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# Vascular plants poisonous to livestock in Canada

## 1. A preliminary inventory



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# Vascular plants poisonous to livestock in Canada

## 1. A preliminary inventory

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Research Branch  
Agriculture Canada  
1983

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CONTENTS

Summary / iv	
Résumé / iv	
Introduction / 1	
Equisetaceae / 2	
Polypodiaceae / 3	
Taxaceae / 3	
Pinaceae / 3	
Juncaginaceae / 3	
Liliaceae / 4	
Iridaceae / 4	
Fagaceae / 5	
Polygonaceae / 5	
Chenopodiaceae / 5	
Amaranthaceae / 6	
Phytolaccaceae / 6	
Caryophyllaceae / 7	
Ranunculaceae / 7	
Berberidaceae / 7	
Fumariaceae / 7	
Cruciferae / 8	
Rosaceae / 9	
Leguminosae / 9	
Euphorbiaceae / 10	
Guttiferae / 11	
Umbelliferae / 11	
Ericaceae / 12	
Asclepiadaceae / 12	
Boraginaceae / 13	
Labiatae / 13	
Solanaceae / 13	
Scrophulariaceae / 14	
Compositae / 14	
Other types of plants causing poisoning or injury in nature / 16	
Literature cited / 17	

## SUMMARY

This publication is Part 1 of a series on native, naturalized, and cultivated vascular plants that cause poisoning or mechanical injury to livestock, other animals, and people in Canada. The series encompasses the native or naturalized vascular plants, occurring in Canada, that are documented to have caused sickness or death to livestock in North America north of Mexico. Part 1 constitutes a preliminary inventory that is intended for distribution to various experts for suggestions on supplementary additions and corrections. For each of the poisonous plants included in this treatment, we give the scientific and common names, specify the occurrence in Canada, provide notes on the animals affected, and list pertinent references documenting poisoning. The supplementary information obtained from readers will be utilized in a subsequent treatment that is to include illustrations and other identification aids.

## RÉSUMÉ

La présente publication est la première partie d'une série sur les plantes vasculaires indigènes, acclimatées ou cultivées du Canada qui provoquent des intoxications ou des blessures chez les animaux domestiques ou sauvages et chez l'homme. La série couvre les plantes vasculaires indigènes ou naturalisées, qui croissent au Canada et auxquelles on a attribué des cas de maladie ou de mort du bétail dans une région de l'Amérique du Nord, au nord du Mexique. La première partie consiste en un inventaire provisoire qui sera distribué aux divers experts et que ceux-ci complèteront ou corrigeront afin d'en améliorer la qualité. Chaque plante est désignée par ses noms scientifique et populaires, et les renseignements qui s'y rapportent comprennent sa distribution au Canada, les espèces qu'elle affecte et la liste des références traitant des cas d'intoxication. Les renseignements que les lecteurs nous feront parvenir seront utilisés dans une publication subséquente qui comprendra des illustrations et d'autres outils d'identification.

## INTRODUCTION

### SCOPE

There is much confusion as to which plants cause poisoning or mechanical injury to livestock, other animals, and people in Canada. Many general publications dealing with poisonous plants perpetuate erroneous information, do not cite source data, or do not differentiate between plants causing serious poisoning problems and those responsible for minor or dubious poisonings. The most comprehensive and accurate sources of information on plant poisoning in North America are Muenscher (1951), Kingsbury (1964), Kinghorn (1977), and Keeler et al. (1978). In addition, the following publications contribute most significantly to the knowledge of poisonous plants in a Canadian context: Fyles (1920), Thomson and Sifton (1922), Bruce (1927), Campbell et al. (1954, 1956), Montgomery et al. (1955), McLean and Nicholson (1958), and Johnston et al. (1965).

Plant-induced poisoning occurs when one or more chemicals present in a plant produce a negative physiological response in an individual animal or species of animal.

The occurrence of poisoning by a particular plant species often varies. Some species of plants are only toxic at certain stages of their life cycle whereas others are most toxic during only one part of the growing season. In some cases the entire plant is toxic but in others only the leaves, seeds, or seedlings contain toxic ingredients. Some plants cause poisoning only when toxic elements, such as selenium, occur in the soil. Other plants may lose their toxins upon drying. Some toxins are so potent that a single mouthful can rapidly cause death. Other toxins are cumulative and must be consumed over a long period. Many poisonous plants are normally unpalatable and are only eaten in times of drought or in the early spring when other forages are scarce.

The physiology of individual animals or species of animal also determines the degree of plant toxicity. Some plants that are toxic to certain species of animals provide valuable forage to other livestock. Within the same species, some animals are highly allergic to a given plant whereas others are immune or only mildly susceptible to it.

Several broad classes of chemicals are responsible for the toxic reactions in animals caused by many plants. Organic chemicals include alkaloids, glucosides, oxalic acid, and resinoids. In addition, inorganic compounds such as molybdenum, nitrates, and selenium, taken up from the soil by some plants, can accumulate in plant tissue to toxic levels. Other plants contain substances that can cause photosensitization in livestock.

Plant poisons can cause reductions in vigor, weight gain, and fertility and, as well, can induce abortions and cause birth defects.



Problems exist for veterinarians who may have to diagnose and treat cases of plant-induced poisoning. The initial problem is recognizing that an animal's symptoms are caused by a plant toxin. Another complication involves acquiring a positive identification of the plant. In addition, well-documented literature is not always available on previous cases of poisoning and on recommended treatments. Farmers and veterinarians can obtain information on livestock poisoning and plant identifications from federal and provincial agencies and universities.

When collecting plant material for identification purposes, be sure to collect fresh leaves, branches, flowers, and fruits. Dry the plant material in a press or put the plants in newspaper and press under books or bricks in a warm dry place. Provide information on the habitat of the plants, the location and the date of the collection, symptoms of poisoning, and any other data that seem relevant.

#### FORMAT

Plants are listed in taxonomic order by family, following the system of Engler and Prantl (1889-1909). Genera within each family, as well as species under each genus, are listed alphabetically by scientific latin names.

Common English and French names are taken, whenever possible, from Common and botanical names of weeds in Canada / Noms populaires et scientifique des plantes nuisibles du Canada (Alex et al. 1980).

The general distributions follow Boivin (1966, 1967), except in a few cases where additional distributions are included from more recent information. When a location abbreviation is bounded by parentheses, the occurrence of the plant in that area has not been confirmed.

#### EQUISETACEAE (HORSETAIL FAMILY)

##### EQUISETUM (HORSETAILS)

Equisetum arvense L. (field horsetail, prèle des champs)

Distribution: Keewatin and MacKenzie dists., Y.T., Nfld., N.S., P.E.I., N.B., Que., Ont., Man., Sask., Alta., B.C.

Equisetum palustre L. (marsh horsetail, prèle des marais)

Distribution: MacKenzie dist., Y.T., Nfld., N.B., Que., Ont., Man., Sask., Alta., B.C.

Animals affected: Sickness and death occur in horses and sheep, rarely in cattle.

References: Rich and Jones (1902), Gussow (1912), Bruce (1927), McLean and Nicholson (1958), Cody and Wagner (1981).



POLYPODIACEAE (FERN FAMILY)

Onoclea sensibilis L. (sensitive fern, onoclée sensible)

Distribution: Nfld., N.S., P.E.I., N.B., Que., Ont., Man.

Animals affected: Sickness and the occasional death occurred in horses, especially the very old, in one set of experiments and related field studies.

Reference: Waller et al. (1944).

Pteridium aquilinum (L.) Kuhn (bracken; fougère d'aigle, grande fougère de l'Ouest)

Distribution: Nfld., N.S., P.E.I., N.B., Que., Ont., Man., Alta., B.C.

Animals affected: Sickness and death occur in cattle, horses, sheep, and pigs.

References: Hadwen (1917), Hadwen and Bruce (1933), Groh (1941), Weswig et al. (1946), Langham (1957), Wagnon (1959), Rosenberger (1971), Cody and Crompton (1975), Evans (1976), Kelleway and Geovjian (1978).

TAXACEAE (YEW FAMILY)

Taxus canadensis Marsh. (Canada yew, if du Canada)

Distribution: Nfld., N.S., P.E.I., N.B., Que., Ont., Man.

Animals affected: One case of poisoning of cattle has been reported.

Reference: Bruce (1927).

PINACEAE (PINE FAMILY)

Pinus ponderosa Dougl. (ponderosa pine, pin ponderosa)

Distribution: B.C.

Animals affected: Abortion or birth of weak calves occurs.

References: MacDonald (1952a), Allen and Kitts (1961), Call and James (1978).

JUNCAGINACEAE (ARROW-GRASS FAMILY)

TRIGLOCHIN (ARROW-GRASSES)

Triglochin maritima L. (seaside arrow-grass, troscart maritime)

Distribution: Keewatin and MacKenzie dists., Y.T., Nfld., N.S., P.E.I., N.B., Que., Ont., Man., Sask., Alta., B.C.

Animals affected: Sickness and death have occurred in cattle and sheep.

References: Fleming (1920), Fleming et al. (1920b), Marsh et al. (1929), Beath et al. (1933), Clawson and Moran (1937).

Triglochin palustris L. (marsh arrow-grass, troscart des marais)

Distribution: Keewatin and MacKenzie dists., Y.T., Nfld., N.S., P.E.I., N.B., Que., Ont., Man., Sask., Alta., B.C.

Animals affected: No firm record of poisoning by this species was found in the literature.

Reference: McLean and Nicholson (1958).

#### LILIACEAE (LILY FAMILY)

Veratrum viride Ait. (false hellebore, varaire vert)

Distribution: Y.T., Nfld., N.B., Que., Alta., B.C.

Animals affected: Sickness and death has been reported in sheep, chickens, and cattle.

References: Chesnut (1898), Chesnut and Wilcox (1901), Fleming and Schappelle (1918), Bruce (1927), Reynard and Norton (1942).

ZYGADENUS (CAMAS)

Zygadenus elegans Pursh (white camas, zigadène élégant)

Distribution: MacKenzie dist., Y.T., N.B., Que., Ont., Man., Sask., Alta., B.C.

Zygadenus gramineus Rydb. (death camas, zigadène vénéneux)

Distribution: southern Sask., southern Alta., southern B.C.

Animals affected: Sickness and death occur in sheep, and occasionally in cattle and horses.

References: Chesnut and Wilcox (1901), Heyl et al. (1912), Marsh et al. (1915), Fleming (1920), Fleming et al. (1921), Marsh and Clawson (1922, 1924), McLean and Nicholson (1958).

#### IRIDACEAE (IRIS FAMILY)

Iris versicolor L. (blue flag iris, clajeux)

Distribution: Keewatin dist., Nfld., N.S., P.E.I., N.B., Que., Ont., Man.

Animals affected: Poisoning and death of calves has been reported.

Reference: Bruce (1927).

FAGACEAE (BEECH FAMILY)

QUERCUS (OAKS)

Quercus rubra L. (red oak, chêne rouge)

Distribution: N.S., P.E.I., N.B., Que., Ont.

Quercus velutina Lam. (black oak)

Distribution: southern Ont.

Animals affected: Poisoning and death of cattle, sheep, and occasionally horses occur. Problems tend to occur where oaks have been felled into pastures.

References: Pammel (1917<sub>a</sub>), Duncan (1961).

POLYGONACEAE (BUCKWHEAT FAMILY)

Rumex venosus Pursh (veined dock, rumex veiné)

Distribution: southern Man., Sask., Alta.

Animals affected: Sickness and death of cattle occur.

Reference: Dickie et al. (1978).

CHENOPODIACEAE (GOOSEFOOT FAMILY)

Bassia hyssopifolia (Pall.) Ktze. (five-hooked bassia, bassia à feuilles d'hysope)

Distribution: southwestern Sask., Alta., B.C.

Animals affected: Poisoning and death of sheep occur.

Reference: James et al. (1976).

Chenopodium album L. (lamb's-quarters, chénopode blanc)

Distribution: MacKenzie dist., Y.T., Nfld., N.S., P.E.I., N.B., Que., Ont., Man., Sask., Alta., B.C.

Animals affected: Poisoning and death occur in cattle, horses, and pigs.

References: Gilbert et al. (1946), Whitehead and Moxon (1952), Case (1957), Buck et al. (1966), Bassett and Crompton (1978).

Kochia scoparia (L.) Schrad. (kochia)

Distribution: N.S., southern Que., Ont., Man., Sask., Alta., B.C.

Animals affected: Photosensitization of cattle occurs, resulting in poisoning and death.

Reference: Galitzer and Oehme (1978).

Sarcobatus vermiculatus (Hook.) Torr. (greasewood)

Distribution: southwestern Sask., southern Alta., southeastern B.C.

Animals affected: Poisoning and death occur in sheep.

References: Chesnut and Wilcox (1901), Couch (1922), Fleming et al. (1928), Marsh (1929a), Wilson (1934), Sampson and Malmsten (1935), Hershey (1945).

Suckleya suckleyana (Torr.) Rydb. (poison suckleya)

Distribution: Sask., southeastern Alta.

Animals affected: Poisoning and death of cattle has been reported.

Reference: Hershey (1945).

AMARANTHACEAE (AMARANTH FAMILY)

AMARANTHUS (PIGWEEDES)

Amaranthus blitoides S. Wats (= A. graecizans L.) (prostrate pigweed, amarante fausse-blite)

Distribution: southwestern Que., Ont., Man., Sask., Alta., B.C.

Amaranthus hybridus L. (smooth pigweed, amarante hybrid)

Distribution: southern Ont.

Amaranthus retroflexus L. (redroot pigweed, amarante à racine rouge)

Distribution: MacKenzie dist., N.S., P.E.I., N.B., Que., Ont., Man., Sask., Alta., B.C.

Animals affected: Poisoning and death of pigs and cattle by Amaranthus spp. occur.

References: The following references deal with Amaranthus spp.: Gilbert et al. (1946), Whitehead and Moxon (1952), Buck et al. (1966), Osweiler et al. (1969), Stuart et al. (1975), Hogg and Hibbs (1976), Weaver and McWilliams (1980).

PHYTOLACCACEAE (POKEWEED FAMILY)

Phytolacca americana L. (pokeweed, phytolaque d'Amérique)

Distribution: southwestern Que., southwestern Ont.

Animals affected: Poisoning and death occur in pigs.

References: Patterson (1929), Hansen (1930).

CARYOPHYLLACEAE (PINK FAMILY)

Agrostemma githago L. (purple cockle, nielle)

Distribution: N.S., P.E.I., (N.B.), Que., Ont., Man., Sask., B.C.

Animals affected: Seeds cause poisoning and death in chickens.

References: Quigley and Waite (1931), Heuser and Schumacher (1942).

RANUNCULACEAE (CROWFOOT FAMILY)

DELPHINIUM (LARKSPURS)

Delphinium bicolor Nutt. (low larkspur, pied d'alouette bicolore)

Distribution: southwestern Sask., Alta., B.C.

Delphinium glaucum S. Wats. (= D. brownii Rydb.) (tall larkspur, pied d'alouette glauque)

Distribution: MacKenzie dist., Y.T., Que., Ont., Man., Sask., Alta., B.C.

Delphinium menziesii DC.

Distribution: B.C.

Animals affected: Poisoning and death of cattle have been reported.  
Horses and sheep have been poisoned experimentally.

References: Wilcox (1897), Chesnut and Wilcox (1901), Marsh et al. (1923a), Marsh (1929a), McLean and Nicholson (1958).

BERBERIDACEAE (BARBERRY FAMILY)

Podophyllum peltatum L. (May-apple, podophylle pelté)

Distribution: N.S., southwestern Que., southern Ont.

Animals affected: Poisoning and death occur in pigs and poisoning of cattle.

References: McIntosh (1928), Hansen (1930).

FUMARIACEAE (FUMITORY FAMILY)

DICENTRA (BLEEDINGHEARTS)

Dicentra canadensis (Goldie) Walp. (squirrel-corn, dicentre du Canada)

Distribution: southwestern Que., southern Ont.

Animals affected: Poisoning and death occur in cattle.



Reference: Black et al. (1923).

Dicentra cucullaria (L.) Bernh. (Dutchman's-breeches, dicentre à capuchon)

Distribution: N.S., N.B., Que., Ont.

Animals affected: Poisoning and death occur in cattle.

References: Black et al. (1923), Hansen (1930).

Dicentra formosa (Andr.) Walp. (western bleedingheart)

Distribution: southwestern B.C.

Animals affected: This species has been implicated experimentally in the poisoning and death of cattle.

Reference: Black et al. (1930).

#### CRUCIFERAE (MUSTARD FAMILY)

Barbarea vulgaris R. Br. (yellow rocket, barbarée vulgaire)

Distribution: MacKenzie dist., Y.T., Nfld., N.S., P.E.I., N.B., Que., Ont., Man., Sask., Alta., B.C.

Animals affected: One unusual case of poisoning in a horse has been reported.

Reference: Hansen (1930).

Descurainia pinnata (Walt.) Britt. var. brachycarpa (Richard.) Fern.  
(green tansy mustard, moutarde tanaïsie verte)

Distribution: MacKenzie dist., Que., Ont., Man., Sask., Alta., B.C.

Animals affected: Poisoning and death occur in cattle when foraging almost exclusively on green tansy mustard.

Reference: Hershey (1945).

Sinapis arvensis L. (= Brassica kaber (DC.) Wheeler var. pinnatifida  
(Stokes) Wheeler) (wild mustard, moutarde des champs)

Distribution: MacKenzie dist., Y.T., Nfld., N.S., P.E.I., N.B., Que., Ont., Man., Sask., Alta., B.C.

Animals affected: Occasional poisoning and death of cattle and swine occur.

References: Thomson and Sifton (1922), Gwatkin and Moynihan (1943), Mulligan and Bailey (1975).



ROSACEAE (ROSE FAMILY)

PRUNUS (CHERRIES)

Prunus serotina Ehrh. (black cherry, cerisier tardif)

Distribution: N.S., N.B., Que., Ont.

Prunus virginiana L. (red choke cherry, cerisier de Virginie)

Distribution: MacKenzie dist., Nfld., N.S., P.E.I., N.B., Que., Ont.,  
Man., Sask., Alta., B.C.

Animals affected: Poisoning and death occur in livestock.

References: Chesnut (1898), Morse and Howard (1898), Fleming et al.  
(1926), Fleming and Dill (1928), Reynard and Norton (1942), Hershey  
(1945), Beath et al. (1953), McLean and Nicholson (1958), Conn  
(1978), Mulligan and Munro (1981<sub>a</sub>).

LEGUMINOSAE (BEAN FAMILY)

ASTRAGALUS (MILK-VETCHES)

Astragalus bisulcatus (Hook.) Gray (two-grooved milk-vetch, astragale  
fondu)

Distribution: Man., Sask., Alta.

Astragalus lentiginosus Dougl.

Distribution: southcentral B.C.

Astragalus miser Dougl. ex Hook. (timber milk-vetch, astragale prostré)

Distribution: southwestern Alta., southeastern B.C.

Animals affected: Poisoning and death have been reported in horses,  
cattle, and sheep.

References: It is difficult to determine the species involved in  
published works because of confusions in scientific names. The  
following references deal with Astragalus spp. Beath and Lehnert  
(1917), Bruce (1927), Beath et al. (1932), Trelease and Martin (1936),  
MacDonald (1952<sub>b</sub>), McLean and Nicholson (1958), James et al. (1968),  
Van Kampen and James (1969), Williams and James (1978).

LUPINUS (LUPINES)

Lupinus argenteus Pursh (silvery lupine, lupin argenté)

Distribution: Man., Sask., Alta., B.C.

Lupinus pusillus Pursh (small lupine)

Distribution: southwestern Sask., southern Alta.

Lupinus sericeus Pursh (silky lupine, lupin soyeux)

Distribution: Y.T., Alta., B.C.

Animals affected: Poisoning and death has been reported in sheep, cattle, horses, and pigs; also reported has been experimental evidence of poisoning. The toxicity of these plants is variable. Lupines are considered valuable range forage in some areas of North America.

References: Marsh et al. (1916), Beath (1920, 1925), Couch (1926a), Beath et al. (1953), McLean and Nicholson (1958), Shupe et al. (1967), Keeler (1973).

OXYTROPIS (LOCOWEEDS)

Oxytropis lambertii Pursh (purple locoweed)

Distribution: southern Man., southeastern Sask.

Oxytropis sericea Nutt.

Distribution: Y.T., (Man.), Sask., Alta., B.C.

Animals affected: Poisoning and death of cattle, horses, and sheep occur.

References: Marsh (1919), James et al. (1968), Van Kampen and James (1969).

Robinia pseudoacacia L. (black locust, robinier faux-acacia)

Distribution: N.S., (P.E.I.), Que., Ont., B.C.

Animals affected: Poisoning occurs in horses, cattle, and chickens.

References: Gardiner (1903), Waldron (1908), Barnes (1921), Hansen (1924a, 1924b), Bruce (1927), Hansen (1930).

Vicia villosa Roth (hairy vetch, vesce velue)

Distribution: N.S., Que., Ont., Man., B.C.

Animals affected: Poisoning and death in cattle have been reported.

References: Claughton and Claughton (1954), Panciera (1978).

EUPHORBIACEAE (SPURGE FAMILY)

EUPHORBIA (SPURGES)

Euphorbia cyparissias L. (cypress spurge, euphorbe cyprès)

Distribution: Nfld., N.S., P.E.I., N.B., Que., Ont., Man., B.C.

Euphorbia esula L. (leafy spurge, euphorbe éssule)

Distribution: N.S., P.E.I., Que., Ont., Man., Sask., Alta., B.C.

Animals affected: Photosensitization occurs in cattle, horses, and sheep, causing poisoning and death.

References: Muenscher (1948), Case (1954, 1957), Johnston and Peake (1960).

GUTTIFERAE (ST. JOHN'S-WORT FAMILY)

Hypericum perforatum L. (St. John's-wort, millepertuis perforé)

Distribution: Nfld., N.S., P.E.I., N.B., Que., Ont., B.C.

Animals affected: Photosensitization occurs in cattle, sheep, horses, and rabbits, causing poisoning and death.

References: Hansen (1928b), Marsh and Clawson (1930a), Sampson and Parker (1930), Gillett and Robson (1981).

UMBELLIFERAE (PARSLEY FAMILY)

CICUTA (WATER-HEMLOCKS)

Cicuta douglasii (DC.) Coult. & Rose (western water-hemlock, cicutaire pourpre)

Distribution: B.C.

Cicuta maculata L. (spotted water-hemlock, carotte à Moreau)

Distribution: MacKenzie dist., Y.T., N.S., P.E.I., N.B., Que., Ont., Man., Sask., Alta., B.C.

Cicuta virosa L. (northern water-hemlock, cicutaire du Nord)

Distribution: MacKenzie dist., Y.T., northern Que., Ont., Man., Sask., Alta., B.C.

Animals affected: Poisoning and death occur in all classes of livestock.

References: Chesnut (1898), Fleming et al. (1920c), Hansen (1928c), Skidmore (1933), Gress (1935), McLean and Nicholson (1958), Tucker et al. (1964), Mulligan (1980), Mulligan and Munro (1981b).

Conium maculatum L. (poison hemlock, cigue maculée)

Distribution: N.S., Que., Ont., Sask., B.C.

Animals affected: Poisoning and death occur in all classes of livestock.

References: Chesnut (1898), Pammel (1919), Anonymous (1951), Keeler (1974).

ERICACEAE (HEATH FAMILY)

KALMIA (LAURELS)

Kalmia angustifolia L. (sheep-laurel, kalmia à feuilles étroites)

Distribution: Nfld., N.S., P.E.I., N.B., Que., Ont.

Kalmia polifolia Wang. (bog-laurel, kalmia à feuilles d'andromède)

Distribution: Keewatin and Mackenzie dists., Y.T., Nfld., N.S., P.E.I., N.B., Que., Ont., Man., Sask., Alta., B.C.

Animals affected: Poisoning and death occur in cattle, sheep, goats, and horses.

References: Marsh and Clawson (1930b), Clawson (1933a), Sampson and Malmsten (1935), Waud (1940), Pritchard (1956).

Menziesia ferruginea Sm. var. glabella (Grey) Peck (western minniebush)

Distribution: Alta., B.C.

Animals affected: Poisoning and death of sheep have been reported.

References: Marsh (1914, 1929a).

RHODODENDRON (RHODODENDRONS)

Rhododendron albiflorum Hook. (white rose-bay)

Distribution: western Alta., B.C.

Rhododendron macrophyllum D. Don ex G. Don (California rose-bay)

Distribution: southwestern B.C.

Animals affected: Some losses of livestock have been reported.

References: Marsh (1929a), Gilfillan and Otsuki (1938).

ASCLEPIADACEAE (MILKWEED FAMILY)

ASCLEPIAS (MILKWEEDS)

Asclepias speciosa Torr. (showy milkweed, belle asclépiade)

Distribution: southern Man., Sask., Alta., B.C.

Reference: Fleming et al. (1920a).

Asclepias syriaca L. (common milkweed, asclépiade de Syrie)

Distribution: N.S., P.E.I., N.B., Que., Ont., southern Man.

Reference: Reynard and Norton (1942).

Asclepias verticillata L. (eastern whorled milkweed, asclépiade  
verticillée)

Distribution: southwestern Ont., Man., southeastern Sask.

Animals affected: Some poisoning and death of sheep have occurred but most of the deaths were produced experimentally. Livestock in general avoid eating milkweeds.

References: Marsh and Clawson (1921), Clark (1979).

BORAGINACEAE (BORAGE FAMILY)

Amsinkia intermedia Fisch & Mey. (= A. menziesii (Lehm.) Nels. & Macbr.)  
(fiddleneck)

Distribution: Y.T., Man., Sask., Alta., B.C.

Animals affected: Poisoning and death of cattle, horses, and pigs occur.

References: Kalkus et al. (1925), McCulloch (1940), Woolsey et al. (1952), Kennedy (1957).

LABIATAE (MINT FAMILY)

Glechoma hederacea L. (ground-ivy, lierre terrestre)

Distribution: Nfld., N.S., P.E.I., N.B., Que., Ont., Man., Sask., Alta., B.C.

Animals affected: One case of poisoning of two horses has been reported.

Reference: Fyles (1920).

SOLANACEAE (NIGHTSHADE FAMILY)

Datura stramonium L. (jimsonweed, stramoine commune)

Distribution: N.S., P.E.I., N.B., Que., Ont., Sask., Alta.

Animals affected: Poisoning and death occur in cattle, horses, pigs, chickens, and mules.

References: Harshberger (1920), King (1923), Hansen (1924c, 1927), Reynard and Norton (1942), Case (1955), Leipold et al. (1973).

SOLANUM (NIGHTSHADES)

Solanum dulcamara L. (climbing nightshade, morelle douce-amère)

Distribution: Nfld., N.S., P.E.I., N.B., Que., Ont., Man., Sask., (Alta.), B.C.

Animals affected: Poisoning of sheep and cattle has occurred.

Reference: Harshberger (1920).



Solanum nigrum L. (black nightshade, morelle noire)

Distribution: (Nfld.), N.S., (P.E.I.), N.B., Que., Ont., Man., Sask., Alta., B.C.

Animals affected: Poisoning and death have occurred in cattle, sheep, pigs, goats, chickens, and ducks.

References: Hansen (1927), Casselberry (1939), Hubbs (1947), Ogg et al. 1981.

SCROPHULARIACEAE (FIGWORT FAMILY)

Digitalis purpurea L. (foxglove, digitale pourpre)

Distribution: Nfld., N.S., Ont., B.C.

Animals affected: Poisoning of pigs and cattle have occurred, but only one report exists of poisoning of livestock in North America.

Reference: Bruce (1927).

COMPOSITAE (COMPOSITE FAMILY)

Centaurea solstitialis L. (yellow star-thistle, centauree du solstice)

Distribution: southern Ont., Man., Sask.

Animals affected: Poisoning and death of horses have been reported.

References: Cordy (1954), Mettler and Stern (1963).

Chrysothamnus nauseosus (Pall.) Britt. (stinking rabbitbrush, bigelovie puante)

Distribution: Sask., Alta., B.C.

Animals affected: Livestock poisoning in California has been reported.

Reference: Sampson and Malmsten (1935).

Eupatorium rugosum Houtt. (white snakeroot, eupatoire rugueuse)

Distribution: central N.S., N.B., Que., Ont.

Animals affected: Poisoning and death occur in cattle, horses, sheep, and goats.

References: Moseley (1906), Jordan and Harris (1909), Wolf et al. (1918), Hansen (1924c, 1924d), Graham and Boughton (1925), Couch (1926b, 1927, 1928), Hansen (1928a, 1928d), Marsh (1929b), Couch (1933), Moseley (1941), Doyle and Walkley (1949).



HELENIUM (SNEEZEWEEDS)

Helenium autumnale L. (sneezeweed, hélénie automnale)

Distribution: southern MacKenzie dist., southwestern Que., Ont., Man., Sask., Alta., B.C.

Helenium flexuosum Raf. (= H. nudiflorum Nutt.)

Distribution: Que., Ont.

Animals affected: Poisoning and death occur in cattle, sheep, horses, and mules.

References: Phares (1889), Pammel (1917b), Hansen (1924b).

Hymenoxys richardsonii (Hook.) Cockerell (Colorado rubberweed)

Distribution: southern Sask., southern Alta.

Animals affected: Poisoning and death of sheep have been reported.

References: Marsh (1929a), Parker (1936), Aanes (1961).

Lactuca scariola L. (prickly lettuce, laitue scariole)

Distribution: N.S., P.E.I., N.B., Que., Ont., Man., Sask., Alta., B.C.

Animals affected: Occasional poisoning of cattle occurs.

Reference: Beath et al. (1953).

Rudbeckia laciniata L. (cut-leaved coneflower, rudbeckie laciniée)

Distribution: N.S., P.E.I., N.B., Que., Ont., southern Man.

Animals affected: Poisoning and death of pigs, sheep, and horses occur.

References: Anonymous (1874), Chesnut and Wilcox (1901), Pammel (1928), Skidmore and Peterson (1932).

SENECIO (GROUNDSELS)

Senecio integerrimus Nutt. (entire-leaved groundsel)

Distribution: MacKenzie dist., Y.T., Man., Sask., Alta., B.C.

Senecio jacobaea L. (tansy ragwort, séneçon jacobée)

Distribution: Nfld., N.S., P.E.I., N.B., Que., Ont., B.C.

Animals affected: Poisoning and death of cattle and horses have been reported. Sheep have been poisoned during experimental feedings.

References: Pethick (1921), Clawson (1933b).

Solidago mollis Bartl. (velvety goldenrod, verge d'or veloutée)

Distribution: southern Man., Sask., Alta.

Animals affected: Occasional livestock losses have been reported, as well as the experimental poisoning of sheep.

Reference: Beath et al. (1953).

Xanthium strumarium L. (cocklebur, lampourde glouteron)

Distribution: N.S., P.E.I., N.B., Que., Ont., Man., Sask., Alta., B.C.

Animals affected: Poisoning and death of pigs is most common. Poisoning of other livestock is uncommon. All species of Xanthium should be considered poisonous.

References: Marsh et al. (1923b, 1924), Hansen (1925, 1928e), Forrest (1938), Reynard and Norton (1942), Löve and Dansereau (1959).

OTHER TYPES OF PLANTS CAUSING POISONING OR INJURY IN NATURE

PLANTS CAUSING MECHANICAL INJURY

Several plants are capable of causing mechanical injury to livestock. This injury is often associated with barbs and grass awns that become lodged in the nose, eye, or mouth and cause disorientation or prevent the animal from eating. Grasses such as foxtail barley (Hordeum jubatum L.), yellow foxtail (Setaria glauca (L.) Beauv.), and porcupine grass (Stipa spartea Trin. var. curtiseta Hitchc.) have all caused mechanical injury (Hansen 1924e, Kingsbury 1964).

ALGAE

Some members of the blue green algae (Division Cyanophyta) have caused poisoning in freshwater in parts of the United States and Canada. Occasional extensive losses of livestock have been reported after ingestion of water containing concentrations of algae. Cattle, sheep, horses, swine, and domestic fowl have all been killed. Kingsbury (1964) discusses this problem in detail.

PLANT FOOD CONTAINING MYCOTOXINS

Certain fungi produce toxic metabolic products under certain environmental conditions. The fungi occur on many food commodities eaten by livestock, and episodes of acute mycotoxicoses resulting in death of large numbers of livestock are well documented. Lower levels of mycotoxins cause carcinogenic, teratogenetic, hallucinogenic, and mutagenic effects in animals. Mycotoxins have been reported from grains, oilseeds, nuts, and dehydrated fruit. An estimate of the economic losses caused by mycotoxicoses is difficult to determine but it may be considerable (Kingsbury 1964, Goldblatt 1969, Patterson et al. 1976, Wyllie and Morehouse 1977-1978, Anonymous 1979, Hsieh 1979).

## CULTIVATED PLANTS

Some forage and grain crops can cause poisoning and death under certain circumstances. For example, oats (Avena sativa L.) and corn (Zea mays L.) can accumulate toxic quantities of nitrates. Alfalfa (Medicago sativa L.), alsike clover (Trifolium hybridum L.), buckwheat (Fagopyrum esculentum Moench (= F. sagittatum Gilib.)), and oats can cause photosensitization of certain animals. Sorghum (Sorghum bicolor (L.) Moench (= S. vulgare Pers.)) can form toxic quantities of nitrile glycosides resulting in cyanide poisoning.

In Canada, there are many valuable crop plants as well as introduced weeds in the mustards (Brassica spp.). Several of these species, including rape (Brassica napus L.), have caused poisoning and death in livestock. The mustards contain oils, called isothiocyanates, which are poisonous in certain concentrations. Some mustards also cause nitrate poisoning. Hay containing sweet-clover (Melilotus spp.) can produce poisoning and death in livestock.

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INDEX

alfalfa/17  
algae, blue green/16  
alsike clover/17  
amarante fausse-blite/6  
amarante hybrid/6  
amarante à racine rouge/6  
Amaranthaceae/6  
amaranth family/6  
Amaranthus/6  
Amaranthus blitoides/6  
Amaranthus graecizans (syn.)/6  
Amaranthus hybridus/6  
Amaranthus retroflexus/6  
Amsinkia intermedia/13  
Amsinkia menziesii (syn.)/13  
arrow-grasses/3  
arrow-grass family/3  
arrow-grass, marsh/4  
arrow-grass, seaside/3  
Asclepiadaceae/12  
Asclepias/12  
Asclepias speciosa/12  
Asclepias syriaca/12  
Asclepias verticillata/13  
asclépiade, belle/12  
asclépiade de Syrie/12  
asclépiade verticillée/13  
astragale fondu/9  
astragale prostré/9  
Astragalus/9  
Astragalus bisulcatus/9  
Astragalus lentiginosus/9  
Astragalus miser/9  
Avena sativa/17  
Barbarea vulgaris/8  
barbarée vulgaire/8  
barberry family/7  
barley, foxtail/16  
bassia à feuilles d'hysope/5  
bassia, five-hooked/5  
bean family/9  
beech family/5  
belle asclépiade/12  
Berberidaceae/7  
bigelovie puante/14  
black cherry/9  
black locust/10  
black nightshade/14  
black oak/5  
bleedinghearts/7  
bleedingheart, western/8  
blue flag iris/4  
blue green algae/16  
bog-laurel/12



borage family/13  
Boraginaceae/13  
bracken/3  
Brassica kaber var. pinnatifida (syn.)/8  
buckwheat/17  
buckwheat family/5  
California rose-bay/12  
camas/4  
camas, death/4  
camas, white/4  
carotte à Moreau/11  
Caryophyllaceae/7  
Centaurea solstitialis/14  
centaurée du solstice/14  
cerisier de Virginie/9  
cerisier tardif/9  
Chenopodiaceae/5  
cherries/9  
cherry, black/9  
choke cherry, red/9  
Chrysothamnus nauseosus/14  
chêne rouge/5  
chénopode blanc/5  
Cicuta/11  
Cicuta douglasii/11  
Cicuta maculata/11  
Cicuta virosa/11  
cicutaire du Nord/11  
cicutaire pourpre/11  
cigue maculée/11  
clajeux/4  
climbing nightshade/13  
clover, alsike/17  
cockle, purple/7  
cocklebur/16  
Colorado rubberweed/15  
common milkweed/12  
Compositae/14  
composite family/14  
coneflower, cut-leaved/15  
Conium maculatum/11  
corn/17  
crowfoot family/7  
Cruciferae/8  
cut-leaved coneflower/15  
Cyanophyta/16  
cypress spurge/10  
Datura stramonium/13  
death camas/4  
Delphinium/7  
Delphinium bicolor/7  
Delphinium brownii (syn.)/7  
Delphinium glaucum/7  
Delphinium menziesii/7  
Descurainia pinnata var. brachycarpa/8

Dicentra/7  
Dicentra cucullaria/8  
Dicentra formosa/8  
dicentre du Canada/7  
dicentre à capuchon/8  
digitale pourpre/14  
Digitalis purpurea/14  
dock, veined/5  
Dutchman's-breeches/8  
eastern whorled milkweed/13  
entire-leaved groundsel/15  
Equisetaceae/2  
Equisetum/2  
Equisetum arvense/2  
Equisetum palustre/2  
Ericaceae/12  
eupatoire rugueuse/14  
Eupatorium rugosum/14  
euphorbe cyprès/10  
euphorbe érule/11  
Euphorbiaceae/10  
Euphorbia/10  
Euphorbia cyparissias/10  
Euphorbia esula/11  
Fagaceae/5  
Fagopyrum esculentum/17  
Fagopyrum sagittatum (syn.)/17  
false hellebore/4  
fern family/3  
fern, sensitive/3  
fiddleneck/13  
field horsetail/2  
figwort family/14  
five-hooked bassia/5  
fougère d'aigle/3  
fougère de l'Ouest, grande/3  
foxglove/14  
foxtail barley/16  
foxtail, yellow/16  
Fumariaceae/7  
fumitory family/7  
fungi/16  
Glechoma hederacea/13  
goldenrod, velvety/15  
goosefoot family/5  
grande fougère de l'Ouest/3  
grass, porcupine/16  
greasewood/6  
green tansy mustard/8  
ground-ivy/13  
groundsels/15  
groundsel, entire-leaved/15  
Guttiferae/11  
hairy vetch/10  
heath family/12

Helenium/15  
Helenium autumnale/15  
Helenium flexuosum/15  
Helenium nudiflorum (syn.)/15  
hellebore, false/4  
hemlock, poison/11  
Hordeum jubatum/16  
horsetails/2  
horsetail family/2  
horsetail, field/2  
horsetail, marsh/2  
Hymenoxys richardsonii/15  
Hypericum perforatum/11  
hélénie automnale/15  
if du Canada/3  
Iridaceae/4  
iris, blue flag/4  
iris family/4  
Iris versicolor/4  
jimsonweed/13  
Juncaginaceae/3  
Kalmia/12  
Kalmia à feuilles d'andromède/12  
Kalmia à feuilles étroites/12  
Kalmia angustifolia/12  
Kalmia polifolia/12  
Kochia/5  
Kochia scoparia/5  
Labiatae/13  
Lactuca scariola/15  
Laitue scariote/15  
lamb's-quarters/5  
lampourde glouteron/16  
larkspurs/7  
larkspur, low/7  
larkspur, tall/7  
laurels/12  
leafy spurge/11  
Leguminosae/9  
lettuce, prickly/15  
lierre terrestre/13  
Liliaceae/4  
lily family/4  
locoweeds/10  
locoweed, purple/10  
locust, black/10  
low larkspur/7  
lupin argenté/9  
lupin soyeux/10  
lupines/9  
lupine, silky/10  
lupine, silvery/9  
lupine, small/10  
Lupinus/9  
Lupinus argenteus/9

Lupinus pusillus/10  
Lupinus sericeus/10  
marsh arrow-grass/4  
marsh horsetail/2  
May-apple/7  
Medicago sativa/17  
Melilotus/17  
Menziesia ferruginea var. glabella/12  
milk-vetches/9  
milk-vetch, timber/9  
milk-vetch, two-grooved/9  
milkweeds/12  
milkweed, common/12  
milkweed, eastern whorled/13  
milkweed family/12  
milkweed, showy/12  
millepertuis perforé/11  
minniebush, western/12  
mint family/13  
morelle douce-amère/13  
morelle noire/14  
moutarde des champs/8  
moutarde tanaïsie verte/8  
mustards/17  
mustard family/8  
mustard, wild/8  
nielle/7  
nightshades/13  
nightshade, black/14  
nightshade, climbing/13  
nightshade family/13  
northern water-hemlock/11  
oaks/5  
oak, black/5  
oak, red/5  
oats/17  
Onoclea sensibilis/3  
onoclée sensible/3  
Oxytropis/10  
Oxytropis lambertii/10  
Oxytropis sericea/10  
parsley family/11  
Phytolacca americana/6  
Phytolaccaceae/6  
phytolaque d'Amérique/6  
pied d'alouette bicolore/7  
pied d'alouette glauque/7  
pigweeds/6  
pigweed, prostrate/6  
pigweed, redroot/6  
pigweed, smooth/6  
pin ponderosa/3  
Pinaceae/3  
pine family/3  
pine, ponderosa/3

pink family/7  
Pinus ponderosa/3  
podophylle pelté/7  
Podophyllum peltatum/7  
poison hemlock/11  
poison suckleya/6  
pokeweed/6  
pokeweed family/6  
Polygonaceae/5  
Polypodiaceae/3  
ponderosa pine/3  
porcupine grass/16  
prickly lettuce/15  
prostrate pigweed/6  
Prunus/9  
Prunus serotina/9  
Prunus virginiana/9  
prèle des champs/2  
prèle des marais/2  
Pteridium aquilinum/3  
purple cockle/7  
purple locoweed/10  
Quercus/5  
Quercus rubra/5  
Quercus velutina/5  
rabbitbrush, stinking/14  
ragwort, tansy/15  
Ranunculaceae/7  
rape/17  
red choke cherry/9  
red oak/5  
redroot pigweed/6  
Rhododendron/12  
rhododendrons/12  
Rhododendron albiflorum/12  
Rhododendron macrophyllum/12  
Robinia pseudoacacia/10  
robinier faux-acacia/10  
rocket, yellow/8  
Rosaceae/9  
rose family/9  
rose-bay, California/12  
rose-bay, white/12  
rubberweed, Colorado/15  
Rudbeckia laciniata/15  
rudbeckie laciniée/15  
rumex veiné/5  
Rumex venosus/5  
Sarcobatus vermiculatus/6  
Scrophulariaceae/14  
seaside arrow-grass/3  
Senecio/15  
Senecio integerrimus/15  
Senecio jacobaea/15  
sensitive fern/3



Setaria glauca/16  
sheep-Taurel/12  
showy milkweed/12  
silky lupine/10  
silvery lupine/9  
Sinapis arvensis/8  
small lupine/10  
smooth pigweed/6  
snakeroot, white/14  
sneezeweed/15  
sneezeweeds/15  
Solanaceae/13  
Solanum/13  
Solanum dulcamara/13  
Solanum nigrum/14  
Solidago mollis/15  
sorghum/17  
Sorghum bicolor/17  
Sorghum vulgare (syn.)/17  
spotted water-henlock/11  
spurges/10  
spurge, cypress/10  
spurge family/10  
spurge, leafy/11  
squirrel-corn/7  
St. John's-wort/11  
St. John's-wort family/11  
star-thistle, yellow/14  
stinking rabbitbrush/14  
Stipa spartea var. curtiseta/16  
stramoine commune/13  
suckleya, poison/6  
Suckleya suckleyana/6  
sweet-clover/17  
sénéçon jacobée/15  
tall larkspur/7  
tansy mustard, green/8  
tansy ragwort/15  
Taxaceae/3  
Taxus canadensis/3  
timber milk-vetch/9  
Trifolium hybridum/17  
Triglochin/3  
Triglochin maritima/3  
Triglochin palustris/4  
troscart des marais/4  
troscart maritime/3  
two-grooved milk-vetch/9  
Umbelliferae/11  
varaire vert/4  
veined dock/5  
velvety goldenrod/15  
Veratrum viride/4  
verge d'or veloutée/15  
vesce velue/10

vetch, hairy/10  
Vicia villosa/10  
water-hemlocks/11  
water-hemlock, northern/11  
water-hemlock, spotted/11  
water-hemlock, western/11  
western bleedingheart/8  
western minniebush/12  
western water-hemlock/11  
white camas/4  
white rose-bay/12  
white snakeroot/14  
wild mustard/8  
Xanthium strumarium/16  
yellow foxtail/16  
yellow rocket/8  
yellow star-thistle/14  
yew, Canada/3  
yew family/3  
Zea mays/17  
zigadène vénéneux/4  
zigadène élégant/4  
Zygadenus/4  
Zygadenus elegans/4  
Zygadenus gramineus/4



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