



Extension Extra

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Plant Science

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NITRATE TOXICITY from WEEDS

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Weeds as well as certain crop plants may accumulate higher levels of nitrates. Under drought conditions, livestock may graze weed plants that normally would be avoided. Frequently, weeds like kochia, pigweed, or lambsquarters may be a significant part of forage harvested where precipitation has limited normal forage production. Some weeds are harvested for emergency forage; i.e. kochia has acceptable feed value if harvested early and properly handled. However, frequently weeds in these situations are considerably too mature, unpalatable, and often difficult to cure properly.

Factors: Factors favoring nitrate accumulation in weeds are similar to those for crops.

1. **SITE:** Form and content of nitrogen in the soil is variable. Frequently pigweed, kochia, and lambsquarters spp produce heavy growth in low, poorly drained areas. Forage from these areas may be mostly weeds.
2. Drought or low light conditions (weeds in understory) may increase nitrates.
3. During dry weather nitrate concentrations may be especially high for a short period after significant precipitation.
4. Treatment with 2,4-D can cause livestock to consume weeds that normally are not palatable. The herbicide changes the plant metabolism, resulting in nitrate accumulation. Studies have attributed abortion to grazing or feeding weeds in low land areas that were treated with 2,4-D. Several other herbicides are likely to produce similar responses.
5. As with crops, the nitrates accumulate in the vegetative tissue, not the seed.

What To Do:

1. Be aware of the potential problem where weeds make up a high percent of the feed source.
2. Test the feed, following guidelines for nitrate testing.
3. Be aware of the increased risk associated with weed response to herbicides.
4. In the future, plan to use herbicide early when weeds are small to reduce the weed material that will be grazed or harvested in the forage.

Weeds with High Risk:

Several species of weeds in the pigweed, goosefoot, mustard, composite and nightshade families are frequently listed as high risk. Nitrate problems have been documented for these weeds and several related species; however the potential risk is not limited to these plants. Several are common in South Dakota:

Most Common

pigweeds
lambsquarters
kochia
Russian thistle
Canada thistle
nightshade
bindweed
dock spp.

Others

beggar ticks
plumeless thistle
bee plant
bindweed
barnyardgrass
wild sunflower
prickly lettuce
skeletonweed
sweetclover
witchgrass
smartweed
goldenrod
sow thistle
chickweed
mustard
blue green algae

References:

Plant That Poison Livestock. Black Hills Resource Conservation and Development Association and South Dakota State University. Regg Neiger et al. 69 pp.

Plants Poisonous to Livestock in the Western States. USDA, ARS Bulletin 415. 90 pp.

Poisonous Plants in the United States and Canada. J. M. Kingsbury, Prentice Hall, Inc. 626 pp.

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ExEx 8144: PDF May 2003.