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## **Progress update on toxic compounds in leafy spurge for ruminants**

FATHI T. HALAWEISH and SCOTT L. KRONBERG

*Assistant Professor, Department of Chemistry and Associate Professor, Department of Animal and Range Sciences, South Dakota State University, Brookings, SD 57007.*

### **Abstract:**

The reluctance of cattle to graze leafy spurge is a major reason why this introduced and toxic plant is considered a noxious weed in North America. The toxic and aversive chemicals in this plant are probably toxic to sheep as well as cattle. Although sheep appear to be much less susceptible to the toxic chemicals in leafy spurge, at higher levels of leafy spurge intake these toxins likely affect them also and consequently limit the capacity of sheep to graze and help control leafy spurge. During the last several years, we have been conducting a bioassay-guided chemical investigation of leafy spurge in order to identify compounds in leafy spurge that are toxic and aversive to ruminants. Our bioassays have been food aversion trials with rats and cattle and cytotoxicity tests. Our work is currently focused on identifying toxic compounds within a fraction that elicits feeding aversions in rats and cattle. This fraction contains about 40 compounds. Using high-performance liquid chromatography coupled with high resolution nuclear magnetic resonance, mass spectroscopy, infrared and ultraviolet detection, we have identified a series of cytotoxic compounds in leafy spurge that are called acetogenins. Our investigation of the compounds in the aversive fraction continues and we hope to know soon if there are other types of toxic and aversive compounds in leafy spurge besides acetogenins.