

POISONOUS PLANTS IN SMALL RUMINANTS

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Plant poisonings can occur accidentally when browsing, or when pastures are overgrazed and animals are hungry. The major plants that cause problems in small ruminants will be discussed.

Goats, camelids and sheep are affected by poisonous plants as a result of drought, over grazing or because owners lack familiarity of potential toxic plants in their pastures or hay being fed. Many factors determine whether livestock are poisoned by plants, including the quantity and rate of the plant eaten, stage of plant growth, plant growing conditions, and if the plants were fertilized or treated with herbicides. The livestock species, age, sex and general body condition can also determine the effect of plant poisons.

- Learn to identify the poisonous plants in your area.
- Inspect for poisonous plants prior to grazing and be sure sufficient desirable forage is present.
- Do not allow hungry or thirsty animals to graze areas heavily infested with poisonous plants. This is especially important in early spring and late summer when normal forages are scarce.
- Supplement animals throughout the year with salt and phosphorus.
- Do not put new animals on a pasture or range without first feeding them a salt and phosphorus supplement for two weeks.
- Plan the grazing program so areas with poisonous plants can be used when the plants are least toxic.
- Make sure animals have access to water.
- Herbicides are seldom cost-effective over large areas but can be used to selectively control poisonous plants in small areas.
- Plowing, selective digging, and mowing prior to seed maturity can be used to control poisonous plants.

Table 1. Poisonous plants grouped by toxin or primary clinical sign.

Common Name	Botanical Name	Toxin	Predominant Clinical Signs	Common?
Nitrate Poisoning Plants				
Weeds: Johnson grass, Pigweed, Smartweed, Lambsquarter, Nightshades, Canada thistle	<i>Sorghum</i> <i>Amaranthus</i> <i>Polygonum</i> <i>Chenopodium</i> <i>Solanum</i> <i>Cirsium arvense</i>	Nitrate	Dyspnea, Sudden death	Yes

Common Name	Botanical Name	Toxin	Predominant Clinical Signs	Common?
Grasses: Sudan, Sorghum-sudan, Plants: Pearl millet, Corn, Wheat, Oats	Sorghum spp.	Nitrate	Dyspnea, Sudden death	Yes
Plants Containing Cyanogenic Glycosides				
Johnson grass, Sudan grass	<i>Sorghum spp.</i>	HCN	Dyspnea, Sudden death	yes
Arrow grass	<i>Triglochin spp.</i>	HCN	Dyspnea, Sudden death	yes
Choke cherry	<i>Prunus spp.</i>	HCN	Dyspnea, Sudden death	yes
Flax	<i>Linum</i>	HCN	Dyspnea, Sudden death	
Christmas berry Toyon, CA holly	<i>Heteromeles arbutifolia</i>	HCN	Dyspnea, Sudden death	No
Cardiotoxic Plants				
Avocado	<i>Persea americana</i>	Persin	Mastitis, Cardiac failure	Yes
Oleander	<i>Nerium oleander</i>	Nerin	Cardiac arrhythmias, death	Yes
Milkweed	<i>Asclepias spp</i>	Cardenolides	Arrhythmias, nervous signs, death	Yes
Yew	<i>Taxus spp.</i>	Taxine	Sudden death	Yes
Dogbane, Indian hemp	<i>Apocynum spp.</i>	Cymarin	Arrhythmias	No
Nephrotoxic Plants				
Halogeton	<i>Halogeton glomeratus</i>	Oxalates	Renal failure	Yes
Oak	<i>Quercus spp.</i>	Gallotannins	Gastro enteritis, renal failure	Yes
Greasewood	<i>Sarcobatus vermiculatus</i>	Oxalates	Renal failure	Yes
Dock	<i>Rumex spp.</i>	Oxalates	Renal failure	No
Neurotoxic Plants				
Locoweed	<i>Astragalus/ Oxytropis spp.</i>	Swainsonine	Neurologic signs, congenital defects	Yes
Lupine	<i>Lupinus spp.</i>	Anagryne	Nervous signs, teratogenic	Yes
Poison hemlock	<i>Conium maculatum</i>	Coniene	Death, teratogenic	Yes
Water hemlock	<i>Cicuta spp.</i>	Cicutoxin	Respiratory depression, death	Yes
Burrow weed	<i>Isocoma spp.</i>	Tremetol	Muscle tremors, weakness, death	Yes

Common Name	Botanical Name	Toxin	Predominant Clinical Signs	Common?
White snake root	<i>Ageratina altissima</i>	Tremetol	Muscle tremors, weakness, death	No
Teratogenic Plants, Abortions				
Locoweeds	<i>Astragalus/ Oxytropis spp.</i>	Swainsonine	Congenital defects, abortions	yes
Lupine	<i>Lupinus spp.</i>	Anagyrine	Congenital deformities	yes
False hellebore (skunk cabbage)	<i>Veratrum spp.</i>	Cyclopamine	Cyclopia, cleft palate, limb defects, tracheal stenosis in sheep, embryonic death	yes
Tree tobacco	<i>Nicotiana glauca</i>	Anabasine	Cleft palate	yes
Rhododendrons	<i>Rhododendron</i>	Andromedotoxin	Abortions	yes
(See nitrate plants)		Nitrates/ nitrites	Abortion, infertility	yes
Affect Male Reproduction				
Locoweeds	<i>Astragalus/ Oxytropis spp.</i>	Swainsonine	Decreased libido, reduced sperm, abnormal sperm	
Cotton seed meal		Gossypol	Blocks spermatogenesis, reduced sperm motility, male infertility, testicular degeneration	
Clover, alfalfa	<i>Trifolium subterraneum Medicago sativa, M. truncate</i>	Estrogens/ phytoestrogens	Reduced libido in rams, mammary development in wethers	
Photosensitization, Liver disease				
Groundsel	<i>Senecio spp.</i>	Pyrrolizidine alkaloids	Liver failure, photosensitization	yes
St John's wort	<i>Hypericum perforatum</i>	Hypericin	Photosensitization	yes
Fiddleneck	<i>Amsinckia spp.</i>	Pyrrolizidine alkaloids	Liver failure, photosensitization	
Rattle pod	<i>Crotalaria spp.</i>	Pyrrolizidine alkaloids	Liver failure, photosensitization	yes
Hound's Tongue	<i>Cynoglossum officinale</i>	Pyrrolizidine alkaloids	Liver failure, photosensitization	yes
Spring parsley	<i>Cymopterus watsonii</i>	Furanocoumarins	Photosensitization	yes
Cocklebur	<i>Xanthium spp.</i>	Carboxyatractylo-side	Liver failure, death	yes

Common Name	Botanical Name	Toxin	Predominant Clinical Signs	Common?
Horsebrush	<i>Tetradymia spp.</i>	Unknown	Photosensitization	no
Gastro-intestinal problems				
Sneezeweed	<i>Dugaldia, Helenium spp.</i>	Sesquiterpenes	Vomiting, inhalation pneumonia	Yes
Mature bitterweed	<i>Hymenoxys odorata</i>		GI, neurologic, sheep like plant	
Burr buttercup	<i>Ceratocephalus testiculatus</i>	Ranunculin	Gastroenteritis, diarrhea, death	
Lantana	<i>Lantana camara</i>	Berry most toxic portion	Bloody diarrhea, anorexia, weakness, dehydration, death in 3 to 4 days	
Oak	<i>Quercus spp.</i>	Gallotannins	Rumen stasis, constipation, gastritis	
Poison hemlock	<i>Conium maculatum</i>	Coniene	Colic, diarrhea, convulsions	Yes
Pokeweed	<i>Phytolacca americana</i>		Bloody vomiting, depression, diarrhea	
Gastro-intestinal problems				
Paperflower	<i>Psilostrophe spp</i>		Sheep- ataxia, lethargy, coughing, vomiting	
Rhododendrons	<i>Rhododendron spp</i>	Andromedotoxin	Vomiting, grinding teeth, colic	

Table 2. Sample submissions- appropriate sample and handling

<u>Toxicant</u>	<u>Sample</u>	<u>Handling and submitting sample</u>
Nitrate	Ocular fluid or serum	Remove fluid from eye with syringe and needle, refrigerate or freeze fluid or serum
Nitrate and/or nitrite	Feed or water	Collect representative sample and refrigerate
Nitrate and/or nitrite	Hay	Collect representative sample in paper bag (not plastic bag)
Cyanide	Feed	Collect representative sample and refrigerate
Trace mineral	Liver or serum	Refrigerate or freeze liver or serum

References/Suggested Reading

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