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Kochia Scopana — Fireweed, burning bush,
summer cypress, Mexican fireweed, tumbleweed,
and Dakota alfalfa

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Extension Extra

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Feeding Kochia to South Dakota Livestock

Kochia Scopana—Fireweed, burning bush, summer cypress,
Mexican fireweed, tumbleweed, and Dakota alfalfa

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Kochia scoparia has been put up as hay for many years as an alternate feed for South Dakota livestock. Frequently, it is mixed with other hay or silage during winter feeding periods. The quality of kochia forage is extremely variable, however, and in certain situations kochia causes livestock poisoning. Many unknowns exist, so use caution when feeding this plant to livestock.

Kochia is a potentially valuable forage as pasture, hay, or silage because it can grow well with limited or low soil moisture, and it's high in protein and total digestible nutrients (TDN) when harvested at the proper maturity. For pasture, begin grazing livestock on kochia when it reaches a height of 12 to 18 inches. For hay or silage, harvest kochia when it reaches a height of 20 to 26 inches. Kochia's long, narrow leaves are resistant to shattering during the haying process, so kochia hay should be palatable for livestock. To produce kochia forage, use the same management skills used to produce good quality hay or silage from other sources.

Toxicological properties of kochia

Kochia can contain nitrate, oxalate, sulfate, saponins, and/or alkaloids. Kochia has the ability to inactivate

thiamine. If nitrates, magnesium sulfate, selenium, or other possible toxic agents are present in the water and/or feed products, health problems could be magnified.

Clinical observations

Exactly how kochia causes livestock poisoning is not well understood. Poisoning usually occurs after animals have been fed kochia for 40 days or longer. The documented lesions associated with feeding kochia are toxic liver damage, kidney damage, dermatitis associated with photosensitization, and brain degeneration similar to bovine polio.

Polio signs can occur after a stress such as moving or processing. This condition responds to thiamine treatment which supports the theory that kochia inactivates thiamine. Thiamine is needed for normal brain function. Clinical signs of polio include unusual behavior and posture, blindness, and muscle tremors.

Kochia is known to accumulate nitrates in certain circumstances. High nitrate levels can cause rapid death with signs of difficult breathing, diarrhea, incoordination, and death within 24 hours after exposure. Long exposure to low levels of nitrate has been associated

with abortions, infertility, poor growth, poor feed efficiency, decreased milk production, and increased susceptibility to infections. Most or all of the above effects of low-level nitrate exposure have not been reproduced experimentally, therefore, consider these observations subjectively, not as fact. Other factors could be involved. South Dakota producers have reported abortions in livestock fed kochia hay.

Liver toxicity is characterized by necrosis and fibrosis. This liver damage can cause poor weight gain, weight loss, decreased feed consumption, and abdominal pain. Liver damage is the probable cause of photosensitization. Photosensitization causes the animal to be very susceptible to sunburn, especially on areas with white skin. Commonly, swelling and redness can be seen on muzzle, eyelids, vulva, and teats.

Kidney dysfunction has been documented in kochia exposed animals. Increased water intake and urination can be expected and often is associated with kochia feeding.

Unsolved sudden death associated with feeding kochia has been described by Dr. Lynn James, Director of the Poisonous Plant Research Laboratory, Logan, Utah. Some veterinary practitioners in South Dakota have observed delayed blood clotting and spontaneous fractures associated with kochia feeding. These conditions were thought to be caused by the oxalates tying up the blood calcium. Calcium is needed for blood clot formation.

Feeding recommendations

The safest way to feed kochia is in the smallest amounts possible. Alternate feeding and dilution feeding are frequently practiced. Feeding kochia in an alternate pattern, such as every other week, has been recommended, but never use rations containing over 50% kochia.

When kochia is fed, observe the animals closely. As a livestock producer, be prepared to make changes in feeding practices when any abnormal signs are observed.

Test kochia for both oxalates and nitrates, as well as nutritive value (i.e. TDN and crude protein). Acquiring a good representative sample is important. Drought-damaged kochia appears to be the most toxic, and the seed head is the most toxic portion of the plant.

Kochia hay frequently becomes moldy. Consider this when confronted with kochia feeding problems.

Conclusion

Many questions about the kochia plant remain unanswered. It is plentiful in South Dakota and when livestock feed supply is short, it will be fed. Be aware of the potential hazards that may accompany feeding of kochia.

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