MANAGEMENT

Vet Call

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Considerations when grazing crop residues

Use of standing crop residues such as cornstalks or soybean stubble is an effective strategy to reduce winter feed bills. Some of the production and health considerations of grazing crop residues include the potential for nitrate toxicity, inadequate protein consumption, foot and leg problems, and inadequate water availability.

Nitrate risks

Standing crop residues are a potential feed source, but for corn, sorghum and other crops, one must be aware of the risk of nitrate toxicity. Nearly all plants contain nitrate, but some species are more likely to accumulate nitrate than others. Forage sorghum, grain sorghum, Sudan grass and pearl millet are notorious nitrate accumulators. Weed species such as kochia, lambsquarters, sunflower and pigweed are routinely high in nitrate. Under certain environmental conditions, wheat, corn, soybeans, johnsongrass and other plants can accumulate toxic levels of nitrate.

Nitrate content generally is highest in young plant growth and decreases with maturity. Sorghums and Sudan grass are exceptions because concentrations remain high in mature plants. Nitrate will accumulate due to excessive nitrogen fertilization or if the plants are stressed due to drought, frost, hail or disease. Nitrates accumulate at night, on cloudy days and when environmental temperatures are cool. Rain following a drought will also cause a rapid buildup of nitrate levels. If forages contain more than 6,000 parts per million (ppm) of nitrate, they should be considered potentially toxic.

A simple test is to gather several plants from around the field, make a cut in the lower 6 inches (in.) of the stem, and place a drop of a sulfuric acid solution on the cut surface (most veterinary clinics will have this solution). The cut surface of plants with high levels of nitrate will turn purple in color.

A more accurate determination of nitrate levels can be obtained by sending a sample of the suspected forage to a reliable laboratory. Nitrate levels of hay will not change once the hay is cut, but grazed forages will change concentrations on a daily basis.

The signs of nitrate toxicity in cattle include depression, muscle tremors, staggering, weakness, and a blue tint to the gums and vulva. Affected animals' blood will be a chocolate-brown color. Exercise will make the signs worse. Treatment is available by intravenous administration of an antidote if the diagnosis can be made in time.

Protein needs

When grazing cornstalks, protein will often be limited [<6.5% crude protein (CP)]. The amount of energy consumed will depend on the amount of grain in the field and will decrease with time. Protein is important for its role in enhancing appetite and increasing the digestibility of mature plants, which alters the level of forage intake and, therefore, the level of energy that an animal consumes. Research has shown that low protein consumption during the last 60 days of pregnancy is associated with weak calf syndrome. Protein sources can include alfalfa hay, raw soybeans, soybean meal, wheat middlings, cottonseed meal, commercial cubes, tubs with urea/molasses or protein blocks. Protein sources should be evaluated on the basis of cost per pound of protein.

Ensuring adequate intake of both protein and energy when grazing soybean residue can be a problem. Although soybeans are a high-protein crop, the residue is often very low in protein. Soybean stems and pods contain only about 4%-6% CP, well below the 7%-8% needed for minimum support of a dry beef cow. And, even though leaves can be about 12% protein, they are not highly digestible.

Energy availability from soybean residue is also a concern. Total digestible nutrients (TDN) average between 35% and 45% for leaves, stems and pods, which is even lower than for wheat straw. Once whole beans are gleaned from a field, cows fed only bean residue can lose body condition very quickly. If that happens, cows should be removed or the remaining residue can be used as an extender of much higher quality hay or silage.

Dangers afoot

One of the most common health problems that face cattle grazing crop residues is infections of the soft tissues and occasionally the bones of the foot. Foot rot in cattle is caused by foot injury that damages the skin between the claws or at the base of the foot, allowing bacteria to enter the skin and cause infection. The bacteria that cause foot rot are very common and present in fields where cattle are present. Exposure to manure, stalk fields, frozen rough ground or extreme drought can contribute to infection because of skin damage and increased exposure to the offending bacteria.

The first sign of foot rot is lameness that may range from very mild to serious enough that the animal is reluctant to move. Close examination of the involved hoof will indicate inflammation extending into the hock joint, with fluid coming from the hairless skin at the top of the cleft between the claws, along the coronary band or the bulbs of the heels. It is important to differentiate foot rot from cases where the hoof is damaged by nail penetration, injury from glass or other sharp objects, or from sole abscesses.

The addition of ethylenediamine dihydriodide (EDDI) in salt or feed is often suggested as a foot rot preventative measure. Use of doses greater than the approved level may result in irritation of the respiratory tract with signs similar to infectious bovine rhinotracheitis (IBR) infection.

For individual animals affected with the disease, hoof care and trimming of infected tissue is an important aid to medication. Tetracyclines, ceftiofur and penicillins administered at adequate dosages and immediately following discovery of infection are usually effective as treatments. Sulfonamides have also been extensively and successfully used.

If many animals in a herd are affected, the problem may be treated with feed-grade tetracycline antibiotics if cattle consume adequate dosages. Use of lower dosages will not cure infections and is suspected to increase the risk of chronic foot rot. EDDI in the feed or salt may be of some help, but is usually considered preventative at best.

Cattle consuming crop residues can also consume enough grain to suffer from acidosis and laminitis. Older, more experienced gleaner cows appear to be at

greatest risk of consuming high levels of grain when first turned into crop residues. Treatment for cows with laminitis involves hoof trimming and care so that the animal can maintain body condition until it can be culled from the herd.

You can lead them to water ...

Inadequate water availability while grazing crop residues is often an overlooked cause of health and production problems. Water must be available in sufficient quantity so cattle have ready access without competition. Insufficient space for animals to drink, low flow rates, low storage capacity, high mineral content or unfamiliar taste can all discourage water consumption to the point that feed intake is reduced or health is compromised.

Adequate trough size and flow rate are both important to ensure a proper water supply. Two feet (ft.) of water tank perimeter should be provided for every 25 head if cattle drink throughout the day; however, if the entire herd drinks at once, 2 ft. of tank perimeter is necessary per head. For most crop residue grazing situations, use water tanks with a capacity that can provide at least a one-day supply. The watering system (pump, pipe diameter, reservoir, etc.) should be able to supply the entire day's supply within four hours. Water sources that are not accessible due to mud or erosion will also result in reduced feed intake.

Cost-conscious producers will look for ways to minimize winter feed bills. A plan to ensure adequate protein supplementation and water availability, as well as to avoid grazing fields at high risk for nitrate toxicity, will minimize the health concerns of utilizing crop residues.

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