Livestock Production

Sam Barringer, DVM
WVU Extension Service - Veterinary Sciences Specialist

Acorns Can be Deadly

Acorn/Oak Toxicity

During periods of decreased forage availability, cattle may seek out acorns as a food source. Acorns can be an important part of the diet in the fall; however, acorns have the potential to cause fatal poisoning. When forage is low, cattle seek out acorns as food. Ingestion of too many acorns can lead to poisoning. The goal of this article is to provide some basic facts on acorn poisoning and alert farmers to be aware of a potential problem.

Why are acorns poisonous?

Acorns contain a substance called gallotannin. In the rumen, gallotannin is metabolized to gallic acid and tannic acid. Tannic acid causes ulceration of the mouth, esophagus, and gastrointestinal tract. Tannic acid is especially toxic to the renal tubules, and renal failure tends to be the hallmark of this disease. In the fall, this substance concentrates in acorns and increases the risk of animal poisoning when acorns are ingested.

What cattle are at risk?

The poison in acorns (tannins) concentrates in milk; therefore, fast-growing calves (400-700 lb calves) on heavy-milking dams will be the first animals to show signs. Older cattle will rarely show signs of oak toxicity.

What are the signs?

In the early stages, constipation is followed by a decreased appetite. If the cattle are removed from the acorn area, most will recover in two to three days. Continued exposure leads to a black (GI ulceration), watery diarrhea, which is often foul smelling and may contain blood. Blood may be draining from the nose at this point. Despite intervention, these calves progress to show severe depression, straining to urinate and defecate; with marked edema in the abdomen and extremities. The prognosis for these calves is grave.

These signs mimic the Type 2 BVD. Remember Type 2 BVD generally presents with very high fevers. Acorn toxicity will have near normal temperatures in most cases. If pregnant animals ingest acorns, birth defects can occur.
What is the treatment?

There is no specific antidote for this toxin. Good nursing care is the only therapy for acorn toxicity.

This care should include:

a. Fluid and electrolyte replacement to keep the kidney operating. Once urination stops, the kidney has stopped and life will stop fairly soon.

b. Broad-spectrum antibiotics to fight off secondary infections from the ulcers. Don't use gentamicin or other drugs that are metabolized through the kidney.

c. Mineral oil. Mineral oil will provide some laxative effect and a single dose may be helpful. Little or no toxin is absorbed into the mineral oil and repeated doses will be ineffective.

Is an animal with acorn toxicity safe for human ingestion?

Generally, before a decision is made to butcher an animal, kidney failure and uremia have set in. Uremic animals should not be considered for human consumption.

Is there any prevention?

Supplementation with calcium hydroxide (hydrated lime) immediately before exposure has been effective in mitigating signs of acorn toxicity. Dose - 0.9 kg/head/day of 10% hydrated lime. The obvious prevention is to fence off oak trees or remove cattle from pastures that contain acorns.

Acorn poisoning is a preventable disease if simple precautions are followed. This fall many states have experienced hot, dry conditions that may indirectly predispose animals to acorn toxicity. Watch your pastures and cattle carefully and keep your herds profitable.