

LARGE ANIMAL NUTRITION DURING DROUGHT CONDITIONS

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Effective management of your animals and pasture is the key

Lower than normal seasonal rainfall this spring and summer has led to drought-like conditions throughout much of Saskatchewan, resulting in poor growth of cereals, hay and pasture, thereby posing unique management and health care challenges for livestock owners. This will have obvious implications on animal nutrition and management not only during the grazing season, but throughout the winter as stockpiled forages are fed.

Toxicities

During drought conditions, there are many potential nutritional issues that the veterinarian and producer should be aware of, the first being water intake. Increased requirements during high temperatures must be considered. **Adequate quality and quantity of water should be provided at all times** to prevent detrimental impacts on health and welfare of animals. Consumption of feed with reduced digestibility and increased fiber content during drought conditions results in increased requirements of water for large animals, more specifically to prevent impaction of intestines and colic in horses.

Often during drought conditions we can expect a decrease in water quality as the concentrations of total dissolved solids, Sulphur and Nitrates in both well and surface water increase, mainly attributed to increased evaporation. Because increased concentrations of minerals and contaminants can negatively affect grazing performance and even lead to death if these compounds reach high enough concentrations, water testing should be recommended to producers as part of a balanced nutritional program.

It is also important that producers be aware of the risks of cyanotoxins produced by blue-green algae (algal bloom) on standing water during the hot summer months, ingestion of which can cause sudden death. Treatment to prevent algae growth often causes other water quality issues, therefore limiting access to standing water (run-offs, sloughs, etc.) is often the best solution. Alternatively, consider regular draining and cleaning of water trough.

Increased growth of weeds and reduced growth of desirable pastures during drought conditions can result in lack of plant selection while grazing, thereby putting animals at higher risk of ingesting drought tolerant, toxic plants. It is important to familiarize yourself and your clients with the clinical signs of common plant toxicities: the reference "Stock-Poisoning plants of Western Canada" (<http://www.crownsnestpass.com/public/download/documents/4799>) is a great online source for plant identification and clinical signs. The most common range plants in Saskatchewan toxic to cattle are **Monkshood, Water Hemlock, Horsetail, Bracken Fern, Tall Larkspur** and some **Astragalus** species. In cases where plant ingestion is suspected, do not forget to submit a sample of rumen contents for toxicology or seek veterinary advice.

Potentially even more dangerous than the toxic plant species are those that accumulate toxic compounds due to soil conditions. Selenium and Sulphur are most commonly accumulated in plants leading to toxicities. Seaside Arrowgrass is commonly found in saline soils and attracts cattle because it accumulates salt, but its cyanogenic property makes it toxic. Stressed plants are prone to accumulate nitrates, which if not given time to dissipate prior to harvest, can cause dietary nitrate levels greater than 1% on DM basis, and can lead to nitrate toxicity when ingested by cattle and horses. Nitrate accumulation is most common in annuals such as barley, wheat and oats and is most apparent during early development (milk to dough stages). This must be considered when harvesting green feed or if producers choose to graze rather than harvest these crops. Diagnosis of toxicities such as these can often be made by clinical signs and a blood mineral panel submitted to the lab. Furthermore, chemical analysis of suspected forages or crops would be a useful tool for producers during drought conditions.

Grazing and pasture management

Supplementation is recommended for animals on grass pasture during drought conditions as a way to minimize risk of toxicity, prolong pasture life and more importantly to prevent malnutrition and starvation. Chemical analysis of livestock feed is very important during drought conditions as it will help to accurately formulate rations based on the nutritional requirements.

Supplemental feed is often required to meet energy and protein requirements during drought conditions. A list of supplemental feeds for horses includes hay cubes, haylage, silage, previous year's hay crop, green feed, straw and grain. For cattle on pasture, providing an alternate, highly digestible energy source will cause a beneficial shift in rumen microflora. The shift to propionate producing microbes allows for more efficient capture of nutrients from the forage while decreasing animal intake, therefore prolonging pasture life. The viability of use of feed grains to supplement pasture forages will depend largely on commodity pricing and logistics of delivery to pasture, but should be considered as way to both supplement nutrition and sustain pastures this season. For both species, producers need to ensure that alternate feed sources are introduced slowly to prevent negative impact on health and welfare.

In regards to pasture management, provision of longer rest period, creation of sacrifice area, reducing stocking rate and avoiding over-grazing are important tools for effectively managing pastures during drought conditions.

Moving into the fall and winter months, veterinarians should be aware of potential vitamin A and E deficiencies arising after a prolonged period on poor quality forages. Be wary of dicumerol toxicity from ditch hay and mycotoxins in old moldy hay. Particularly in equines, parasitic infections, foal pneumonia and heaves are more prevalent during drought period. Feed testing of stockpiled forages and grains should be recommend to producers as drought conditions during the growing season will affect both the nutrient quality and concentration of potential toxins in the final feed product. Producers should be encouraged to work with a nutritionist, and to take forage quality into account when developing nutritional programs for winter feeding of all large animal species. Overall, implementation of key pasture management and nutritional strategies can help to prevent the negative impact of drought conditions on the health and welfare of large animals.

For more information contact:

University of Saskatchewan Toxicology Center. (306) 966-7441/7442

Prairie Diagnostic Services. (306) 966-7316

Saskatchewan Ministry of Agriculture:

Agriculture Knowledge Center. <http://www.agriculture.gov.sk.ca/AKC>

Dr Brian Doig, Provincial Feeds/Regional Forage Specialist,
<http://www.agriculture.gov.sk.ca/FeedForageListing>

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