

Poisonous Plants

Extension Goat Handbook

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Factors contributing to plant poisoning are starvation, accidental eating and browsing habits of animals. Starvation is the most common reason. Most woodland or swampy-ground pastures contain many species of poisonous plants. These are usually eaten only when animals have nothing else to eat.

Certain plants are accidentally eaten by animals as they graze. A notable example of this is **water hemlock**. This plant emerges in wet areas which are the first to become green in early spring. Animals eager to eat the fresh young grass may accidentally bite off the crown of this plant with fatal results. Another type of accidental poisoning occurs when large amounts of cockle are present in wheat which is fed as grain.

Some animals on good feed in a dry lot or excellent pasture become bored with the same regular diet. They may eat unpalatable weeds or ornamental plants growing along fences. Goats and cattle like to vary the best kind of diet with a little "browse". Many ornamental or wild shrubs may be consumed, not because they are palatable, but because the animal craves variation in its diet.

The severity of poisoning is related to the quantity of material eaten, the specie of animal eating the plant, portion of the plant and condition of the plant eaten, level of ground moisture, general health of the animal prior to ingesting the substance, and the age and size of the animal. Therefore some livestock can eat some of the bad plants and under several of the mentioned conditions, fail to show symptoms of injury or poisoning. At other times death may occur.

Scores of plants contain material toxic to animals if eaten in sufficient quantity. Some of the plants are well known, some quite rare, some are useful, others are valued ornamentals. They may be grouped by the type of poison contained, the effect of their toxins or the part of the plant containing the poison. Some plants may contain several poisonous principals.

1. **Cyanogenetic Plants** - These contain under certain conditions, prussic acid (hydrocyanic acid), a deadly poison which interferes with the oxygen-carrying ability of the blood. Death in these cases is usually rapid and with little outward symptoms.
 - a. Members of the **prunus family of plants**, especially wild cherries, are dangerous. Peaches, plums, and other stone fruits belong to this group of plants. Wilting of the green leaves caused by frost, storm damage, or by cutting, changes a glucoside found in the leaves to hydrocyanic acid (HCN) and sugar. The sweet, wilted leaves are thus more attractive to animals than normal foliage. HCN content varies widely; but under some conditions a few handfuls of leaves may be enough to kill a horse or cow. This type of poisoning should be suspected when sudden death of animals follows windstorms or early sharp frosts. These leaves apparently lose their poison after they have become dry; the limp, green or partially yellowed leaves are the most dangerous.



b. **Sudan grass and sorghums** are also cyanogenetic plants. These plants are usually deadly when damaged or frozen. Aftermath sprouts following an early frost are particularly dangerous. Very little sudan grass poisoning occurs from animals trampling down plants and later eating them although this is often listed as dangerous. In dry weather, sudan grass is often pastured to the ground without ill effects. After sudan grass has been repeatedly frozen and the plants are completely dead, it is safe but not very valuable for pasture. Once frozen, sorghum, sorghum sudan hybrids, or their aftermath should never be pastured. As long as the plants show any green color they may be very poisonous. Both frosted sorghum and sudan grass can be best and most safely utilized by ensiling them for at least two weeks before feeding. Normal ensilage fermentation safely eliminates the poisonous principle.

c. **Cyanogenetic Plants (Glucosides - Glycosides)**

Arrow grass	Black Locust	Blue Cohosh
Broomcarn	Buckeye (horse chestnut)	Cherry
Choke Cherry	Corn Cockle Dogbane	Elderberry
Hemp Horse Nettle	Indian Hemp	Ivy
Johnson grass Kafir	Laurel	Leucothoe Lily-of-the-Valley
Maleberry	Marijuana	Milkweeds Milo
Nightshade Oleander	Rhododendron	Sevenbark
Silver	Sneezewood Sorghum	Staffer brush
Sudan grass	Velvet grass white snakeroot	Wild Black Cherry
Wild Hydrangea		

- d. Common **milkweed**, a perennial that grows three or four feet high, has a heavy stem and leaves and is frequently found in pastures. The milky white sap is sticky and has a bitter taste but livestock eat the topmost, tender leaves if good forage isn't abundant. Remove plants by spading, pulling, cutting, or plowing extensive areas and planting to cultivated crops for a year or two.
- e. **Horse nettle** is a perennial plant, two-feet-high, with spiny stems and leaves, and smooth, orange-yellow berries. Fruits are more toxic than the foliage. It's a common plant in grasslands and fields and is a member of the nightshade family.
- f. **Black nightshade** is an annual plant, two-feet high, with many branches. Leaves are variably smooth or hairy. The stems angled in cross-section and sometimes spiny. Clusters of white flowers, one-fourth inch across, bloom in midsummer and are followed by small, black fruits. Both the foliage and green berries are toxic. The ripe berries are not poisonous. Black nightshade is widely distributed.
- g. **Mountain laurel** is an evergreen shrub of the Appalachian Mountain region. Plants grow five-feet tall and have glossy green leaves. Flowers appear in clusters at the ends of branches. Livestock eat the leaves in early spring when little other foliage is available. Weakness, nausea, salivation, and vomiting are symptoms of poisoning. The preventative is to keep livestock out of areas where mountain laurel is abundant.

2. **Plants Containing Deadly Alkaloids** - Fortunately, these plants are unpalatable for most wild and domestic animals. Water hemlock and poison hemlock are deadly. Poisoning rarely occurs except in early spring when young plants are accidentally eaten, but the roots, stems, leaves, and flowers are always poisonous. Look for and learn to identify these plants in the summer when they are large and showy. The hemlocks are members of the carrot family and have showy, white, umbrella-like flower heads. Poison hemlock needs dry land to grow and is often found in gardens as an ornamental plant. Flowers are often incorporated into large mixed flower sprays in rural churches and at social events.

- a. **Water hemlock** - a perennial frequently found in wet, fertile soil - is a five-foot-tall plant with thick rootstocks, doubly compound leaves (fernlike) and small white flowers in umbrella-like clusters. The roots are the most poisonous parts of the plants. Cut the thick rootstocks lengthwise and you'll find air cavities separated by plate-like partitions of solid tissue. Drops of yellowish, aromatic, resin-like exudate containing the poisonous alkaloid appear at the cuts. Leaves and seeds contain little of the toxic substance and eaten in small quantities, either green or in hay, do little harm. Water hemlock starts growth in early spring. Its green foliage may show up before most other plants leaf out. Livestock tug at the tender leaves and pull roots from the soil which are still soft from late winter rains. The combinations of foliage and roots in considerable quantity can be fatal. As a preventative, pull water hemlock plants from the soil during the summer when they can readily be found and destroy them. Plants usually are not numerous in an area.
- b. **Poison hemlock** is a hollow-stemmed biennial, four-feet high, with double compound leaves resembling parsley and a large, white taproot like parsnip. Flowers are showy, umbrella-like clusters and appear in late summer. The poison is a volatile alkaloid, coniine, found in the foliage all season and in the seeds in late summer. Most livestock poisoning comes in the spring from eating fresh foliage.
- c. **Mayapple, bloodroot, pokeweed, nightshade, and hellebore** are other alkaloidal plants. They are rarely eaten except when animals are starving for better feed. Deaths from alkaloidal plants usually result from severe digestive disturbances, pain, and nervous symptoms. Animals usually die in convulsions.

d. **Alkaloid Containing Plants**

Aconite	Allspice	Black Snake Root
Bloodroot Blue Cohosh	Boxwood Celandine	Common Poppy
Crotalaria	Crow Poson	Death Camas
Dicentra False Hellebore	False Jessamine	Fume wort
Hellebore Hemp	Horse Nettle	Indian Hemp
Indian poke	Jimson weed	Larkspur
Lobelia Lupines	Marijuana	Monkshood
Moonseed	Night shade	Pink Death Camas Poison Darnel
Poison Hemlock	Poison rye grass	Rattleweed
Rock Poppy SpiderLily Spotted	Spotted Water Hemlock	Stagger grass Staggerweed

cowbane		
Sweet Shrub	Thorn Apple	Varebells
Wild Parsnip Wolfsbane	Yellow Jessamin	

3. **Plants That Are Photodynamic** - This means photo-sensitive animals get a reaction. In typical cases, an animal suddenly becomes sore on the white areas of their bodies. Whole areas of white skin may raise up and slough off. White goats may become severely affected and die from this condition. Conditions necessary for a reaction to occur are:
- 1) The animals must have white areas of skin (unpigmented);
 - 2) The animals must eat a sufficient quantity of the plants; and
 - 3) The animals must be exposed to bright sun.
1. Some common plants which cause photosensitization are **goat weed, Klamath weed, rape, alsike clover, buckwheat, lantana, St. John's Wort, and ornamental hypericums**. Both St. John's Wort and ornamental hypericums have showy, golden-yellow flowers. They are not readily eaten by animals. White goats frequently become badly "sunburned" when they are on rape pasture in bright, sunny weather with little or no shade. Alsike clover or other legumes may produce these symptoms in dairy goats under the above conditions.
4. **Plants That Produce Mechanical Injury** - A number of plants may have a spiny covering, long beards, fine hairs and when eaten may cause mechanical injuries or form hair balls in the stomach and intestines. **Sand bur, downy brome grass, squirrel-tail grass, poverty grass, mesquite, cocklebur, and clover** are some of the offending plants.
5. **Some Other Poisonous Plants** - Comparatively few plants containing poisons grow in areas usually used as pastures.
- a. **Bracken fern** is very common in wooded areas and unimproved pastures. Most animals will not eat bracken fern if there is adequate pasture or other feed. In ruminants, such as goats, bracken fern must be consumed over a period of several weeks before toxicity signs develop. Affected animals are listless, show weight loss, and may exhibit small hemorrhages on the mucous membranes. They may die from internal hemorrhages.
 - b. **Buttercups** contain an acrid, volatile alkaloid-amenenol, strong enough to blister the skin and cause inflammation of the intestinal tract. Cattle and goats poisoned by buttercups produce bitter milk and a reddish color. The toxic material volatilizes and is lost when buttercups are dried as in hay. A heavy growth of buttercup is an indication of low soil fertility. Have the soil analyzed and apply ground lime and fertilizers as their need is shown. The increased grass growth soon crowds out buttercups.
 - c. **Poison ivy** is widespread over most of the United States. It's a shrub or vine with woody stems that climb by attaching aerial rootlets to fences, walls, trees, etc. Leaves have three leaflets, glossy green and smooth at the edges. Inflammation of the skin from contact with the plants is an affliction of goat-keepers more frequently than of goats. The infection can become serious and may need medical attention. Kill poison ivy with an herbicide.

- d. Several **ornamental plants** that are green outdoors or indoors are highly toxic. Goats should not be fed clippings from ornamental plants. Common poisonous ornamentals are **yew, delphinium, oleander, larkspur and lily-of-the-valley**. Goats should not be allowed access to these plants.

6. Volatile or Essential Oils as Poisonous Principle

Baneberry	Crowfoot	Lobelia
Snakeberry	Spurge	White Cohish

7. Saponin Containing Plants

Bagpod	Coffee weed	Purple sesban
Rattlebox	Soapwort	

8. Tannin (Tannic Acid) as Poisonous

Principle Oaks

9. Poisonous Principle Not Exactly Known

Inkberry	Poke weed
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10. Resins as Poisonous Principle

Discarded Christmas trees	Ponderosa Pine needles
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NOTE: USDA and the State Department of Agriculture in each state can offer help in providing reference material on poisonous plants.

A Listing of Some Plants Known to Cause Problems When Eaten by Livestock

(Source: Stock Poisoning Plants of North Carolina, Bulletin No. 144, by James Hardin; Plants Poisonous to Livestock in the Western States, USDA Information Bulletin No. 415; Poisonous Plants of Pennsylvania, Bulletin No. 531, PA Department of Agriculture)

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TI: POISONOUS PLANTS

AU: D. L. Ace

L. J. Hutchinson; Pennsylvania State U., University Park

RV: G. F. W. Haenlein; U. of Delaware, Newark

DE: Nutrition