Winter Is A Great Time to Start Organizing Judging

As we head into the winter months, the thought of judging contests scheduled for next spring and summer are likely tucked away in the back of your mind. However, this is a great time to start organizing those teams. The 4-H program offers three Animal Science based judging opportunities – Livestock, Meats, and Equine. All three have value and merit, and each develop slightly different traits in youth and young adults.

Research shows that participation in youth judging contests has a positive influence on those individuals. Youth judging contests help to develop life-skills that can be used well past their years in 4-H. Training for, and competing in, 4-H judging contests can be an educational and enjoyable youth activity.


The most important piece to any judging program is the Coach. It might take some time and effort to find them, but there are qualified Coaches for all of our 4-H judging teams in every county. Start early to identify those individuals that are willing to make a little (2-3 hours per week), yet very rewarding time contribution. Quality (and competitive) 4-H judging programs can be developed by meeting once every couple of weeks over the winter months and once a week for the couple of months directly leading up to the State Contest.

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Feeding and Managing High Nitrate Feeds

As grain and hay prices continue to climb, many producers are attempting to control feed costs by buying lower priced “alternative” forages. These would include straws, stressed cereal grain hays, baled corn stalks, drought stressed forages, and lower quality baled hay. We’ve often discussed the concern about high nitrate forages, and how to interpret analyses and manage higher nitrate feeds. A brief discussion of sampling, interpreting reports and safely feeding higher nitrate feeds might help to avoid any potential problems.

Nitrate Susceptible forages. In most cases, the forages we are most concerned about are drought-stressed warm season annual forages such as sorghum / sudan “cane” hays and millet hays. Weed species such as kochia, lambsquarters, sunflower, and pigweed can also accumulate nitrates, so emergency feed resources should be watched closely. Finally, under extremely stressful conditions, additional crops such as corn, wheat, oats, and barley can also accumulate nitrates. From a management standpoint, the plant nitrates are generally located in the lower 1/3 of the stalk. Raising the cutter bar when swathing, or reducing the grazing pressure so animals are not forced to graze the lower portion of the stalk, will help reduce the nitrate concerns.

Nitrate Testing. When testing forages for nitrate levels, pay close attention to how the nitrate levels are reported. Depending on the lab, nitrate levels may be described as nitrate (NO\textsubscript{3}), nitrate nitrogen (NO\textsubscript{3}N) or Potassium Nitrate (KNO\textsubscript{3}). General nitrate recommendations are that nitrate (NO\textsubscript{3}) levels of 6,000 ppm (1% KNO\textsubscript{3}) or less are generally safe. Nitrate levels of 6,000 to 9,000 ppm (1% to 1.5% KNO\textsubscript{3}) are potentially toxic, and should be fed with caution. Nitrate levels over 9,000 ppm (1.5% KNO\textsubscript{3}) are extremely dangerous and must be diluted and blended with other feeds. When testing hay for nitrates, be sure to sample from at least 10 bales, as there is a lot of variation in nitrate levels from bale to bale. It is generally safer to feed susceptible forages to non-pregnant animals, and remember that nitrates remain in the plant, no matter how long the hay is stored.

Feeding Recommendations. Once you know the nitrate level of the forage, you can manage accordingly. The best situation is to keep the overall ration nitrate level below 6,000 ppm Nitrate (1% KNO\textsubscript{3}). This may mean blending or mixing hays. When feeding nitrate-susceptible forages, the safest method is to tub grind and blend with low-nitrate hay. If you are unable to tub grind, there are some important management considerations.

As mentioned before, feeding susceptible forages to growing (non-pregnant) animals is the safest route. When feeding, introduce the high nitrate feeds gradually. Cattle do have a limited adaptation to higher nitrate levels. This means that if you introduce the feed slowly, you will reduce the risk of having problems, but it definitely does not eliminate them. Also, making sure the overall ration is balanced, providing adequate energy (small amounts of supplemental grain), will also reduce the risk.

If you are forced to feed bales of high nitrate feed, most recommendations are, after you have introduced it slowly, to feed some of both the high nitrate and safe hay each day. Generally feed the high nitrate feed first, followed by the safe feed. There is still the risk that some cows will eat only the high nitrate hay. For example, dominant cows may push the thin or timid cows away from the better hay, forcing them to eat only the high nitrate forage. You may reduce the risk of this by sorting the cattle into two groups, 2’s, 3’s and thin/weak cows, and the adult cows.

When managing high nitrate forages, it is better to feed frequently, and don’t allow the cattle to go hungry. Also, it is important to manage feeding closely, especially during severe weather. If cattle go without feed for a day, they may go back and pick through the coarse stalks from previous feedings. Those lower stalks are where most of the nitrate is located, increasing the risk of nitrate problems.

Finally, be aware of all sources of nitrates. Some stock water sources can be high in nitrates, adding to the risk. Also, poor water sources may reduce the herd’s water consumption, also adding to the problem.

While there are risks associated with feeding high nitrate feeds, weather conditions, hay availability and hay prices may limit any other alternatives. Following a few basic guidelines and managing the cattle closely will definitely reduce the risk of nitrate problems.

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**Recommendations for managing high nitrate forages:**

<table>
<thead>
<tr>
<th>NO$_3$, ppm</th>
<th>KNO$_3$, %</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 3,000</td>
<td>0.48 (I use .5 for simplicity)</td>
<td>Safe for all classes of livestock</td>
</tr>
<tr>
<td>0% to 0.30%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3,000 to 4,500</td>
<td>0.48 to 0.72</td>
<td>Usually safe for all classes of livestock under normal management</td>
</tr>
<tr>
<td>.30% to .45%</td>
<td>(0.5 to 0.75 rounded)</td>
<td></td>
</tr>
<tr>
<td>4,500 to 6,000</td>
<td>0.72 to 0.96</td>
<td>Usually safe, consider feeding to growing animals, potential risk of early abortions if used as the only source of feed. As levels approach 6,000 ppm, consider blending with low nitrate feeds to reduce risk</td>
</tr>
<tr>
<td>.45% to .60%</td>
<td>(0.75 to 1.0)</td>
<td></td>
</tr>
<tr>
<td>6,000 to 9,000</td>
<td>0.96 to 1.44</td>
<td>Potentially toxic to cattle depending on situation; should not be the only source of feed, blend to 50% of the ration, keeping total diet NO$_3$ levels below 6,000 ppm</td>
</tr>
<tr>
<td>.60% to .90%</td>
<td>(1.0 to 1.5)</td>
<td></td>
</tr>
<tr>
<td>9,000 and above</td>
<td>1.5 and above</td>
<td>Should not be fed to pregnant animals, be sure to blend at 1/4 to 1/3 of the ration. Total NO$_3$ should be below 6,000 ppm</td>
</tr>
<tr>
<td>0.90% and up</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

To summarize from before, there are several things you can do to improve your safety when feeding nitrate susceptible forages:

1. Work cattle up slowly on nitrate forages. Cattle will adapt to higher nitrate levels, decreasing the risk of having any problems.
2. Do not introduce hungry, naïve (not adapted) cattle to nitrate susceptible forages. Work cattle up gradually.
3. Feed a balanced ration, supplying adequate energy (supplementation) and meeting vitamin A and E requirements.
4. Feed accurately, consistently, and often to reduce risk.
5. Grinding and blending feed is the safest method. If you are unable to grind, be sure to closely manage feeding so that all cattle have access to both low and high nitrate forages each day.

Doing any of the above management will dramatically reduce risk. At UW in the 80’s, they tried to induce nitrate toxicity with some cows by feeding 9,000 ppm nitrate forage as the only hay source. They were unable to cause any toxicity, and no abortions. This is not going to happen every time, and as you can see, I don’t recommend this, but I do feel comfortable that if you manage the feeding closely, feeding the same time every day, working cattle up slowly so that they adapt, and providing adequate mineral and vitamin supplementation, as well as providing adequate energy in the ration, the risk is minimal with 1% KNO$_3$ or lower feeds.

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There are resources available through the State 4-H office, University of Wyoming Animal Science Department, or established online websites to aid in the training of coaches and teams. In addition, the Coaches of the University of Wyoming’s judging teams are always willing to assist with camps and clinics to train Coaches or youth.

**Horse Judging Team** – Dr. Amy McLean; 307-766-4373; clean1@uwyo.edu

**Livestock Judging Team** – Lance Miller; 307-766-2159; lrmiller@uwyo.edu

**Meats Judging Team** – Zeb Gray; 307-766-5115; zgray2@uwyo.edu

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**Links to Judging Resources:**

- Wyoming State 4-H Judging Contests Rules and Eligibility: [http://4-h.uwyo.edu/4-HJudging-Contest_Eligibility&Rules.pdf](http://4-h.uwyo.edu/4-HJudging-Contest_Eligibility&Rules.pdf)
- Wyoming State 4-H Horse Judging Information page: [http://4-h.uwyo.edu/HorseJudging.asp](http://4-h.uwyo.edu/HorseJudging.asp)
- Wyoming State 4-H Livestock Judging Information page: [http://4-h.uwyo.edu/LivestockJudge.asp](http://4-h.uwyo.edu/LivestockJudge.asp)
- Wyoming State 4-H Meat Judging Information page: [http://4-h.uwyo.edu/MeatJudge.asp](http://4-h.uwyo.edu/MeatJudge.asp)
- UW Department of Animal Science homepage with information about our Judging Programs: [http://www.uwyo.edu/anisci/](http://www.uwyo.edu/anisci/)