

POISONOUS PLANTS OF SOUTH DAKOTA

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The loss of livestock due to poisoning by plants is seldom great in any one locality, but if all the deaths in the United States in a single year due to such causes were known, the total would be surprisingly large. Marsh¹ in 1924 cited average annual losses of from three to five per cent in many areas, with sheep losses in Wyoming running as high as 14.6% for a single year; for the country as a whole the average yearly loss is estimated by Couch² at more than \$2,000,000.00.

While the total number of poisonous plants is large (Muenscher³ lists about 400 species in 68 families for the United States), most of those causing serious trouble are found in less than a dozen families. In South Dakota the important poisonous plants are found in the grass, lily, goosefoot, buttercup, rose, pea, flax, spurge, nightshade, and sunflower families. The principal plant poisons are also comparatively few in number. Couch gives the following classification:

Alkaloids	Resinoids
Glucosides	Oxalic acid & oxalates
Hydrocyanic acid	Phenolic compounds
Solanine	Selenium
Plant toxins	

Plant poisons may also be classified on a physiological basis. Pammel⁴ cites the classification of Smith, which is as follows:

Narcotics, deliriant, and inebriants which act on the brain.

¹ Marsh, C. D. 1924. Stock-poisoning Plants of the Range. U. S. Department of Agriculture, Dept. Bul. No. 1245.

² Couch, J. F. 1937. The Chemistry of Stock-poisoning Plants. Jour. of Chem. Ed. 14: 16-30.

³ Muenscher, W. C. 1939. Poisonous Plants of the United States. The Macmillan Co. New York.

⁴ Pammel, L. H. 1911. A Manual of Poisonous Plants. The Torch Press, Cedar Rapids, Iowa. (Now out of print.)

Convulsives, which act on the spinal cord.

Depressants and asthenics which act on the heart.

Irritants, which act on the digestive, reproductive, and nervous systems.

In most cases of poisoning little can be done in the way of a cure. It is better to learn the poisonous plants and depend on preventive measures, such as eradication of the plants or removal of animals from the fields. It is with the hope of making South Dakota residents better acquainted with the common poisonous plants of the state that I venture to list the following plants which are often harmful to both men and animals. The plants are arranged according to families and both the scientific and common names are given. In addition short remarks are made concerning the distribution of the species within the state, the poisonous principle present in the plant, and a few of the outstanding symptoms exhibited by a poisoned animal. Although in some cases suggested treatments are offered, it cannot be over-emphasized that in cases of severe poisoning of man or animals a physician or veterinarian should be called at once.

Name of Plant	Distribution	Poisonous Principle	Symptoms and Suggested Treatment
Polypodiaceae—Fern Family			
<i>Pteridium latiusculum</i> Brake fern, bracken	Black Hills	Unknown	Labored breathing, internal hemorrhages. Give purgatives and soft feeds.
Equisetaceae—Horsetail Family			
<i>Equisetum arvense</i> <i>E. hyemale</i> , and <i>E. laevigatum</i> Horsetails	Common over state	Equisetin, an alkaloidal nerve poison	Diarrhea and staggers. Give purgatives and soft feeds. Also nux vomica.
Juncaginaceae—Arrow-Grass Family			
<i>Triglochin maritima</i> and <i>T. palustris</i> Arrow-grass	Saline soils	Prussic acid	Abnormal breathing and convulsions. See cherry poisoning.
Gramineae—Grass Family			
<i>Sorghum vulgare</i> Sorghum <i>Sorghum halepense</i> Johnson grass	Cultivated and escaped	Prussic acid from the glucoside known as dhurrin	Staggering gait, abnormal breathing, convulsions, and death from respiratory paralysis. See cherry poisoning.
<i>Lolium temulentum</i> Darnel	Eastern part of state	Temuline, an alkaloid	Vomiting and stupefaction. Discontinue feeding darnel in grain.
<i>Avena sativa</i> Oats	Cultivated	Nitrates	See reports from South Dakota State College.
<i>Setaria</i> spp. Millets	Cultivated		Overfeeding causes kidney trouble in horses.

Name of Plant	Distribution	Poisonous Principle	Symptoms and Suggested Treatment
Araceae—Arum Family			
<i>Arisaema triphyllum</i> Jack-in-the-pulpit	Woods in eastern part of the state	Acrid substances in root-stocks.	Burning taste and a dermatitis.
Liliaceae—Lily Family			
<i>Zygadenus gramineus</i> <i>Z. elegans</i> <i>Z. chlorantha</i> Poison camas, White camas, and Leath camas	West of the Missouri River and in the Black Hills.	Zygadenine, an alkaloid similar to varatrine.	Salivation, low temperature, staggering, weakness, coma and death. Keep poisoned animals quiet.
<i>Convallaria majalis</i> Lily-of-the-valley	Cultivated and escaped	Glucosides, convallarin & convallamarin.	Nausea and slow pulse.
Orchidaceae—Orchid Family			
<i>Cypripedium parviflorum</i> Yellow ladies' slipper	Moist places in Black Hills	Probably a toxic fatty acid.	Dermatitis similar to poison ivy.
Fagaceae—Beech Family			
<i>Quercus macrocarpa</i> Bur oak	Black Hills and locally over the state.	Tannic acid and other substances.	Constipation and bloody feces. Keep animals away from oaks when feed is scarce.
Urticaceae—Nettle Family			
<i>Urtica lupulus</i> Hops	Moist ground in thickets		Causes dermatitis in some people.
<i>Cannabis sativa</i> Marijuana Hemp	Weed in waste places in eastern part.	Resinous mixture of narcotic alkaloids	When smoked, causes stimulation which is followed by depression.

Name of Plant	Distribution	Poisonous Principle	Symptoms and Suggested Treatment
Moraceae—Mulberry Family			
<i>Maclura pomifera</i> Osage orange	South-eastern part of the state.	Substance in milky sap.	Dermatitis in some individuals.
Polygonaceae—Buckwheat Family			
<i>Fagopyrum esculentum</i> Buckwheat	Cultivated	Unknown	Photosensitization in white animals. When exposed to sun light, the face swells and pustules form. Some people develop rash from eating buckwheat.
<i>Rheum raphaniticum</i> Rhubarb	Cultivated	Oxalic acid and oxalates of calcium and potassium.	Eating leaf blades causes vomiting, diarrhea, bleeding from nose, and death.
Chenopodiaceae—Goosefoot Family			
<i>Sarcobatus vermiculatus</i> Greasewood	Western part of state.	Sodium oxalate and potassium oxalate.	Depression and weakness. Do not allow sheep to feed on greasewood alone.
Caryophyllaceae—Fink Family			
<i>Agrostemma githago</i> Corn cockle	Introduced weed, grows in fields.	Githagin, a glucoside.	Man and animals are poisoned by eating cockle infested grain. Symptoms are soft feces, colic, weak pulse, and muscular tremors.
<i>Saponaria vaccaria</i> Cow cockle	Introduced weed, grows in fields.	Similar to githagin.	Similar to above.

Name of Plant	Distribution	Poisonous Principle	Symptoms and Suggested Treatment
Ranunculaceae—Crowfoot Family			
<i>Aconitum</i> spp. Monkshood	Moist places in Black Hills.	Possibly the alkaloids aconitine and aconine.	Weak pulse, muscular weakness, and labored breathing.
<i>Delphinium bicolor</i> <i>D. nelsoni</i> and <i>D. virescens</i> Larkspurs	Black Hills, Prairies	Delphinine and other alkaloids	Stiffness, irregular gait, fast pulse, and convulsions. Larkspurs should be fenced in or removed from around springs and water holes.
<i>Actaea rubra</i> Baneberry	Common in rich woods	Unknown substance in berry and rootstock	Irritating to the gastrointestinal tract; also causes dizziness and increases heart beat.
<i>Caltha palustris</i> Marsh marigold Cowslip	Wet places in north-eastern part of the state.	Acrid glucoside and alkaloids present. Both are destroyed by cooking.	Irritation and inflammation of the digestive tract. Also a falling-off in flow of milk.
<i>Anemone patens</i> Pasque flower	Common on grassy hillsides.	Anemonine, an alkaloid	Irritation and inflammation.
<i>Ranunculus</i> spp. Buttercups	Wet places, fields, and meadows	Acrid bitter substance similar to anemonine	Blistered mouth and skin, colic, diarrhea. Slow pulse and possible convulsions.
<i>Clematis virginiana</i> Virgin's bower	Thickets in eastern part of state	Unknown	Rare cases of dermatitis are caused by handling leaves.

Name of Plant	Distribution	Poisonous Principle	Symptoms and Suggested Treatment
Berberidaceae—Barberry Family			
<i>Caulophyllum thalictroides</i> Blue cohosh	Woods in eastern part of state	An alkaloid and possibly glucosides	Irritating to mouth and causes dermatitis.
Menispermaceae—Moonseed Family			
<i>Menispermum canadense</i> Moonseed	Woods in eastern part of state	Bitter alkaloids	Fruits may be mistaken for grapes.
Papaveraceae—Poppy Family			
<i>Sanguinaria canadensis</i> Blood root	Rich woods in eastern and western parts of state	Sanguinarine and other alkaloids in the rootstock	Large doses are irritating, causing nausea and vomiting. Heart may be paralyzed.
<i>Argemone intermedia</i> Prickly poppy	Hills and plains in western part of state	Probably an alkaloid	
Fumariaceae—Fumitory Family			
<i>Dicentra Cucullaria</i>	Open woods in eastern part of state	Cucullarine and other alkaloids	Trembling, salivation, and convulsions.
<i>Corydalis aurea</i> Golden corydalis	Black Hills	Alkaloids similar to those found in <i>Dicentra</i>	Rapid pulse and breathing, followed by convulsions.
Rosaceae—Rose Family			
<i>Prunus</i> spp. Cherries and plums	Several native and cultivated varieties grow over the state	Prussic acid from the glucoside known as amygdalin	Staggering gait, convulsions, and death from respiratory paralysis. Drench with potassium permanganate, hydrogen peroxide, or corn syrup.
<i>Cercocarpus montanus</i> Mountain mahogany	Black Hills	Prussic acid from wilted leaves.	Similar to cherry poisoning.

Name of Plant	Distribution	Poisonous Principle	Symptoms and Suggested Treatment
Leguminosae—Bean Family			
<i>Lupinus argenteus</i> and <i>L. sereceus</i> Lupines	Dry plains and in the Black Hills	One or more alkaloids	Salivation, difficult breathing, and convulsions. Sheep often die from eating pods and seeds.
<i>Astragalus bisuleatus</i> Milk vetch <i>A. mollissimus</i> Woolly loco <i>A. convallarius</i> Poison vetch <i>Oxytropis Lambertii</i> Loco weed <i>O. saximontana</i> Crazy weed	Western part of state Southwestern part of state Western part of state Hillides and plains Western part of state	Selenium. The mineral is absorbed from the soil by the roots of the plants.	Irregular gait, loss of appetite, shaggy coat and death. See reports from South Dakota State College. Studies have also been made in Wyoming.
<i>Melilotus</i> spp. Sweet clovers	Cultivated and escaped	Unknown	Alternate sweet clover hay with other hay if trouble occurs.
<i>Robinia pseudoacacia</i> Black locust	Eastern part of state	A very toxic albumose, robin.	Colic, purging, weakened children and stock away from young shoots of locust.
<i>Crotalaria sagittalis</i> Rattle box	Sandy soils	One or more alkaloids	Emaciation and some symptoms similar to loco poisoning.
<i>Trifolium hybridum</i> Alsike clover	Cultivated and escaped		Dermatitis in some individuals.

Name of Plant	Distribution	Poisonous Principle	Symptoms and Suggested Treatment
Linaceae—Flax Family			
<i>Linum usitatissimum</i> Flax	Cultivated and escaped	Prussic acid from phaseolunatin, a glucoside	Symptoms and treatment are the same as cherry poisoning.
Euphorbiaceae—Spurge Family			
<i>Euphorbia</i> spp. Spurges	Native and introduced ornamentals and weeds	Acrid substance present in the milky juice which characterizes plants of this genus.	Acts as emetic and purgative when taken internally. Causes severe dermatitis when handled by some individuals.
<i>Ricinus communis</i> Castor oil plant Castor bean	Planted	Ricin, a strong and irritating phytotoxin.	Nausea, vomiting, violent purging, collapse, convulsions and death.
<i>Croton texensis</i> Croton	Sandy soil in southern part of state	Similar to croton oil	Irritation and violent purging.
Anacardiaceae—Cashew Family			
<i>Rhus toxicodendron</i> <i>Rhus Rydbergii</i> Poison ivy	Southeast So. Dakota Common over state	Urushiol, an oil present in the resinous secretion of the plants	Severe dermatitis in some people. Wash with strong soap and apply 5% ferric chloride solution in water.
Celastraceae—Staff Tree Family			
<i>Celastrus scandens</i> Bittersweet	Thickets	Present in leaves and fruits.	

Name of Plant	Distribution	Poisonous Principle	Symptoms and Suggested Treatment
Hippocastanaceae—Horsechestnut Family			
<i>Aesculus hippocastanum</i> Horse chestnut	Planted in eastern part	Glucosides in seeds and young shoots	Vomiting, stupor, and paralysis.
Rhamnaceae—Buckthorn Family			
<i>Rhamnus carthartica</i> Buckthorn	Found in hedges	Bitter substance	Acts as purgative.
Umbelliferae—Parsley Family			
<i>Cicuta maculata</i> Water hemlock <i>Cicuta occidentalis</i> Western water hemlock <i>Cicuta bulbifera</i>	Wet places Black Hills Northeast part of state	A resinous substance known as cicutoxin	Salivation, bloating, diarrhea, dilation of pupils, convulsions and death due to paralysis of respiratory centers. Give emetics and cathartics and morphine to control the convulsions.
<i>Pastinaca sativa</i> Parsnip	Cultivated		Causes dermatitis in some individuals.
Apocynaceae—Dogbane Family			
<i>Apocynum cannabinum</i> Indian hemp <i>A. androseemifolium</i> Dogbane <i>Nerium oleander</i> Oleander	Southern part of state Over the state Woody ornamental, sometimes grown in the house	Cynarin, a poisonous glucoside Toxic glucosides	High temperature, fast pulse, dilated pupils, followed by death in some cases. Vomiting, dizziness, cramps, paralysis, and death.
Asclepiadaceae—Milkweed Family			
<i>Asclepias</i> spp. Milkweeds	Found as weeds in fields, meadows, and on hills over the state	Toxic substances which are sometimes resinous in nature	Loss of appetite, diarrhea, difficult breathing, spasms, paralysis, and death.

Name of Plant	Distribution	Poisonous Principle	Symptoms and Suggested Treatment
Solanaceae—Nightshade Family			
<i>Solanum nigrum</i> Nightshade	Old fields and gardens	Solanine, a glucoside	Stupefaction, cramps, dilated pupils, convulsions, and death.
<i>Solanum tuberosum</i> Irish potato	Cultivated	Solanine is found in green sprouts and tubers	Do not eat raw green potatoes and do not feed them to animals.
<i>Nicotiana</i> spp. Tobacco	Native and cultivated	Nicotine, an alkaloid	Weak pulse, muscular weakness, staggering, salivation, and vomiting. Give tannic acid as soon as possible.
<i>Datura stramonium</i> Jimson weed	Weed in rich soil	Hyoscyamine and hyoscyne, both alkaloids	Nausea, dilated pupils, fast heart, convulsions, and death. Treat with emetics, tannic acid, and stimulants.
<i>Hyoscyamus niger</i> Henbane	Escaped and growing wild in Black Hills	Hyoscyamine, hyoscyne, and atropine	Same as Jimson weed.
Caprifoliaceae—Honeysuckle Family			
<i>Sambucus canadensis</i> Elderberry	Moist ground	An alkaloid and a cyanogenic glucoside	May be similar to poisoning by other prussic acid plants.

Name of Plant	Distribution	Poisonous Principle	Symptoms and Suggested Treatment
Lobeliaceae—Lobelia Family			
<i>Lobelia syphilitica</i> Lobelia	Wet ground	Lobeline and lobelidine, both alkaloids	Nausea, prostration, and convulsions. Avoid overdoses of the drug.
Compositae—Composite Family			
<i>Eupatorium urticaefolium</i> White snakeroot	Woods in eastern part of the state	Tremetol	Trembling, weakness, loss of appetite and collapse.
<i>Tanacetum vulgare</i> Tansy	Weed in waste places	Oily substance known as tanacetin	Salivation, convulsions, and weak pulse. Drug is used for anthelminthic.
<i>Xanthium</i> spp. Cocklebur	Weeds in field and moist places	Xanthostrumarin, a toxic glucoside is found in seedlings	Vomiting, weakness, unsteady gait, and labored breathing. Give oils and fats, such as lard or linseed oil.
<i>Senecio riddelli</i> Groundsel	Western part of state	The active principle is probably alkaloidal in nature	Nervousness, diarrhea, weakness, and lesions on the liver.
<i>Senecio aureus</i> Groundsel	Eastern part of state		