTH DAKOTA STATE UNIVERSITY

Nitrate QuikTest Certification Program Qualitative rapid analysis for nitrates in forages

The Situation

Nitrate accumulation in annual forages and common weed species can have negative impacts on livestock production and may cause abortions and even death. Although the potential for nitrate toxicity is present every year, increased levels of nitrate in plants are associated with drought conditions. Limited precipitation throughout the 2017 growing season created a forage shortage and challenges for producers in regards to feed and livestock management. With nitrate-accumulating crops such as small grains, canola, and sorghum-sudangrass being harvested for hay or utilized for grazing, producers needed tools and strategies to allow them to make timely management decisions to optimize the feed resource base and minimize livestock losses.

Extension Response

The Nitrate QuikTest is a "spot" test that can be utilized in the field or office to determine the presence or absence of nitrates in a forage sample. Due to the potentially hazardous component of chemicals utilized for the test, it is important that users are aware of safe handling techniques and proper use and interpretation of the test. Training materials and kits were assembled, and an Extension in-service training and certification program was conducted at four locations across the state. Forty Extension Agents and Area Extension Specialists were certified to conduct the Nitrate QuikTest. Samples were evaluated by certified individuals in 42 North Dakota Counties during the summer and fall of 2017. Statewide and local press releases were prepared and distributed to advertise the availability of the Nitrate QuikTest and increase awareness on the potential for nitrate toxicity in grazed and harvested forages. Additionally, educational materials related to nitrate accumulation and toxicity were distributed at the NDSU Extension Crop and Livestock In-Service Training held September 6-7 in Washburn, ND.

Impacts

NDSU Extension personnel evaluated over 1,300 samples representing over 100,000 acres of various forage crops, including wheat, oats, millet, barley,

canola, and sorghum-sudangrass. Nearly two-thirds of samples tested positive for the presence of nitrates and were sent to a certified laboratory for quantitative analysis. Extension Agents worked closely with clientele to provide management recommendations and formulate rations containing safe levels of nitrates.

Feedback

Extension personnel reported that the availability of the Nitrate QuikTest allowed them to make contact with new clientele who had not previously utilized Extension resources. Producers gained awareness and knowledge of issues related to nitrates and how to manage and feed forages to reduce the potential for nitrate toxicity in livestock. One producer stated the following: "The half-hour of my time I spent at the Extension Office to gain the knowledge I did about nitrates was invaluable. Thank you for providing this great service."



Public Value Statement

There are over 2 million acres of forage land in North Dakota that help support more than 1.8 million cattle. The total value of agricultural products sold in the state is over \$10 billion, making this industry a critical component of state and local economies. Providing tools and information that enhance the knowledge base and management skills of producers is critical in maintaining the sustainability and profitability of agricultural operations in our state.

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