

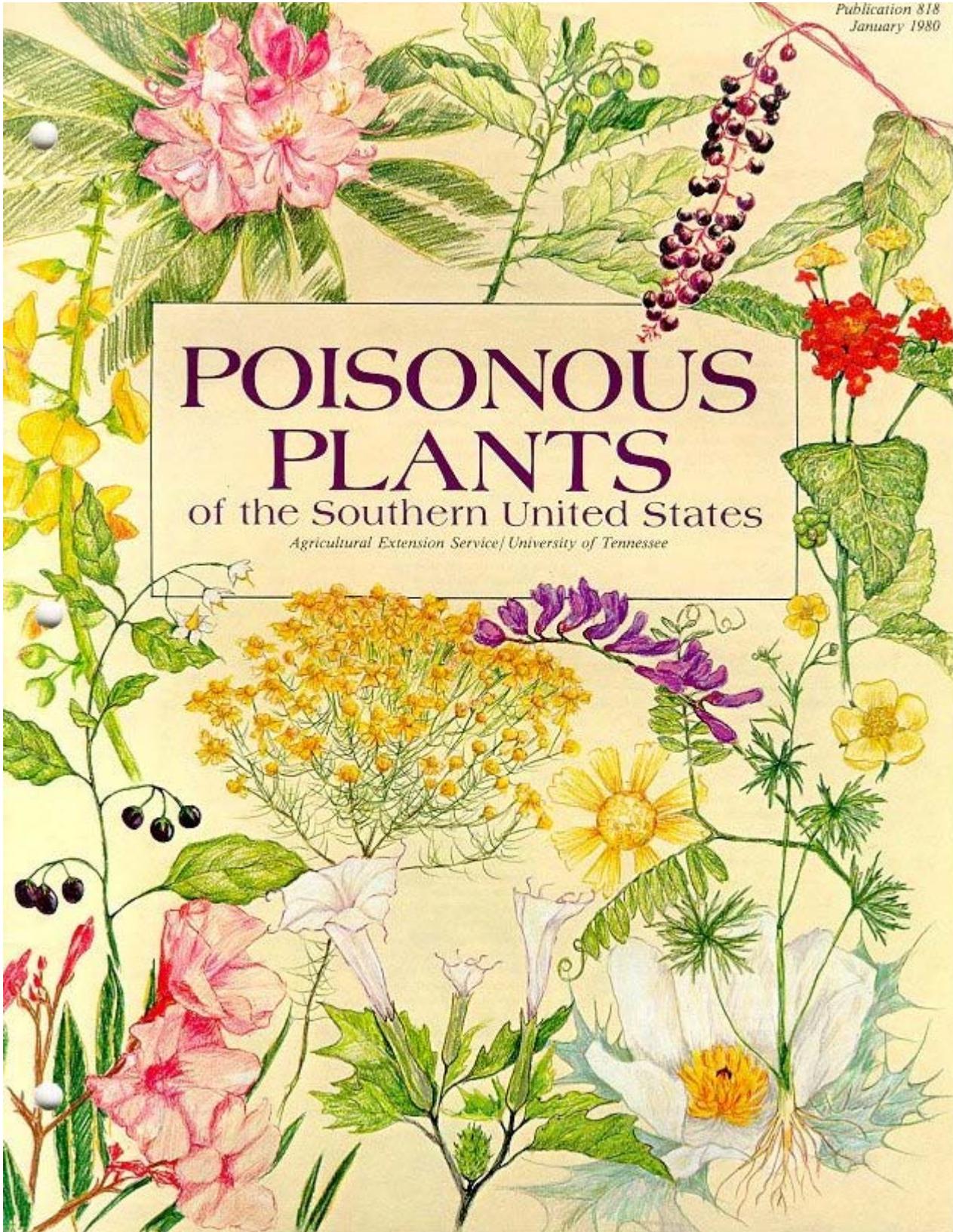
# Poisonous Plants of the Southern United States

Publication 818  
January 1980

## POISONOUS PLANTS

of the Southern United States

*Agricultural Extension Service/University of Tennessee*



## Poisonous Plants of the Southern United States

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# Poisonous Plants of the Southern United States

## *Foreword*

Poisonous plants annually cause significantly large losses of money through injury to man and livestock. No verifiable sums are available but figures as high as "several million dollars" are often quoted. There is no doubt that poisonous plants adversely affect man and all classes of livestock through reduced productivity and even death.

Quick recognition of some of the more common poisonous plants found in fence lines and pastures may encourage livestock producers to remove such plants where feasible and cause people to avoid exposure to such plants.

The need for a regional publication on the identification and toxicity of common poisonous plants was discussed at the annual meeting of Southern Extension Directors held July 1974. Dean William D. Bishop (Tennessee) appointed the following committee to prepare the publication:

Dr. A. H. Kates - Extension (VPI & SU)

Dr. D. E. Davis - Botanist (Auburn University)

Dr. John McCormack - Extension D.V.M. (University of Georgia)

Chairman, Dr. James F. Miller - Extension (University of Georgia)

Extension weed specialists and Extension veterinarians in the southern region states were asked in a survey to name poisonous plants in order of poisoning frequency and relative importance in their state. A master list of poisonous plants was developed from these surveys. The list was returned twice to Extension weed specialists for adjustment in order of importance.



Plant species in this publication are shown in the order determined by the procedure described above.

The committee chairman acknowledges with grateful appreciation the dedicated efforts of the committee members and their patience and perseverance: Dr. Davis who prepared the descriptive text for each species, Dr. Kates who prepared the glossary and conducted the surveys, and Dr. McCormack who prepared the symptomatology and toxicology text.

The committee hopes that by preparing this material as a regional publication copies will always be available through periodic reprints. Availability has not been the case with several excellent state publications on poisonous plants.

For reprints, please contact:

Extension Publications Editor  
University of Georgia  
Georgia Cooperative Extension Service  
Athens, Georgia 30602

## **Poisonous Plants of the Southern United States**

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Thank you

## Poisonous Plants of the Southern United States



**showy crotalaria**  
*Crotalaria spectabilis*

Annual herb, .2 to .5 m tall, densely pubescent. Leaves simple, alternate, linear to lanceolate, upper mostly 3 to 6 cm long, 4 to 10 mm wide; lower leaves spatulate, 2 to 3 cm long, 6 to 15 mm wide. Stipules conspicuous, tardily deciduous, fused to stem. Flowers showy, 1.5 to 2.5 cm long, yellow in terminal racemes. Widely distributed from Florida to Texas in coastal plain and piedmont; abundant along roadsides and in fields, waste places; once cultivated as a green manure crop. Plant on the left is *Crotalaria striata*, also toxic.

### TOXICITY

All parts of the plant are poisonous, whether green or dried in hay. The seeds are especially poisonous. The toxic principle is the alkaloid monocrotaline. Chickens, horses, cattle and swine are the species usually affected, but sheep, goats, mules and dogs can be affected to a lesser degree. Poisoning occurs from consuming the green plant, hay contaminated with crotalaria, or dried seed in harvested grain.

### SYMPTOMS

Death in chickens can occur from as few as 80 seeds. Fatalities may occur within a few days or up to several weeks after ingestion. Symptoms include diarrhea, a pale comb (signifying anemia), ruffled feathers and depression. Quail are also easily poisoned, but turkeys are more tolerant.

Horses develop chronic unthriftiness, become incoordinated, walk aimlessly and may "head press" against various objects. Mucous membranes often exhibit jaundice, related to severe liver damage.

In cattle, three syndromes are recognized: acute, chronic and intermediate types. The chronic type is most commonly seen with animals dying several months after consuming the toxic material, usually hay contaminated with crotalaria. Symptoms include bloody diarrhea, icterus, rough hair coat, unthriftiness, edema and weakness.

Swine may exhibit an acute death characterized by sudden gastric hemorrhage and death or a chronic form with symptoms of anemia, ascites, loss of hair and unthriftiness.

### TREATMENT

There is no specific treatment.



**bracken fern**  
*Pteridium aquilinum*

Coarse perennial fern to 1 m tall. Older fronds leathery, .3 to 1 m long, triangular in outline with three main divisions and many small subdivisions. Rhizomes horizontal, underground, about .5 cm in diameter. Distributed throughout all southern states; most common in old fields, waste places, open woods and roadsides, particularly on relatively dry sites.

**TOXICITY**

The poisonous principle is the enzyme thiaminase which inactivates thiamine (Vitamin B<sub>1</sub>) in the horse. In ruminants, an aplastic-anemia factor causes depression of the bone marrow. Sheep are less susceptible to the toxic effects than cattle and horses.

All portions of the plant are toxic whether green or dry. Poisoning by the plant is cumulative and symptoms may not appear until several weeks or months later. Clinical cases are most often seen in the spring or late summer or fall, especially after periods of drought when other forage is short or not available. Animals have shown toxicity from consuming hay containing the dried plants.

**SYMPTOMS**

Horses exhibit incoordination, often standing with their legs spread apart as if bracing themselves. The affected animal arches its back and neck into a crouching stance. Occasionally a fever is present up to 104°F. Prior to death horses may "head press" objects and have spasms with the head and neck drawn backwards.

Cattle may exhibit two types of symptoms. The laryngeal form is seen often in younger animals and is characterized by edema of the throat region resulting in difficult and loud breathing. The enteric form may be preceded by the laryngeal form. Animals thus affected exhibit bloody feces, blood in the urine and excessive bleeding from fly bites. The blood is slow to clot since there is a deficiency of platelets. Death usually occurs within a few days after symptoms appear.

Sheep have shown blindness due to degeneration of the retinal epithelial cells after grazing bracken fern.

**TREATMENT**

Horses often respond to repeated injections of thiamine at a dosage of 100-200 mg. per day for 7-14 days.

In cattle, whole blood transfusions, broad spectrum antibiotics, DL-batyl alcohol and protamine sulfate have all been used with some success. Removal of the animals from areas infested with bracken fern is suggested.

## Poisonous Plants of the Southern United States



**mountain laurel**  
*Kalmia latifolia*

Large, densely branched shrub or small tree up to 5 m tall. Leaves thick, leathery, evergreen, mostly alternate or in whorls of threes, elliptical, 8 to 15 cm long, 1.5 to 5 cm wide; margins entire and rolled in. Flowers white to pink, 2 to 3 cm in diameter, in large showy clusters. Found in all the southern states but less common in the coastal plain; most common on dry, rocky slopes and ridges and in open woods.

**sheep laurel *Kalmia angustifolia***

Very similar to mountain laurel and also toxic. Shrub to 1.5 m tall. Usually a smaller plant than *Kalmia latifolia* with narrower and smaller leaves and smaller flowers that are more often pink than white.

This species usually occupies wetter sites and mostly limited to mountainous areas of Georgia, the Carolinas and Virginia.

### TOXICITY

The resinoid, andromedotoxin, and a glucoside, arbutin, are the toxic principles responsible for symptoms. Sheep, goats and cattle are susceptible to poisoning if they consume the plant, especially the leaves.

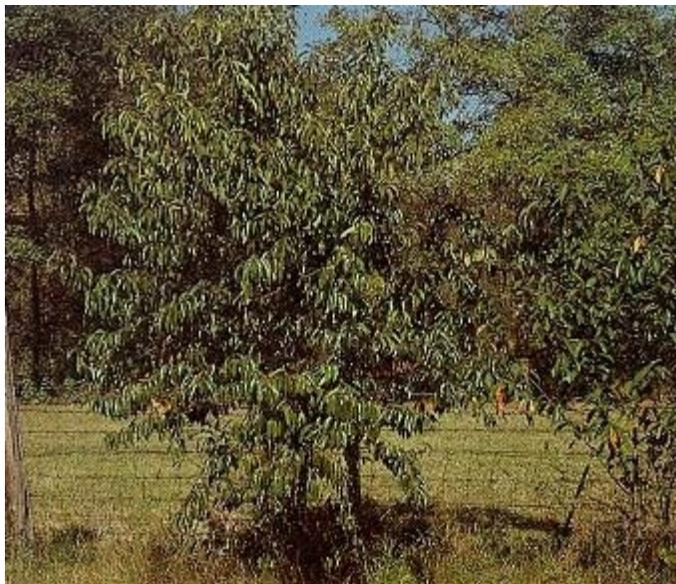
There are recorded cases of toxicity in humans and monkeys. Most clinical cases of laurel toxicity are seen in the winter and early spring months. When other forage is not available, livestock may consume the toxic evergreen laurels.

### SYMPTOMS

Signs of toxicity occur usually within six hours after consuming the plants. Symptoms include incoordination, excessive salivation, vomiting, bloat, weakness, muscular spasms, coma and death. The animals are often found down, unable to stand, with their head weaving from side to side.

### TREATMENT

Animals should not be drenched or given medicine by mouth in severe cases since they may be unable to swallow due to weakness of the throat muscles. The administration of mineral oil or saline laxatives by stomach tube is suggested. In addition, intravenous electrolyte solutions may be used.



**black cherry**  
*Prunus serotina*

Medium sized tree with dark, smooth bark. Bruised twigs and leaves with a distinctive acrid taste and odor. Leaves alternate, deciduous, light green, elliptic to lanceolate, 6 to 12 cm long, 2 to 5.5 cm wide, crenate to crenate-serrate, two small glands near the juncture of blade and petiole. Flowers small, white, in terminal racemes 4 to 10 cm long. Ripe fruit black, shiny, juicy, .7 to 1 cm long. Distributed throughout the south, most common in fence rows, open woods and pastures.

**choke cherry** *Prunus virginiana*

Shrub with extensive rhizomes and thus often appearing in clumps. Leaves are smaller than *P. serotina* with smaller, sharper teeth and

ripe fruit are dark red to purple. Uncommon except perhaps along streams in Tennessee or in moist places in Oklahoma and Texas.

**cherry laurel** *Prunus caroliniana laurocerasus*

Small to medium-sized tree, sometimes clipped to form dense hedges, 1 to 3 m tall. Leaves alternate, evergreen, dark green, shiny, elliptic to elliptic lanceolate, 5 to 10 cm long, 1.5 to 4 cm. wide; leaf margins variable, entire to serrate or denticulate. Flowers small, white, in axillary racemes 1.5 to 3 cm long. Ripe fruit dull black, only slightly fleshy. Georgia to Florida and west to Texas; most common in fence rows, low moist woods and maritime forest of coastal plain; often planted and escaping widely.

**TOXICITY**

The toxic principle is hydrocyanic acid (also called prussic acid) which is created by enzymic action on the glucoside, amygdalin. It is present primarily in the leaves of trees that have fallen and are in a wilted condition. The bark and twigs are also toxic. Poisoning may occur in the spring, summer or fall.

**SYMPTOMS**

Ruminants (cattle, sheep, goats) are most often affected, but single stomach animals, such as the horse, can also be affected.

Symptoms are difficult breathing, bloat, an anxious expression, moaning, staggering, recumbency and convulsions before death. Animals may die within one hour after consuming the leaves. The mucous membranes are bright red in color, as is the blood.

**TREATMENT**

The intravenous injection of sodium nitrite and sodium thiosulfate is suggested. It must be given as early as possible. Treatments may need to be repeated within a few hours.

## Poisonous Plants of the Southern United States



**johnsongrass**  
*Sorghum halepense*

Coarse grass up to 2 m tall with stout rhizomes, appearing in dense clumps or nearly solid stands. Leaves on vigorous plants up to .6 m long and 3 cm wide, pilose on upper leaf surface near the base. Panicle often appearing purplish, up to .6 m long and .2 m broad. Spikelets 4 to 6 mm long enclosing a 2 mm long grain. Found throughout the south; most abundant in fields, waste places, fence rows and on ditch banks. Particularly abundant in rich delta la such as in Mississippi. Once widely cultivated as a hay and pasture crop.

### TOXICITY

Under conditions of drought, trampling, frost, or second growth, the plants may contain cyanide. In addition, if heavily fertilized with nitrogen, there is a possibility of nitrate poisoning if the plants are

drought stricken.

All animals can be poisoned by cyanide, however, ruminants are more susceptible. Nitrate poisoning occurs most commonly in ruminants, although cases of nitrite poisoning have occurred in monogastric animals.

### SYMPTOMS

Cyanide poisoning is very acute and affected animals exhibit difficult breathing, anxious expression, staggering and usually become recumbent, have convulsions and die. Animals may show signs within 15-30 minutes after consuming plants containing cyanide and may die very quickly. The blood is usually bright red.

In nitrate poisoning, the symptoms are similar except the blood is characteristically chocolate-brown.

### TREATMENT

For cyanide poisoning sodium thiosulfate and sodium nitrite intravenously are used as an antidote.

For nitrate poisoning, two percent methylene blue is specific.

### PREVENTION

Plants containing cyanide can be ensiled or cut for hay. After drying, most of the cyanide is eliminated. Be careful when allowing cattle to graze Johnson grass, sorghums, etc., that have been frosted, wilted, trampled, or drought stricken.

Hay made from the plants may contain nitrate, however, and should therefore be analyzed if suspect.



**yellow jessamine**  
*Gelsemium sempervirens*

Climbing or trailing, somewhat woody, perennial vine. Leaves opposite, evergreen, lanceolate, 3 to 7 cm long, 1 to 2.5 cm wide, tips acute to acuminate, margins entire. Flowers showy, yellow, fragrant, to 3 cm long, 1 to 3 in axils of leaves, blooming in early spring. Fruit a many seeded, compressed capsule. Found from bluffs to swamps, throughout the south; most abundant along fence rows and in open woods. Often confused in the vegetative stage with *Lonicera japonica* which has broader, deciduous leaves.

**TOXICITY**

The toxic principles are the alkaloids gelsemine, gelseminine and gelsemoidine. These toxins are related to strychnine.

Livestock are affected, usually in the winter and spring months, from eating any parts of the plant. Humans have been known to be poisoned from sucking the nectar from the flowers or from eating honey made from these flowers. Bee deaths have been blamed on the nectar.

**SYMPTOMS**

Animals are usually found staggering and incoordinated, with dilated eyes and convulsive movements. Often the animals are found down in comatose condition. Death usually occurs soon after the animal becomes comatose.

**TREATMENT**

There is no specific treatment.

## Poisonous Plants of the Southern United States



**pokeberry**  
*Phytolacca americana*

Perennial herb, to 3 m tall, often with many stems from large fleshy rootstock. Stems green to purplish, fleshy, smooth. Leaves alternate, light green, lanceolate, 8 to 30 cm long, 3 to 12 cm wide, glabrous, margins entire. Flowers white to purplish in drooping axillary racemes. Ripe fruit black, juicy, many seeded, when mashed produces a red "ink." Distributed throughout the south; most common on waste ground, fence rows, pasture and old home sites. Young leaves often used as cooked green; older leaves quite poisonous.

### TOXICITY

The poisonous principles are oxalic acid and a saponin called phytolaccotoxin. In addition, alkaloids may also be present.

The root of the plant is the most toxic portion, although all other parts of the plant contain smaller amounts of the toxic principles. Cattle, horses, swine and man have all been poisoned after consuming this plant. Recognizable clinical cases are rare, however. Swine are most often affected since they often grub up the roots.

Poisoning occurs during spring, summer or fall. In the springtime humans commonly cook the leaves and consume them. This "poke salad" is generally considered safe if the water in which the leaves are cooked is poured off.

### SYMPTOMS

The most commonly observed symptom is a severe gastroenteritis with cramping, diarrhea and convulsions. Postmortem lesions include severe ulcerative gastritis, mucosal hemorrhage and a dark liver. In most cases the animal recovers within 24-48 hours.

### TREATMENT

Gastrointestinal protectives and sedatives are suggested.



**jimsonweed**  
*Datura stramonium*

Coarse, foul-smelling, glabrous annual, .5 to 1.5 m tall with green or purple-tinged stems. Leaves alternate, coarsely and irregularly toothed, 7 to 15 cm long, 2 to 12 cm wide. Flowers large, white to lavender, tubular, 7 to 10 cm long. Fruit an erect, dry, spiny capsule 2.5 to 4 cm long, 2 to 3.5 cm wide, with many black, shiny seeds. Distributed throughout the south but most abundant in fertile fields, gardens and barn lots.

**TOXICITY**

The toxic principles of this common hog lot and barnyard plant are the alkaloids atropine, hyoscyamine and scopolamine. All parts of the plant are considered poisonous, whether green or dry. However, the seeds are particularly poisonous. Usually, this plant is not eaten except when other forage is unavailable. Cattle and swine are primarily affected but horses, poultry, dogs and humans have been affected. Cows can be poisoned by consuming one-half to one pound of the green plant.

**SYMPTOMS**

Early symptoms include a weak and rapid pulse and heartbeat. The eyes are widely dilated, the mouth and other mucous membranes are dry and animals may appear blind. Later, slow breathing may be observed as well as lowered temperature, convulsions or coma.

After eating the plants, sheep have been observed to have abnormal leg movements, disturbed vision, intense thirst and to bite at imaginary objects in the air.

Pregnant sows consuming jimsonweed during their second and third months of gestation have produced deformed pigs. Some pigs may be born alive but exhibit varying degrees of flexed hips, stifles and forelegs. The hocks may be overextended.

**TREATMENT**

Non-specific. Weeds should be destroyed in order to prevent problems.

## Poisonous Plants of the Southern United States



### **buttercup**

#### ***Ranunculus abortivus* and other species**

Low annual or perennial herbs from fibrous roots or thickened rootstocks or bulbs often with a basal rosette of leaves. Stem leaves alternate, simple, lobed or divided. Flowers usually axillary and solitary with five green sepals and five glossy yellow petals which give the plant its common name, buttercup. Fruit a head of achenes. Potentially poisonous buttercups occur throughout south; most common in low, moist areas along creeks, in open woods and pastures.

### **TOXICITY**

This plant contains an irritant oil called protoanemonin. This oil is not a highly toxic substance and is present in various species of buttercup in differing amounts. In general, the flowering plant contains more toxin than the younger plant. The toxin is present in the stems and leaves.

### **SYMPTOMS**

All livestock. Signs of abdominal pain, severe diarrhea, convulsions and death. Milk from affected cows will be bitter and may be reddish in color. Although buttercup poisoning is uncommon, it will occasionally be seen, especially in cattle when other forages are in short supply.

### **TREATMENT**

Non-specific. Give purgatives initially, then gastrointestinal protectives later.



### **great laurel**

#### ***Rhododendron maxima***

Very similar to *R. catawbiense* but flowers white, leaves larger and narrowed to base whereas *R. catawbiense* leaves are rounded to base. Distribution is also similar but occurs mostly in well drained sites above 3,000 feet whereas *R. maxima* is mostly below 3,000 feet and along stream banks and in moist woods.

### **rosebay *Rhododendron catawbiense***

Shrub or densely branched, small tree 1 to 3 in tall. Leaves alternate, leathery, evergreen, entire, lanceolate to elliptic, 8 to 15 cm long, 3 to 7 cm wide. Flowers showy, pink to purple, 1.5 to 2 cm long, in terminal clusters. Found almost exclusively in the mountains of Alabama, Georgia, Kentucky, Tennessee, West Virginia; mostly on rocky slopes and on ridges sometimes called "hog-backs."

## TOXICITY

There are many species of laurels and most are considered poisonous. The toxic principle is called andromedotoxin, which is a white carbohydrate material. Some of the laurels also contain a glucoside of hydroquinone.

Poisoning can occur at any time of the year but is more commonly seen in the early spring or in wintertime when snow covers other vegetation. Sheep, goats, and cattle are commonly affected by grazing all portions of the plant, but particularly the leaves. Deaths have also been recorded in humans and in sheep.

## SYMPTOMS

Symptoms include vomiting, bloating, salivation and abdominal pain as evidenced by straining. Eventually the animals become weak, stagger and become prostrate. Occasionally, pneumonia is present due to inhalation of rumen contents into the lungs during vomiting.

## TREATMENT

Use sound judgment in treatment. For instance, don't drench or otherwise orally medicate animals that are vomiting or showing excessive swallowing movements. Inhalation pneumonia may result. Veterinarians may be able to pass a large bore stomach tube to relieve bloat or perform gastric lavage. Intravenous fluids, such as glucose and saline solution may be helpful.

## Poisonous Plants of the Southern United States



### **lantana**

#### *Lantana camara*

Erect or spreading shrub, .5 to 1.2 m tall, with recurved prickles on the angles of the square stem. Leaves opposite or whorled, deciduous, ovate to lanceolate, 2 to 7 cm long, margins toothed, aromatic when crushed. Flowers initially cream, yellow or pink changing to orange or scarlet thus resulting in a multi-colored, short, head-like spike. Fruit greenish-blue or black, one seeded. Found in sandy coastal plain soils Florida to Texas; roadsides, waste places, yards and gardens; persisting after cultivation and escaping.

#### TOXICITY

This ornamental shrub contains lantanin, a triterpenoid, and other compounds irritating to the mucosa of the gastrointestinal tract. All parts of the plant are quite toxic and poisoning may occur year-round, but is most common in summer and fall. Many poisoning cases occur when clippings are thrown into the pasture.

Sheep, cattle, horses, and humans are sensitive to the effects of the plant. Children have been poisoned by eating the berries.

#### SYMPTOMS

Cattle are most often affected. There are two forms of toxicity: acute and chronic. The acute form usually occurs within 24 hours after eating the plants with the animal exhibiting gastroenteritis with bloody, watery feces. Severe weakness and paralysis of the limbs are followed by death in three to four days. The chronic form is characterized by jaundiced mucous membranes, photosensitization, ulcerations of the mucous membranes of the nose and oral cavity. The skin may peel, leaving raw areas that are vulnerable to blowfly strike and bacterial infection. Severe keratitis may result in temporary or permanent blindness.

#### TREATMENT

Removal of animals from direct sunlight, the use of antibiotic injections and topical applications of protective antibiotic creams are suggested.



**oleander**  
*Nerium oleander*

Ornamental shrub or small, densely branched tree, 1 to 10 m tall. Leaves opposite or whorled, evergreen, leathery, narrowly elliptic to linear elliptic, 6 to 15 cm long, 1 to 3 cm wide, margins entire. Flowers showy, white, pink, red or yellow, 3.5 to 4 cm wide; in large terminal clusters. Found on coastal plain Florida to Louisiana, particularly abundant on sandy soils near the coast; widely cultivated and escaping; roadsides, edges of woods, lawns and gardens.

**TOXICITY**

This extremely toxic plant can poison livestock and humans at any time of the year. The toxic principles are two glycosides, oleandroside and nerioside, and can be isolated from all parts

of the plant.

**SYMPTOMS**

Severe gastroenteritis, diarrhea, abdominal pain, sweating and weakness are the usual symptoms. These signs appear within a few hours after eating the leaves. Cardiac irregularities are common, often characterized by increased heart rate. However, a slower heart rate is often detected in the later stages.

**TREATMENT**

Non-specific. Symptomatic treatment is suggested but is usually unsuccessful.

## Poisonous Plants of the Southern United States



### **bladderpod**

*Glottidium vesicarium*

Robust annual becoming quite woody at base, 1 to 4 m tall. Leaves alternate, deciduous, compound, 10 to 20 cm long, evenly pinnate with 24 to 52 leaflets. Flowers yellow or sometimes pinkish or purplish in clusters of two or more on long slender stalks. Pod flattened, swollen, ends pointed, 5 to 8 cm long, two seeds per pod. Found in coastal plain North Carolina to Florida to Texas; most abundant in moist, fertile soil in waste places, along ditches and in pastures.

### **TOXICITY**

Saponins have been detected in this plant. Cattle, sheep, goats, chickens and hogs have all been poisoned from consuming the seeds and green plant. The green seeds are the most toxic part.

It is thought that the plant is distasteful to animals but some appear to develop a craving for the seeds even when other forage is available. Poisoning most often occurs in the fall or early winter when pasture or other feed is in short supply. Also, new additions to pastures containing the plants are often affected.

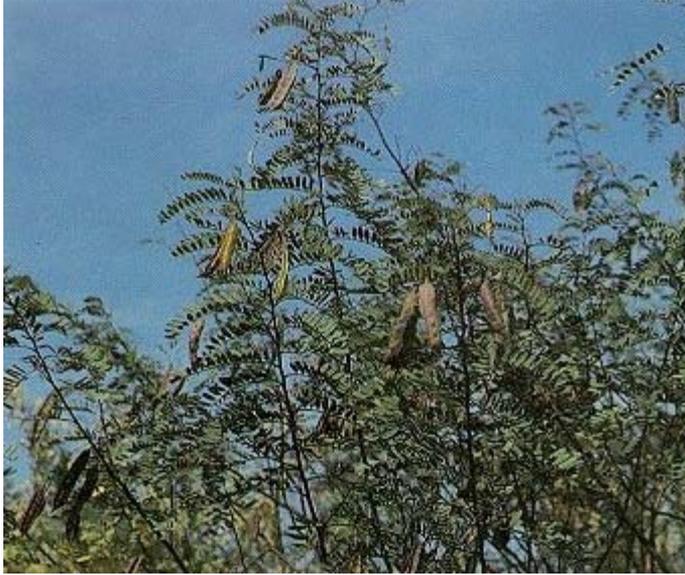
### **SYMPTOMS**

Sheep and cattle exhibit hemorrhagic diarrhea, shallow and rapid respiration, fast irregular pulse and become comatose before death. Constipation has been observed in affected cattle.

Post mortem examination reveals hemorrhages in the abomasum and intestines, rumen stasis and dark tarry blood. Usually the seeds can be observed in the rumen.

### **TREATMENT**

Remove all animals immediately from pastures containing the plant and confine them to clean pastures or a dry lot. General supportive treatment, including saline laxatives, rumen stimulants and intravenous fluid therapy is suggested.



## **rattlebox**

### ***Daubentonia punicea***

Shrub or small tree to 4 m tall. Leaves alternate, deciduous, 10 to 20 cm long, evenly pinnately compound with 12 to 40 leaflets. Flowers conspicuous, orange to red, shaped like a sweetpea, 2 to 2.5 cm long; in drooping, axillary clusters. Pods four-winged, 6 to 8 cm long, indehiscent, tough and somewhat leathery. Found in lower coastal plain Florida to Louisiana. Most abundant in moist fertile soils, marshes, along ditches, fence rows, pastures and waste places; planted as an ornamental and widely escaping.

### **TOXICITY**

The seeds contain a saponin which is quite toxic to poultry, cattle, sheep, goats and humans. It has been shown that as few

as nine seeds per bird can be fatal. Sheep can be killed by consuming as little as 50 grams/ 100 pounds of body weight.

### **SYMPTOMS**

Animals appear severely depressed, have a rapid pulse and diarrhea. Poisoning usually occurs in the fall when other forage is scarce.

### **TREATMENT**

Saline purgatives should be given.

## Poisonous Plants of the Southern United States



**sicklepod**  
*Cassia obtusifolia*

Coarse, annual herb, .4 to .5 m. Leaves alternate, pinnately compound with 4 to 6 obovate leaflets; largest leaflets 3 to 5 cm long. Flowers yellow, 1 to 1.5 cm. long, 1 or 2 in axillary clusters. Pods splitting along two lines, sickle-shaped, .3 to .4 cm wide, 10 to 20 cm long, many seeded. Reportedly found throughout the south but more abundant on sandy soils of coastal plain; most abundant in cultivated fields, roadsides, waste places and open pinelands.

**coffee senna** *Cassia occidentalis*

As shown on the left, is an annual weed very similar to *C. obtusifolia* but having mostly 8 or more leaflets rather than 4 to 6. Pods flattened while on *C. obtusifolia* they are nearly four-sided. Pods tend to be straighter and shorter than those of *C. obtusifolia*.

### TOXICITY

The toxic principles have not been clearly established. The seeds appear to exert their toxicity upon the skeletal muscles, kidney, and liver. The leaves and stem also contain toxin, whether green or dry. Sicklepod is much more prevalent but somewhat less toxic than coffee senna. Animals can be poisoned by consuming the plant in the field, in green chop, in hay or if the seed is mixed in grain. Toxicity has been observed in cattle. It should be assumed that other animals are susceptible to the effects of these plants.

### SYMPTOMS

Diarrhea is usually the first symptom observed. Later, the animals go off feed, appear lethargic, and tremors appear in the hind legs, indicating muscle degeneration. As the muscle degeneration progresses, the urine becomes dark and coffee-colored and the animal becomes recumbent and is unable to rise. Death often occurs within 12 hours after the animal goes down. There is no fever.

### TREATMENT

Once animals become recumbent, treatment is usually ineffective. Selenium and Vitamin E injections have been used with variable results.



**sesbania**  
***Sesbania exaltata***

Annual herb, .7 to 2 m tall, becoming quite woody at base. Leaves alternate, even pinnately compound; leaflets 20 to 70, oblong to linear elliptic, 1 to 3 cm long, entire. Flowers yellow, often streaked with purple, to 1.5 cm long, borne in axillary clusters of 2 to 6 flowers each. Pods linear, 10 to 20 cm long, 3 to 4 mm broad, 30 to 40 seeds. Found mostly in coastal plain Virginia to Florida to Texas; most abundant along ditches, on stream banks, low fields, and waste places.

**TOXICITY**

The poisonous principle is a saponin that is toxic to livestock and humans. The seeds are the most toxic part of the plant and are consumed in the late summer, fall, or winter when other forage is scarce. Cattle are often affected when moved into new pastures containing the plant. It has been observed that cattle often develop a craving for the seeds.

**SYMPTOMS**

The cattle are often found dead. An opened rumen may reveal the sprouted seeds and there will be a hemorrhagic inflammation of the abomasum and intestines. Symptoms are variable and include hemorrhagic diarrhea, although constipation has been recorded. The animals walk stiffly with an arched back, have shallow respiration and a weak rapid pulse. They become prostrate and comatose before death.

**TREATMENT**

Symptomatic. Insertion of a stomach tube and administration of intestinal protectives are suggested in severe diarrhea. If constipated, give mineral oil by the same route. Intravenous fluids are helpful in dehydrated animals.

## Poisonous Plants of the Southern United States



**sweet clover**

*Melilotus sp.*

Coarse, biennial herb, .4 to 2 m tall. Leaves alternate, pinnately compound; leaflets 3, obovate, mostly 1 to 2.5 cm long, .5 to 1.5 cm wide, stipules lanceolate. Flowers yellow or white, 5 to 7 mm long, fragrant; borne in 4 to 12 cm long racemes. Pods small, .2 to .4 cm long. Found throughout the south; most abundant on calcareous or alkaline soils, fields, roadsides and waste places. Cultivated as a forage crop and soil builder.

### TOXICITY

Under certain conditions, such as mold accumulation in the hay, coumarin, a harmless substance, is converted into dicoumarin. This compound interferes with the blood clotting

mechanism, thus leading to hemorrhage.

### SYMPTOMS

Cattle are primarily affected, although losses in horses and sheep have occurred. Sheep are much more resistant to the effects of the toxic principle than are cattle.

Symptoms are related to massive blood loss. Swellings appear under the skin due to accumulations of blood. These swellings vary in size and may occur at any site on the body, but particularly in areas that are susceptible to bruising. Pale mucous membranes, rapid and weak pulse, and weakness are observed. Females may hemorrhage following calving. Occasionally animals hemorrhage internally and exhibit signs of shock.

### TREATMENT

Remove sweet clover hay from animals immediately. Vitamin K injections and transfusions of whole blood are suggested.



**scotch broom**  
*Cytisus scoparius*

Erect, bushy shrub, 1 to 2.5 m tall, stems and branches dark green. Leaves alternate, simple or palmately three-foliolate, obovate to elliptic, .5 to 1.5 cm long, entire, evergreen or deciduous. Flowers showy, yellow, shaped like a sweet pea, 1.5 to 2.5 cm long; borne in terminal racemes. Pods long ciliate, flattened, broadly linear, 4 to 5 cm long, several seeded. Found mostly in Alabama, Georgia, Kentucky, Tennessee, Virginia and West Virginia, cultivated and sometimes escaping lawns, roadsides, open woods.

**TOXICITY**

Poisoning from this shrub is usually of a mild type. Large amounts are required to cause symptoms in animals.

Alkaloids have been identified as being the toxic principle. Cytisin, sparteine and isosparteine are found in the twigs, leaves and seeds in small amounts. A glycoside, scoparin, has also been isolated.

**SYMPTOMS**

The usual animal poisoned is the horse. The alkaloid portions cause depression of the nervous system and the glycoside causes a diuretic effect. Occasionally excitement is observed along with incoordination. Coma and death can result from ingestion of large amounts.

**TREATMENT**

Non-specific. Symptomatic treatment is suggested.

## Poisonous Plants of the Southern United States



**black locust**  
*Robinia pseudoacacia*

Shrub or tree to 25 m tall with deeply furrowed, thick bark and usually paired thorns at the base of each compound leaf; thornless varieties have been developed. Leaves alternate, deciduous, pinnately compound; leaflets 9 to 19, elliptic to ovate, 2 to 5 cm long, 1 to 2 cm wide. Flowers showy, white, 1.5 to 2 cm broad, very fragrant; home in drooping racemes, 10 to 20 cm long. Pod 5 to 10 cm. long, 1 to 2 cm broad, mostly 4 to 8 seeded. Plant has been cultivated throughout the region and widely escaping; open woods, roadsides, fence rows, old fields, pinelands and sometimes in sandy areas but more common on clays.

### TOXICITY

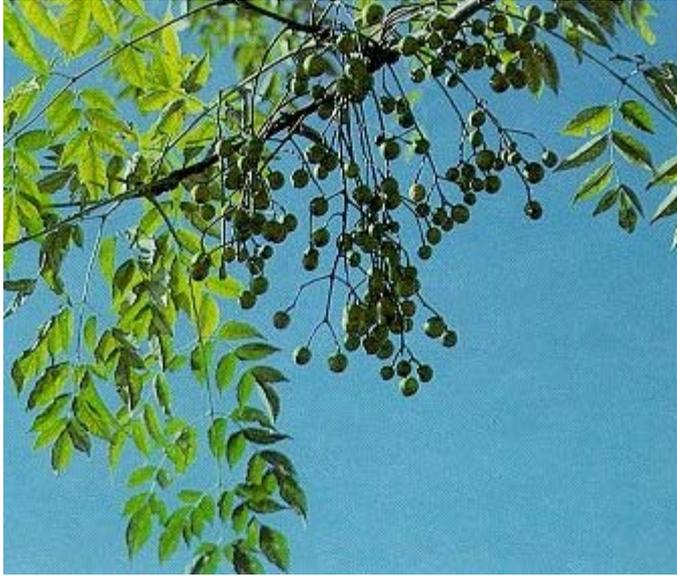
Toxic principles include a phytotoxin (robin) and a glycoside (robitin). Horses, cattle, sheep, poultry and humans may be poisoned by ingesting roots, bark, sprouts, seed pods and/or trimmings.

### SYMPTOMS

Horses are the most susceptible animal to the effects of black locust. Weakness, posterior paralysis, depression and loss of appetite are signs commonly observed. Irregular pulse, difficult breathing and diarrhea are also seen.

### TREATMENT

Insertion of a stomach tube and the administering of laxatives, such as mineral oil, are suggested. Stimulants may be needed.



**chinaberry**  
*Melia azederach*

Small to medium-sized, round-headed tree, to 12 m tall. Leaves alternate, deciduous, bipinnately compound, .3 to .9 m long; leaflets 2.5 to 5 cm long with deeply-toothed margins. Flowers pinkish to lavender, 1 to 1.5 cm long; borne in large, terminal panicles. Fruit barely fleshy, one-seeded, greenish-yellow to yellow-tan, 1 to 1.5 cm in diameter, persisting on the tree through much of the winter. Found throughout the south but rare in the more northern areas or higher altitudes. Once widely cultivated as a fast-growing, shade tree around small homes, escaping widely; roadsides, fence rows, around buildings and waste places.

**TOXICITY**

The fruit (berries) are the most toxic part of the tree. The leaves, bark and flowers are only mildly toxic and usually cause no problem. Most poisonings occur in the fall when the berries ripen and fall from the tree.

Swine and sheep are most often affected. Toxicity may occur after consumption of more than one-half per cent of body weight. Poultry and cattle can be poisoned, but larger amounts are required. Children have been poisoned by eating the berries.

**SYMPTOMS**

The gastrointestinal tract is affected, therefore vomiting and diarrhea are the commonly observed signs. Occasionally, central nervous system involvement is observed in the form of severe depression or excitement.

**TREATMENT**

Gastrointestinal evacuation is suggested.

## Poisonous Plants of the Southern United States



**common cocklebur**  
*Xanthium pensylvanicum*

Coarse, widely branching, annual herb .2 to 1.7 in tall. Leaves alternate, simple, coarsely pubescent, shallowly 3 to 5 lobed. Flowers green inconspicuous, male and female borne in separate clusters. Fruit broadly cylindrical, to nearly spherical, spiny, 1.5 to 3 cm long including spines, two-seeded, greenish to brown at maturity. Found throughout the south; most abundant in fertile soil in gardens, fields, roadsides and other areas having nearly full sunlight.

### TOXICITY

The toxic principle is the glycoside, hydroquinone. It is concentrated in the seeds and seedlings (cotyledon stage). Mature plants are distasteful to animals and contain less of the

toxin.

### SYMPTOMS

Swine are the animals most commonly poisoned. They root up and ingest the two-leaf stage of the plant in the springtime. Symptoms include vomiting and gastrointestinal irritation with occasional diarrhea. Large amounts often cause nervous symptoms including spasmodic running movements and convulsions. Chickens and other livestock have also been poisoned.

### TREATMENT

Treatment is of little or no value once symptoms have been observed.



**horsenettle**  
*Solanum carolinense*

Perennial, thorny herb, .2 to .8 m tall. Leaves alternate, simple, irregularly pinnately lobed, 7 to 12 cm long, 3 to 8 cm wide, stellate pubescent. Flowers white to purple, 2.3 to 3.1 cm broad; borne in few-flowered, terminal racemes. Fruit green, turning yellow, like a small tomato, 1 to 1.5 cm in diameter. Found throughout the south; common in pastures, old fields, waste places and sometimes in cultivated ground.

**TOXICITY**

A toxic alkaloid, solanine, has been isolated from this group of plants. Toxicity of these plants varies depending upon maturity, environment and portion of plant ingested. The berries are the most toxic part and are more toxic when they have matured. The berries of both Carolina horsenettle and black nightshade are green when immature. However, horsenettle berries turn yellow when mature and nightshade berries become black. Leaves are also toxic, but to a lesser degree.

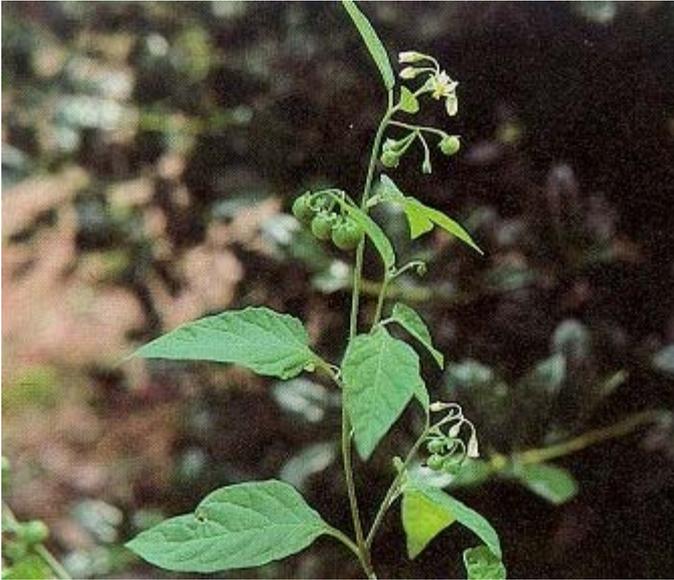
**SYMPTOMS**

All classes of livestock and humans have been poisoned. Two syndromes have been described: acute and chronic. The acutely poisoned animal is characterized by irritation of the mouth and gastrointestinal lesions. In the chronic form, unthriftiness, jaundiced mucous membranes, abdominal dropsy and constipation have all been seen.

**TREATMENT**

Non-specific.

## oPoisonous Plants of the Southern United States



**black nightshade**  
*Solanum nigrum*

Annual, thornless, essentially glabrous herb, .1 to 1 m tall. Leaves alternate, sinuately or coarsely toothed, 5 to 10 cm long, 2 to 5 cm wide. Flowers white, 6 to 8 mm broad. Fruit shiny, black when ripe, several seeded, 5 to 9 mm in diameter. Found throughout the south, seldom abundant; fields, waste places, cultivated ground.

### TOXICITY

A toxic alkaloid, solanine, has been isolated from this group of plants. Toxicity of these plants varies depending upon maturity, environment and portion of plant ingested. The berries are the most toxic part and are more toxic when they have matured. The berries of both Carolina horsenettle and

black nightshade are green when immature. However, horsenettle berries turn yellow when mature and nightshade berries become black. Leaves are also toxic, but to a lesser degree.

### SYMPTOMS

All classes of livestock and humans have been poisoned. Two syndromes have been described: acute and chronic. The acutely poisoned animal is characterized by irritation of the mouth and gastrointestinal lesions. In the chronic form, unthriftiness, jaundiced mucous membranes, abdominal dropsy and constipation have all been seen.

### TREATMENT

Non-specific.



**red buckeye**  
*Aesculus pavia*

Shrub or sometimes a small tree, to 4 m tall. Leaves opposite, palmately compound; leaflets 6 to 17 cm long, 3 to 6 cm wide. Flowers showy, scarlet, 2.5 to 4 cm long; borne in large, terminal panicles. Fruit leathery, 3.5 to 6 cm broad, splitting on maturity; containing 1 to 3, shiny-tan or light-brown seeds, to 4 cm in diameter. Found throughout the south but more abundant in coastal plain; most abundant in moist, fertile soils of deciduous forests.

**TOXICITY**

A glycoside, aesculin, has been detected in the buckeye sprout, young leaves, and the mature seed. All classes of livestock and humans can be affected by ingestion of the buckeye. Cattle are

most frequently affected, usually by consuming young shoots and leaves in the early springtime.

**SYMPTOMS**

Generally, symptoms of drunkenness are observed. Trembling, muscular weakness and incoordination are commonly seen. In addition, vomiting, irritated mucous membranes and paralysis may occur.

**TREATMENT**

Non-specific. Laxatives and supportive therapy are suggested.

## Poisonous Plants of the Southern United States



### spotted water hemlock

*Cicuta maculata*

Glabrous, branching, perennial herb, .6 to 2 m tall with purple striped or mottled, glabrous, hollow stems arising from fibrous or fleshy roots (like a dahlia). Lengthwise splitting of the juncture of the stem and roots shows the center is hollow with broad partitions of pithy tissue. Leaves alternate, pinnately, bipinnately or pinnate-ternately divided, uppermost leaves not dissected. Flowers white; borne in compound, flat-topped umbels at the ends of stems and branches. Fruits ovoid, prominently ribbed, two-parted, 2 to 4 mm long. Found throughout the south but , seldom common; swamps, stream banks, marshes, wet pastures, roadside ditches.

### TOXICITY

A very poisonous alkaloid and resinoid are found in all parts of the spotted water hemlock, primarily in the roots. The pithy area between the nodes contains a greenish-yellow oil which contains the toxins.

Livestock and humans are especially susceptible to this poison. The plant grows in soil which is wet and damp, which enables the animal to easily pull up the plant. Most cases occur in the springtime.

### SYMPTOMS

Animals exhibit nervous symptoms because of the toxin, which is a convulsant. Trembling motions are followed by convulsions. In addition, frothing at the mouth, chewing movements of the mouth and vomiting may be seen. The eyes are widely dilated and the temperature is elevated. Death occurs from respiratory failure.

### TREATMENT

Gastrointestinal evacuation is suggested.

### poison hemlock *Conium maculatum*

Glabrous, branching, biennial herb, to 2 m tall with hollow spotted stems arising from a thick taproot. Very similar to the much more poisonous *Cicuta maculata* and often confused with it. However, it usually has only one fleshy taproot; there are pithy partitions in a hollow area at the juncture of the root; stem and upper stem leaves are divided. Probably more common than *Cicuta maculata* but growing in the same kind of habitats.

### TOXICITY

The poison hemlock contains coniine, an alkaloid, and other compounds that are capable of poisoning livestock, poultry and humans. The stems, leaves and mature fruits are toxic. The leaves are more dangerous in the springtime, and the fruit is the most dangerous in the fall.

### SYMPTOMS

Gastrointestinal irritation, nervousness, trembling, staggering, coldness of the extremities, slow heartbeat and eventually coma and death.

### TREATMENT

Respiratory stimulants may be used advantageously. Intestinal protectives are suggested.



**castor bean**  
*Ricinus communis*

Large, robust, annual (in the south) or perennial (in tropics and subtropics), woody herb, to 3 m tall. Leaves alternate, up to 40 cm long, simple, palmately 7 to 9 lobed, serrate with gland-tipped teeth. Flowers green, inconspicuous; staminate flowers near the base and pistillate flowers mostly near the top of a small panicle. Fruit a three-lobed capsule with a soft, spiny exterior, 1.5 to 2 cm long; seeds three per capsule, resembling a female tick, shiny, grayish-brown mottled with reddish-brown, 10 mm long and 6 to 7 mm wide. Found throughout our area; cultivated and occasionally escaping and persisting in pinelands, waste places and roadsides.

#### TOXICITY

The poisonous principle is a phytotoxin called ricin. The plant is commonly planted in vegetable gardens in the southeast as an ornamental. Horses are most susceptible to poisoning but all livestock and humans can be affected. All parts of the plant are toxic, especially the seeds. Toxicity is seen most often in spring and summer.

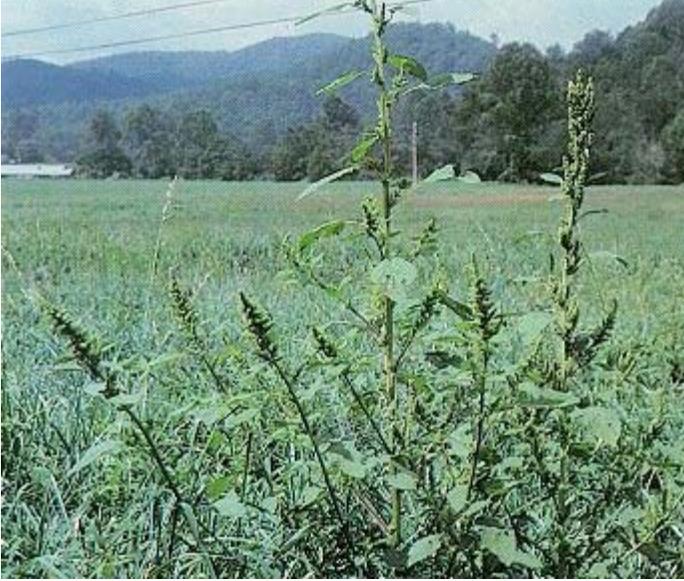
#### SYMPTOMS

Animals are most often poisoned when feed grains have become contaminated with the castor bean seeds. Symptoms appear several hours to several days after consuming the toxin depending upon the amount consumed. Violent purgation in the form of straining and bloody diarrhea is the classical sign. Other signs are dullness, abdominal pain, weakness, trembling and incoordination.

#### TREATMENT

Intestinal protectives in large amounts, administered by stomach tube is necessary. If dehydrated, large amounts of intravenous fluids assist in recovery.

## Poisonous Plants of the Southern United States



**redroot pigweed**  
*Amaranthus retroflexus*

Large, coarse, annual herb, 1 to 1.5 m tall. Leaves alternate, simple, elliptic, to lanceolate, 8 to 15 cm long, tapered at both ends. Flowers green, inconspicuous; borne in short, compact panicles interspersed with long, green, floral bracts. Seeds small, lenticular, less than 1 mm long. Found throughout the south, particularly in cultivated fields, barnyards and waste places.

### TOXICITY

This plant may accumulate nitrates after treatment with herbicides such as 2, 4-D and also after heavy nitrogen fertilization. This plant also becomes more palatable after treatment with herbicides. Cattle, sheep and other ruminants are susceptible.

Another syndrome has been observed in swine and cattle in which incoordination, coma and death have been observed. Necropsy examination reveals edema in the kidney region with degeneration of the kidney tubules. Degeneration of the brain has also been recorded.

### SYMPTOMS

Classical acute nitrate poisoning is characterized by cyanosis, difficult and open mouth breathing, weakness and trembling. The animal usually becomes recumbent.

### TREATMENT

Two percent methylene blue given intravenously is the treatment of choice. If large quantities of toxic material have been consumed, treatment may need to be repeated.



**eastern baccharis**  
***Baccharis halimifolia***

Much branched shrub or small tree, 1 to 4 m tall. Leaves alternate, deciduous, simple, elliptic to ovate, coarsely serrate to rarely entire, 3 to 7 cm long, 1 to 4 cm wide. Flowers inconspicuous but fruits have many white bristles on the seed which are sufficiently numerous to give the whole top of the plant a white or silvery appearance (hence one common name, silvering). Found in all of the coastal states, Virginia to Florida to Texas; much more abundant in lower coastal plain; salt marshes, low grounds, fence rows, open woods, pastures and roadsides.

**TOXICITY**

The leaves and flowers of this plant contain a cardioactive glycoside and are attractive to cattle and sheep in the early spring. The evergreen appearance is particularly attractive to cattle when other forage is not available.

**SYMPTOMS**

Staggering, trembling and convulsions, diarrhea and other gastrointestinal symptoms are often seen.

**TREATMENT**

There is no specific treatment. Gastrointestinal protectives are used if diarrhea is present. Sedatives may be used if convulsions are occurring.

## Poisonous Plants of the Southern United States



**white snakeroot**  
*Eupatorium rugosum*

Perennial herb, .6 to 1.5 m tall, with erect branched or unbranched stems arising from a mat of fibrous roots. Leaves opposite, simple, ovate, 3.5 to 17 cm long, 2.5 to 11 cm wide, crenate to serrate. Flowers showy, white; borne in open, terminal clusters, blooming late in summer or fall. Easily confused with near relatives that are not poisonous. Positive identification requires the services of a trained botanist. Probably found in all southern states east of the Mississippi River except perhaps Mississippi but rare in the southern portion of the region and in lower elevations; rich, moist, open, deciduous woods or bordering streams.

### TOXICITY

The toxic principle has been identified as an alcohol called tremetol. It is found in all parts of the plant whether green or dry. All domestic livestock, some laboratory animals, and human beings are all susceptible to the effects of this plant. Animals may be poisoned from consuming the actual plant or from ingesting milk from cows, sheep or mares that have eaten

the plant. Drinking milk from cows eating white snakeroot has accounted for illness called "milk sickness" and for deaths in humans.

### SYMPTOMS

Trembling is the most commonly observed sign. The condition has been called "trembles." Animals are stiff and sluggish, stand with feet wide apart and may eventually become recumbent. Slobbering, vomiting, constipation and dribbling of urine are also seen. A ketone odor may be detected on the breath. Humans may exhibit delirium after drinking toxic milk.

### TREATMENT

Laxatives may be of benefit but there is no specific treatment.



**common sneezeweed**  
*Helenium autumnale*

Clump-forming, perennial herb from a crown, .5 to 2 m tall. Leaves alternate, simple, elliptic to lanceolate, serrate to almost entire, 6 to 15 cm long, 1 to 3 cm wide; bases of leaves continuing as lines down the stem. Flowers yellow; borne in conspicuous heads. Found throughout the south but less common in coastal plain; moist places in pastures, bogs and ditches.

#### TOXICITY

The toxic principle is a glucoside, dugaldin, and a phenol. Sneezeweed appears to cause more severe signs than does bitterweed. In the Rocky Mountain area, sheep have been severely poisoned by consumption of all portions of the sneezeweed plant. Cattle may also be affected but require a much larger amount.

The plant retains its toxicity even after drying, therefore, heavily contaminated hay can cause problems. Most cases occur when animals are on summer pasture and other forage is not available.

#### SYMPTOMS

Sneezeweed is a severe irritant to the mucous membranes. Dullness, trembling and weakness are first observed. In many instances, vomiting is prominent. For this reason, it has been called "spewing sickness" by sheepmen. Many vomiting animals inhale part of the regurgitated material into the trachea and develop inhalation pneumonia. These animals usually survive only to become chronically poor performers and perhaps die later from secondary ailments.

Bitterweed can cause similar problems under experimental conditions. Cattle consume bitterweed only if other forage is unavailable

#### TREATMENT

There is no effective treatment

## Poisonous Plants of the Southern United States



**bitter sneezeweed**  
*Helenium amarum*

Annual, 15 cm to 1 m tall, much branched herb with taproot. Stem leaves narrow, numerous, 2 to 7 cm long, 1 to 4 mm wide, bases not continuing as lines down the stem. Leaves, when crushed, with a strong disagreeable odor. Flower similar to *H. autumnale*. Found Virginia to Florida to Texas and extending into southern parts of adjacent northern states; most abundant in coastal plain where it may be very abundant weed in pastures, roadsides and waste places.

### TOXICITY

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Bitterweed can cause similar problems under experimental conditions. Cattle consume bitterweed only if other forage is unavailable.

### TREATMENT

There is no effective treatment.



**poison ivy**  
*Rhus radicans*

Perennial, high climbing, woody vine. Leaves alternate, deciduous, pinnately compound; leaflets three, thin, bright green, shiny, ovate to elliptic, entire to serrate to shallowly lobed, 2 to 12 cm long, 2 to 12 cm wide. Flowers small, yellowish green, in clusters of 2 to 6 in lower leaf axils. Fruit a scarcely fleshy drupe, glabrous to short pubescent, .4 to .5 cm broad. Found throughout the southern states east of the Mississippi River; most abundant in moist woods but also in pastures, fence rows, roadsides and waste places.

**poison oak** *Rhus toxicodendron*

Low shrub, .3 to 2 m tall; very similar in appearance to *R. radicans*; however, it does not climb and leaflets are thicker, dull green, hairy on both surfaces and are more often lobed or coarsely serrate. Fruit is densely pubescent rather than glabrous or short pubescent. Found throughout the south; most abundant on relatively dry, sunny sites in woodlands, thickets

and old fields.

## TOXICITY

The toxic principle is a phenolic compound called urushiol. It is a skin and mucous membrane irritant and is found in all parts of the plant. Some humans are quite sensitive to the effects of the toxin while others show no ill effects from coming into contact with the plant. The toxin has little or no effect on animals but pets may carry the irritating substance on their hair and thereby transmit it to humans.

## SYMPTOMS

Susceptible humans exhibit intense itching with inflammation and the formation of blisters at the areas of contact. Animals are rarely affected. Burning maybe dangerous because the irritant may be transmitted by smoke.

## TREATMENT

A physician should be consulted for proper treatment.

## Poisonous Plants of the Southern United States



**poison sumac**

*Rhus vernix*

Shrub or small tree, to 4 or 5 m tall. Leaves alternate, deciduous, pinnately compound; leaflets 7 to 13, elliptic to oblong, entire, 5 to 12 cm long, 2 to 5 cm wide, rachis not winged. This species varies from the non-poisonous species of sumac in that the leaflets are entire and the rachis is not winged; other species have serrate margins or if entire, the rachis is winged. Flowers in panicles in axils of lower leaves. Fruit similar *R. toxicodendron* but glabrous and smaller. Found throughout the southern states east of the Mississippi River but limited in distribution to very moist areas; bogs, pocosins, wet pine barrens and stream borders.

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thereby transmit it to humans.

### SYMPTOMS

Susceptible humans exhibit intense itching with inflammation and the formation of blisters at the areas of contact. Animals are rarely affected. Burning maybe dangerous because the irritant may be transmitted by smoke.

### TREATMENT

A physician should be consulted for proper treatment.



**atamasco lily**  
*Zephyranthes atamasco*

Perennial, scapose, bulbous herb, 10 to 25 cm tall. Bulbs onion-like, brown-coated. Leaves linear, sheathing at the base, 20 to 40 cm long, 3 to 8 cm wide. Flowers solitary, very showy, white, 7 to 10 cm long. Found in coastal plain and lower piedmont Virginia to Florida to Mississippi; most abundant in moist open woods and low meadows.

**TOXICITY**

The bulb of this plant is the most toxic portion. The leaves are also toxic but to a much lesser degree. Animals are usually poisoned in the spring time when the ground is wet and there is little forage.

**SYMPTOMS**

Cattle, horses and poultry have all been poisoned by this plant. Symptoms usually appear in 24 to 48 hours after eating the bulbs. Staggering, diarrhea with blood, collapse and death are the usual symptoms.

**TREATMENT**

Gastrointestinal protectives are recommended.

## Poisonous Plants of the Southern United States



### **stagger grass**

*Amianthus muscaetoxicum*

Perennial, subscapose, bulbous herb, .3 to 1.4 m tall. Leaves mostly basal, linear, 10 to 60 cm long, .4 to 2.3 cm. wide. Flowers white, turning greenish in age; borne in dense racemes, 3 to 13 cm. long. Found throughout the southern states east of the Mississippi River; mostly moist, wooded slopes, meadows, open fields and bogs.

### TOXICITY

The highest concentration of the toxin, an alkaloid, is found in the bulb of the plant. The alkaloid, which is cumulative, is also found in the fruit and leaves. It is consumed only when other forage is unavailable and cases of toxicity are observed in the spring, summer and fall. Cattle and sheep are most commonly affected.

### SYMPTOMS

Animals exhibit vomiting, frothing at the mouth, staggering, rapid respiration, subnormal temperature and weakness. Death is caused by respiratory failure.

### TREATMENT

Keep animals quiet. Sedatives may be given. Gastric protectives may be administered by stomach tube unless this procedure excites the animal.



## **milkweed**

### ***Asclepias tuberosa* and other species**

Nearly all members of the milkweed genus (*Asclepias*) are erect or spreading, perennial herbs with milky sap and arising from thick rootstocks or rhizomes. Leaves opposite, whorled or rarely alternate, simple, linear to widely ovate, entire. Flowers borne in dense, often showy umbels, often white or greenish white but may also be red, orange, lavender or pale green. Fruit, an elongated follicle splitting on one side and releasing many seeds topped with white, silky hairs that enables them to be widely dispersed by the wind. The milkweed genus is found throughout the southern area in fields, along roadsides, fence rows, open woods, pastures and waste places.

### **TOXICITY**

Various species of milkweeds have yielded resinoids, alkaloids and glycosides. All parts of the plant are toxic, whether consumed green or dried in hay. Cattle, sheep, goats, horses and poultry are all sensitive to the effects of milkweed. Consuming the toxic plant in the amount

of 2% of body weight can cause symptoms.

### **SYMPTOMS**

Losses usually occur when animals are forced to graze the plant due to lack of other forage. Usual signs include staggering, depression, weakness, labored respiration and dilated pupils. Animals go down and exhibit tetanic spasms before going into a coma and dying.

### **TREATMENT**

Laxatives and intravenous fluids are suggested.

## Poisonous Plants of the Southern United States



**hemp dogbane**  
*Apocynum cannabinum*

Erect, branching, perennial herb, .8 to 1.8 m tall, with milky sap arising from creeping, underground rootstock. Leaves opposite, ovate to elliptic, 4 to 14 cm long, 1.5 to 6 cm wide, smooth margins. Flowers white to greenish white in terminal flat-topped clusters, usually overtopped by the leafy branches. Fruit long, slender, paired, drooping follicles, 10 to 22 cm long, 2 to 3 mm in diameter. Seeds elongated and smooth. Found throughout the south, most abundant in edges of woods, roadsides, pastures and waste places.

### TOXICITY

A resinoid and glucoside are found in the leaves and stems of this plant, whether green or dry. It is quite toxic and requires only 15-30 grams of green leaves to kill a horse or cow. Livestock can be poisoned in spring, summer or fall.

### SYMPTOMS

Symptoms include increased temperature and pulse, dilated pupils and off feed. The mucous membranes are discolored and the extremities are cold.

### TREATMENT

Intravenous fluids and gastric protectants are suggested.



**common yarrow**  
*Achillea millefolium*

Perennial, silky villous, rhizomatous herb with erect stems, .3 to 1.2 m tall. Leaves finely 2 to 3 pinnately divided, the smaller segments linear to ovate, hairy. Flowers about .5 cm broad; borne in heads with white to pink ray flowers; heads borne in dense terminal clusters. Seeds oblong, slightly flattened, 2 to 3 mm long, pappus absent. Found throughout all the southern area east of the Mississippi River; most common in pastures, roadsides, dry hillsides, open woods and waste places.

**TOXICITY**

This plant contains the alkaloid, achillain, and glycosides but is not considered to be highly toxic. Consumption of the plant may cause a disagreeable odor or taste in milk or in the meat of slaughtered animals. All livestock should be considered susceptible.

**SYMPTOMS**

Mucous membrane contact with the plant causes irritation and inflammation. Gastrointestinal upset including diarrhea may occur.

**TREATMENT**

Use intestinal protectives.

## Poisonous Plants of the Southern United States



**fetterbush**  
*Leucothoe racemosa*

Shrub similar to *L. axillaris* but with deciduous leaves, 3 to 9 cm long and 1 to 4 cm wide. The racemes of flowers are terminal and bear flowers on only one side. Seeds wingless, .8 to 1.2 mm long. Distribution similar to *L. axillaris* but perhaps extending farther north.

**fetterbush** *Leucothoe axillaris*

Shrub up to 1.5 m tall with green, slightly arching branches. Leaves alternate, simple, evergreen, lanceolate to elliptic, 5 to 13 cm long, 1.5 to 5 cm wide. Racemes 2 to 7 cm long, bearing white flowers on all sides of the rachis; flowers 2 to 6 mm long. Fruit, a capsule 3 to 3.5 mm long, 5 to 6 mm broad. Seed shiny, light brown, 1 to 1.4 mm long. Found Virginia to Florida to Mississippi in coastal plain and sometimes in adjacent piedmont; mostly in bogs, along streams, swamp forests and moist woods.

**fetterbush** *Leucothoe recurva*

Shrub similar to *L. axillaris* but with deciduous leaves and growing to 4 m tall. Differs from *L. racemosa* in that the anthers are four-awned while they are two-awned for *L. racemosa*. The capsule of *L. racemosa* is rounded on the sutures and the seeds are wingless and .3 to 1.2 mm long while the capsule is angular and seeds winged and 2 to 2.5 mm long for *L. recurva*. *L. recurva* is found primarily in rocky woods at higher elevations in Georgia, Tennessee, Virginia and West Virginia.

### TOXICITY

The resinoid, andromedotoxin, and a glucoside, arbutin, are the toxic principles responsible for symptoms. Sheep, goats and cattle are susceptible to poisoning if they consume the plant, especially the leaves.

There are recorded cases of toxicity in humans and monkeys. Most clinical cases of toxicity are seen in the winter and early spring months. When other forage is not available, livestock may consume the toxic plants.

### SYMPTOMS

Signs of toxicity occur usually within six hours after consuming the plants. Symptoms include incoordination, excessive salivation, vomiting, bloat, weakness, muscular spasms, coma and death. The animals are often found down, unable to stand, with their head weaving from side to side.

### TREATMENT

Animals should not be drenched or given medicine by mouth in severe cases since they may be unable to swallow due to weakness of the throat muscles. The administration of mineral oil or saline laxatives by stomach tube is suggested. In addition, intravenous electrolyte solutions may be used.



**maleberry**  
*Lyonia ligustrina*

Shrubs 2 to 3 m tall, usually in clumps from underground rhizomes. Leaves alternate, deciduous, pubescent on both sides, obovate to elliptic, 3 to 7 cm long, 1 to 3.5 cm wide, finely serrate to entire. Flowers white, globular, 3 to 5 mm long, borne in clusters at ends of branches. Fruit a dry, globose, pubescent capsule, 2.5 to 3 mm long. Seeds very narrow, 1.5 to 2 mm long. Found throughout the southern states east of the Mississippi River; dry woods or thickets to moist or wet habitats.

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## Poisonous Plants of the Southern United States



**common buttonbush**  
*Cephalanthus occidentalis*

Shrub or rarely a small tree, 1 to 3 m tall. Leaves opposite or whorled, deciduous, ovate to elliptic, 6 to 15 cm long, 3 to 10 cm wide. Flowers white; borne in terminal or axillary, showy, dense, nearly spherical heads, 2 to 3.5 cm in diameter. Found throughout the south; low areas, margins of lakes, rivers, creeks, swamps, marshes and poorly drained pastures.

### TOXICITY

The bitter glycosides cephalin and cephalanthin are found primarily in the leaves of this plant. Other parts of the plant are less toxic. Cattle are primarily affected usually in the summer and fall months when other forage is scarce.

### SYMPTOMS

Vomiting, muscular weakness, occasionally convulsions and death result.

### TREATMENT

Laxatives administered by stomach tube are suggested.



**mustard**  
*Brassica sp.*

Annual, biennial or perennial herbs with a pungent odor when crushed. Leaves alternate, simple to highly dissected, often basal with only a few on the upper stem. Flowers borne in a raceme or solitary on a leafless or nearly leafless stem, mostly bright yellow. Fruit dry, dehiscent, 1.5 to 7 cm long, much longer than wide. Seeds numerous, black or brown, globular, 1.5 to 3 mm in diameter. Found throughout the south in fields, pastures, roadsides, lawns, waste places and some in cultivated ground.

### TOXICITY

Members of the mustard family contain isothiocyanates, commonly called mustard oils. Certain members, such as the rutabaga, have produced goiter in livestock experimentally due to its high goitrogenic substance concentration. Animals are most often poisoned from spring to fall but can show symptoms of toxicity throughout the year if hay is contaminated with a large amount of mustard. All parts of the plant are toxic but especially the seeds. Swine, cattle, and horses are susceptible.

### SYMPTOMS

Symptoms are primarily those of a severe gastroenteritis due to irritation of the mucous membranes. Abdominal pain, salivation and diarrhea are commonly seen.

Rape, a winter annual, often causes a series of problems including pulmonary emphysema, diarrhea, blindness and hemoglobinuria. Photosensitization has been seen in swine and light-skinned animals. Abortions have been recorded in sows.

### TREATMENT

There is no effective treatment. Prevention is aimed at including hay free of mustards in the diet or if rape forage is being utilized, allowing access to other types of pastures.

## Poisonous Plants of the Southern United States



**St. John's wort**  
*Hypericum perforatum*

Erect, diffusely branched, perennial herb; smaller stems wing-angled. Leaves with tiny, nearly clear spots, opposite, elliptic to oblong, usually five-veined, entire, 1 to 2.5 cm long, 2.5 to 11 mm, wide, base clasping, sessile. Flowers deep yellow; petals 7 to 10 mm long, with tiny, black spots; borne in decomposed, flat-topped clusters. Fruit, a many seeded capsule, ovoid, 3.5 to 5.5 mm long, 2.5 to 4 mm broad. Seeds brown, 1 to 1.2 mm long. Found throughout the south; dry fields, waste places, roadsides, mostly in piedmont or mountains.

### TOXICITY

A red fluorescent pigment, hypericin, is the toxic agent. It is a primary photosensitizing compound although the liver is not affected. Light areas of the skin surface become hypersensitive to sunlight. Cattle, sheep and horses are affected; also goats, but to a lesser degree. Animals are poisoned by eating the fresh plant or dried hay. The toxic principle is not destroyed by drying or excessive heat. Younger plants are more palatable than the older ones.

### SYMPTOMS

In cattle, consumption of the toxic plant amounting to one percent of the body weight is toxic. Photosensitization is noticed within two days to three weeks after ingestion. The white skin peels off and may hang from the body before falling away. Affected animals exhibit itching and try to scratch themselves on objects. Blindness often results from inflammation and secondary infection of the cornea. Animals occasionally have convulsions in the acute form of poisoning. More commonly, however, the photosensitization results in secondary infection of the affected areas. Animals may actually die of starvation.

### TREATMENT

Remove animals from contaminated pastures to barns, woods, pasture or areas where animals have access to shade. Affected skin areas should be treated with antibacterial preparations as well as antibiotic injections to prevent infection.



**Sweetshrub**  
*Calycanthus floridus*

Shrub with opposite branches, 1 to 3 m tall. Leaves opposite, deciduous, entire, lanceolate to ovate, 5 to 18 cm long, 2 to 8 cm wide, entire. Flowers axillary with many linear or lanceolate, maroon petals and sepals, very fragrant. Fruit dry, tough, obovate, fibrous, 8 cm or more long and 5 cm or more in diameter; resembling an insect gall. Found in Alabama, Florida, Georgia, Mississippi, Tennessee, Virginia; mostly in rich, deciduous woods along stream banks and other moist places.

### TOXICITY

An alkaloid is contained in the seed of the plant. It has been reported to be toxic to cattle. It is dangerous but not usually eaten.

### SYMPTOMS

Strychnine-like action results in an increased excitability in which tetanic convulsions are exhibited.

### TREATMENT

Due to its strychnine-like action, sedatives may be of value in controlling the convulsions.



## Poisonous Plants of the Southern United States



**mexican poppy**  
*Argemone mexicana* (bluestem pricklepoppy,  
*Argemone intermedia*, is shown)

Annual or biennial herb, 3 to 9 m tall, more or less spiny; plant sap bright yellow. Leaves alternate, glaucous, auriculate clasping, sessile, lanceolate to obovate, 7 to 20 cm long, 3 to 9 cm wide, coarsely pinnately cleft or parted; margins spinose dentate. Flowers showy with very short stems; corolla bright or rarely pale yellow; petals 3 to 5 cm wide. Found throughout most of the south; sandy roadsides, waste places and fields.

### TOXICITY

The alkaloids berberine and protopine are contained in the entire plant. In addition, the seeds contain sanguinarine and dihydrosanguinarine. If consumed in sufficient quantities, livestock, humans and chickens can be poisoned. One ounce of seed causes symptoms in poultry and two ounces usually produce death.

### SYMPTOMS

In humans and chickens, widespread edema (dropsy) is the main finding. Chickens exhibit a swelling of the wattles and darkening of the tips of the comb and also a decrease in egg production, weakness, hemorrhagic enteritis and death.

### TREATMENT

Non-specific. Diuretics may be of value in livestock.



**hairy vetch**  
*Vicia villosa*

Annual, biennial or rarely perennial, trailing or climbing herb, .5 to 1 m tall, with densely hairy stems (a cultivated variety is not hairy). Leaves alternate, pinnately compound, terminal leaflet modified into a branched tendril; leaflets 10 to 29, narrowly oblong to linear, 1 to 3 cm long. Flowers violet or rarely white, 1.2 to 2 cm long; 10 to 40 flowers borne together in racemose axillary clusters. Fruit, a flattened pod, 2 to 3 cm long, 7 to 10 mm broad. Found throughout the southern states east of the Mississippi River; fields, roadsides and waste places.

### TOXICITY

A cyanogenetic glycoside is present in vetch seed. In Alabama, cattle exhibited signs of cyanide poisoning after eating from a sack of vetch seed that was left in a barnyard.

### SYMPTOMS

Symptoms include bellowing, sexual excitement, a wild appearance, crawling on the ground and death. Some species of vetch have been known to cause liver damage and photosensitization.

### TREATMENT

Treatment of cyanide poisoning should include sodium thiosulfate and sodium nitrite. Cattle exhibiting photosensitization should be kept in a shady area and given antibiotics to prevent secondary infection.

## Poisonous Plants of the Southern United States



**perilla mint**  
*Perilla frutescens*

Annual herb, .2 to .6 m tall, freely branched. Leaves opposite, purple or green, ovate, 5 to 13 cm long, 4 to 10 cm wide, coarsely serrate, crushed leaves and stem with a strong pungent odor. Flowers small, white to purple, with a ring of hairs in the throat of the 5-lobed corolla; borne in terminal panicles or singly in the axils of leaves. Found throughout the south in pastures, fields, roadsides, about homesites and waste places.

### TOXICITY

This toxic plant contains "perilla ketone" that is known to produce pulmonary edema and pleural effusion in a variety of animals. Toxic cases are seen sporadically, usually in the late summer or fall after grazing of the plant, most often in cattle and horses.

### SYMPTOMS

Affected animals exhibit respiratory distress. There is difficult breathing especially when exhaling. Grunting is often seen when exhaling. There may be a nasal discharge and an elevated temperature; friction sounds can be heard over the chest wall.

Post mortem examination reveals pulmonary emphysema and edema. The perilla mint seeds are often found in the rumen of the cow.

### TREATMENT

Once symptoms of severe pulmonary edema and emphysema are observed, treatment is usually ineffective. Injections of antihistamines, steroids and antibiotics are indicated. Cattle should be handled quietly to prevent further respiratory complication and subsequent death.

# Poisonous Plants of the Southern United States

## Glossary

*achene* - a small, dry, hard 1-locular, 1-seeded, indehiscent fruit.

*acuminate* - tapering to a point.

*acute* - sharp pointed, 90° angle.

*ascites* - an excessive accumulation of fluid in the peritoneal (abdominal) cavity.

*axil* - the angle found between the leaf and stem.

*axillary* - in an axil.

*bipinnate* - twice pinnate.

*blade* - the expanded portion of a leaf.

*bract* - a leaf-like structure subtending a flower.

*capsule* - a dry, or occasionally leathery, dehiscent fruit.

*ciliate* - fringed with hairs.

*comatose* - affected with a coma, which indicates a state of complete loss of consciousness from which the animal cannot be aroused.

*compound* - composed of two or more similar and united parts, as in a compound leaf

*cordate* - heart-shaped with the point at the apex.

*crenate* - shallowly round-toothed or teeth obtuse; scalloped.

*dehiscent* - opening regularly by slits like a pea or pod or cotton ball.

*dentate* - toothed, the sharp or coarse teeth perpendicular to the margin.

*denticulate* - minutely or finely dentate.

*diuretic* - a drug or other agent that promotes the secretion of urine.

*dropsy* - an abnormal accumulation of fluid in the cellular tissues or in a body cavity.

*drupe* - a fleshy, usually one-seeded, indehiscent fruit, as a cherry or plum.

*edema* - the accumulation of abnormally large amounts of fluid in the intercellular tissue spaces of the body.

*elliptic* - being narrowed to relatively round ends and widest at or about the middle.

*entire* - a margin without teeth or other irregularities, along the margin.

*follicle* - a dry fruit dehiscent along one line.

*gastritis* - inflammation of the stomach.

*gastroenteritis* - inflammation of the stomach and intestines.

*glabrous* - without hairs.

*hemorrhage* - excessive bleeding. A copious escape of blood from vessels.

*hemorrhagic enteritis* - inflammation of the intestines characterized by the passing of blood in the droppings.

*icterus* - a yellow appearance of the skin and mucous membranes. It is caused by liver damage, impairment of bile flow, or excessive destruction of red blood cells.

*indehiscent* - not regularly opening.

*jaundice* - a common term for icterus.

*lanceolate* - lance-shaped, much longer than wide, widened at or above the base and tapering to the apex.

*linear* - long and narrow with essentially parallel margins, as the blades of most grasses.

*necropsy* - an examination of the body after death. An autopsy or post mortem examination.

*ob* - a prefix signifying inversion, as obovate.

*ovate* - with an outline like that of a hen's egg, the broader end below the middle.

*palmate* - lobed, divided or ribbed like the fingers from the palm of the hand.

*panicle* - a cluster of flowers (inflorescence) in which the branches of the primary axis are racemose and the flowers pedicellate.

*pappus* - a ring of appendages (modified calyx), often hairs capping the fruit of many Asteraceae.

*petal* - one unit of the corolla.

*petiole* - leaf stalk.

*photosensitization* - sensitivity to light. Usually used to indicate a condition in animals when their superficial layers of non-pigmented skin exhibit dermatitis when exposed to sunlight. The condition may develop when animals consume certain poisonous plants or other agents that are not properly metabolized by the liver.

## Poisonous Plants of the Southern United States

*pilose* - covered with long soft hairs.

*pinnate* - with the leaflets arranged along a common axis (rachis), feather-like.

*pistil* - one or more fused carpels consisting of stigma, style (if present) and ovary.

*pistillate* - with pistils and without fertile stamens; female.

*pubescent* - covered with hairs, often soft and downy.

*raceme* - a simple, elongated inflorescence with stalk flowers.

*rachis* - an axis bearing leaflets.

*recumbent* - lying down. Usually used to indicate an animal that is down and unable to arise.

*rhizome* - usually elongate, horizontal, underground stem.

*rhizomatous* - producing or possessing rhizomes.

*rootstock* - subterranean stem; rhizomes.

*scape* - a naked flowering stem.

*scapose* - resembling a scape; stem essentially leafless.

*sepal* - a single unit of the calyx.

*serrate* - margin with teeth like a saw, teeth pointing toward the tip of the leaf.

*simple* - of one piece, not divided into leaflets.

*sinuate* - the margin wavy with regular strong indentations.

*spike* - an elongated, simple, inflorescence with sessile flowers.

*spikelet* - a secondary spike; a part of a compound inflorescence; the flower of grasses.

*stamen* - the pollen-bearing organ of a seed plant.

*staminate* - having stamens and no functional pistils; male.

*stasis* - a stoppage of the flow of blood or other body fluid in any part. In animals, this term often indicates a paralysis or abnormal slowing down of the gastrointestinal tract.

*stellate* - star-like, with radiating branches.

*stipitate* - borne on a stipe or short stalk, as stipitate glands.

*tetanic spasm* - a sudden, persistent, violent, involuntary contraction of a muscle or a group of muscles. The body becomes rigid, often with the head drawn backwards.

*umbel* - an inflorescence with pedicles or peduncles (rays), or both, arising from a common point.

## Poisonous Plants of the Southern United States

NAME OF PLANT	SEASON POISONING DANGER X greatest S little no symbol rare or none				SYMPTOMS OF POISONING <sup>1</sup>																	Page	ACTIVE PRINCIPLE INVOLVED	PARTS OF PLANT CONTAINING POISON								
	Spring	Summer	Fall	Winter	bloat	trembling	diarrhea	salivation	convulsions	rapid pulse	slow pulse	incoordination	subnormal temp.	vomiting	stupor	loss of appetite	muscular weakness	muscular paralysis	clonic spasms	excessive thirst	dilated pupil				lacrimation	emaciation	gastric enteritis	dizziness	partial blindness	labored breathing	hemorrhage	death possible
<i>Pteridium aquilinum</i>		X	X					X								X	X								X	X	X	X	5	unknown	leaves, leaf stalks	
<i>Sorghum halepense</i>		X	X		X				X	X									X					X	X	X	X	7	glucoside	green stunted parts, wilted plants		
<i>Amianthium muscaetoxicum</i>	S	X	X					X	X			X			X	X												X	22	alkaloid	leaves, fruit, underground parts	
<i>Phytolacca americana</i>	S	X	X				X	X	X					X	X				X									X	8	alcohol	roots, young shoots, berries	
<i>Agrostemma githago</i> <sup>3</sup>	S	X	S	S			X							X									X	X			X		glucoside	seeds, leaves		
<i>Prunus serotina</i>	X	X	X		X			X										X					X	X			X	6	glucoside	leaves, twigs, bark		
<i>Prunus caroliniana</i>	X	S	X	X	X			X	X								X						X	X	X		X	6	glucoside	leaves, twigs, bark		
<i>Crotalaria sagittalis</i>		X	X												X	X						X					X	5	alkaloid	entire plant, including seeds		
<i>Robinia pseudo-acacia</i>	X	X	X	S			X			X												X				X	X	14	phytoalbumin	leaves, sprouts, inner bark		
<i>Aesculus</i> spp.	X	X	X	S						X							X	X	X								X	16	glucoside	seeds, young shoots, and leaves		
<i>Cicuta maculata</i>	X	X	S				X	X	X								X	X									X	17	resinoid	all parts, but especially roots		
<i>Rhododendron maximum</i>	X		S	X				X	X					X	X	X						X					X	9	resinoid	leaves, twigs		
<i>Rhododendron catawbiense</i>	X		S	X				X	X					X	X	X						X					X	9	resinoid	leaves, twigs		
<i>Kalmia latifolia</i>	X		S	X				X	X					X	X	X						X					X	6	resinoid	leaves, twigs		
<i>Leucothoe catesbaei</i> <sup>3</sup>	X		S	X				X	X					X	X	X						X					X		resinoid	leaves, twigs		
<i>Leucothoe racemosa</i>	S	X	S					X	X					X	X	X						X					X	24	resinoid	leaves, twigs		
<i>Gelsemium sempervirens</i>	X		S	X							X				X	X	X									X	X	7	alkaloid	stems, leaves		
<i>Solanum nigrum</i>	S	X	X		X		X							X												X	X	16	glucoside	all parts, especially fruits and leaves		
<i>Datura stramonium</i>		X	X											X	X				X				X	X			X	8	alkaloid	all parts		
<i>Cephalanthus occidentalis</i>		X	X											X	X	X	X										X	25	glucoside	all parts, especially leaves		
<i>Eupatorium rugosum</i>		X	X			X								X	X	X	X								X		X	19	alcohol	all parts		
<i>Xanthium</i> spp.	X		S	S					X					X	X	X											X	15	phenol glucoside	young seedlings, and perhaps seeds		
<i>Helenium autumnale</i>		X	X				X		X														X				X	19	phenol	entire top, including flowers		
<i>Helenium amarum</i>		X	X																								X <sup>2</sup>	20	phenol	entire top, including flowers		

<sup>1</sup>Note:— The symptoms checked are the usual ones observed. The lack of a given symptom being checked in this chart would not necessarily mean that such a symptom would not develop in some cases.

<sup>2</sup>Note:— In horses and mules.

<sup>3</sup>Note:— Species not illustrated.

Extracted from:

*Poisonous Plants of Georgia*, by Wilbur H. Duncan and Thomas J. Jones, April 1949.

## **Poisonous Plants of the Southern United States**

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COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS

The University of Tennessee Institute of Agriculture and U.S. Department of Agriculture Cooperating in Furtherance of Acts of May 8 and June 30, 1914.

Agricultural Extension Service, M. Lloyd Downen, Dean