



COW SENSE CHRONICLE

MAY 2017

POISONOUS PLANTS: LARKSPUR AND DEATH CAMAS

The spring moisture much of Montana has received bodes well for a good poisonous plant year. This month, we'll focus on two common poisonous plants, larkspur and death camas.

Fatal poisonings from larkspur (*Delphinium* spp.) were reported in Montana as early as 1897. There are at least 60 species of larkspur throughout North America. Poisoning has been attributed to nine of these species; however, it is probably a good idea to assume that all larkspur species are poisonous. It's common for larkspurs to be grouped into tall and low varieties. Tall larkspurs grow at high elevation in deep, moist, and highly organic soils, often in montane forests. On the other hand, low larkspurs grow at lower elevations in drier soils. Given this difference in elevation and soil type, low larkspur issues are generally more common in the spring and tall larkspur in the summer. Young, rapidly growing plants are most toxic, with high levels of alkaloids in the leaves. Cattle appear to only consume tall larkspur once the plants initiate and elongate flower stalks. This results in a "toxic window" where cattle find tall larkspur increasingly palatable and the plants still contain appreciable amounts of toxic alkaloids.



Low larkspur near Norris, MT, June 2016.
R. Endecott photo.

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The toxic dose of larkspur depends on larkspur species and growth stage, season, amount ingested, and duration of time over which larkspur is consumed. One estimate suggests cattle must eat 0.7% of their body weight of green tall larkspur in an hour for a fatal dose. In the 9 species of larkspur associated with livestock poisoning, 40 alkaloids (toxic and nontoxic) have been identified. Concentration of alkaloids vary depending on species and stage of growth—studies show that tall larkspur growing in full sun will have more toxic alkaloids than the same plants growing in the shade. These alkaloids act at the neuromuscular junction, blocking the neurotransmitter acetylcholine, leading to muscle weakness. Bloat is often common because neuromuscular impairment doesn't allow contraction necessary for gas eructation accompanied by rapid rumen fermentation and gas production.

Around 15 species of death camas (*Zigadenus* spp.) are found in North America, appearing in early spring and often growing among wild onion. Like larkspur, death camas contains toxic alkaloids, but these act rapidly to decrease blood pressure by dilating arterioles, constricting veins, and slowing heart rate. Salivation, muscular weakness, staggering, and convulsions generally follow. As with larkspur, death is often the first clinical sign. Sheep are more susceptible to death camas poisoning, and show signs after eating as little as half a pound of green plant, with death occurring if they eat 2-2.5 pounds of green plant per 100 pounds of body weight.



Mountain death camas.
Montana FWP photo.

Resources:

Knight, A. P. and R. G. Walter. 2001. A Guide to Plant Poisoning of Animals in North America. Teton New Media. Jackson, WY.

Montana Plant Field Guide. <http://fieldguide.mt.gov/>

USDA-ARS Poisonous Plants Lab, Logan, UT. <https://www.ars.usda.gov/pacific-west-area/logan-ut/poisonous-plant-research/>