Plants Poisonous to Livestock in the Southern US

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Grazing animals will not eat poisonous plants unless forced to do so by some unusual or artificial condition.
Conditions Leading to Poisoning

- Lack of good forage – drought, overgrazing, etc.
- Deficient rations – unbalanced diet
- Waste or trash – garden waste, houseplants, etc.
- Newly cultivated areas – exposed roots
- Dry or partially dry water holes
- Incidental causes
Poisonous Substances

- Minerals: selenium, molybdenum, copper, lead, cadmium, fluorine. Mostly a problem in central and western US.

- Nitrates: sudden change in animals diet to plants with high nitrate content. Nitrate is reduced to nitrite which oxidizes hemoglobin – results in sudden death (alfalfa, Amaranthus).

- Resin or Resinoids: extremely poisonous – affect nervous system (Rhododendron).
Poisonous Substances

Glycosides:

- Cyanogenetic (hydrocyanic acid or prussic acid): rapid death with few obvious symptoms (Hydrangea, Prunus, Photinia)
- Saponic: cause gastric irritations (Aesculus, Agrostemma, Medicago, Phytolacca, Sesbania)
- Goitrogenic: inhibits formation of thyroid hormone (found in mustards)
Poisonous Substances

Glycosides (con’t):

- Irritant oils: found mainly in seeds (mustards, Ranunculus)
- Coumarin: hemorrhagic agent (Aesculus, Melilotus)
- Cardiac: stimulate the heart (Liliaceae, Apocynaceae)
Poisonous Substances

- Alkaloids: affect the heart and nervous system (Crotolaria, Taxus, Narcissus, Amaryllis, Crocus)
- Oxalates: cause kidney damage. Produces dullness, depression, and death (Rumex)
- Nonglycoside Oils: irritant effects in the gut, can cause death (Chenopodium, Glechoma)
Toxicity Rating For Plants

**Group 1**: most likely to cause poisoning or death

**Group 2**: cause serious poisoning or death but are rarely eaten

**Group 3**: cause serious poisoning or death but are uncommon in AR

**Group 4**: cause minor disorders or irritation

**Group 5**: may cause poisoning but are usually unavailable to livestock
Poisonous Plants

- Many kinds of plants have a wide range of poisonous effects.
- Poisonous plants cause chemical or physiological disturbances when taken internally.
Poisonous Plants When Taken Internally

- **Bacteria and Algae**: from farm ponds and polluted streams
- **Fungi**: mushrooms
- **Vascular Plants**: herbaceous and woody plants
Reference Books

Handbook of Toxic Plants of North America

Published in 2006

POISONOUS PLANTS of the UNITED STATES and CANADA

Published in 1964
Red Maple
(Acer rubrum)

- Wilted leaves are toxic.
- Cattle and horses have been poisoned.
- Toxic principle not known.
Red Buckeye
*(Aesculus pavia)*

- Dangerous
- Parts of Plant young leaves in spring and seeds in fall
- Poisonous Principle: glycosides, alkaloids, and neurotoxins
- Animals Poisoned: horses, cattle, pigs
Buckeye, Red

- Grazon P+D, Remedy.
Buckeye, Red
Smooth Pigweed
*(Amaranthus hybridus)*

- Dangerous
- Parts of Plant: all parts
- Poisonous Principle: oxalates and nitrates – results in cardiac arrest 5 to 10 days after eating
- Animals Poisoned: pigs, cattle, and sheep
Pigweed
Spiny Pigweed
Pigweed, Spiny

- Treat when small (2 to 4 inches) early May
- Cimarron 0.25 to 0.33 oz/acre
- Grazon P+D, Weedmaster, 2,4-D - 1-2 pts/acre, Cimarron Max 1 pt + 0.25 oz
- Germinates all summer. Repeat applications needed.
Spiny Pigweed
Pigweed

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- Germinates all summer. Repeat applications needed.
Hemp Dogbane
(*Apocynum cannabinum*)

- **Group 1 (dangerous)**
- **Parts of Plant: green or dry leaves** – 15 to 30 g of green leaves can kill horse or cow
- **Poisonous Principle:** resins and glycosides with cardioactivity
- **Animals Poisoned:** cattle, horses, and sheep
Hemp Dogbane

- Very tough to control.
- Surmount at 3 to 6 pts per acre is the best.
- High rate of Cimarron Max is also effective.

Milky juice
Surmount at 3 pts/ac, 30 days after treatment
Surmount at 3 pts/ac, 340 days after treatment
Surmount at 6 pts/ac, 340 days after treatment.
Cimarron Max 0.5 oz metsulfuron + 2 qts Weedmaster at, 30 days after treatment
Cimarron Max 0.5 oz metsulfuron + 2 qts Weedmaster at, 340 days after treatment.
Butterfly Milkweed  
(*Asclepias tuberosa*)

- Dangerous, but rarely eaten.
- Parts of Plant: all parts, green or dried (toxicity decreases with maturity)
- Poisonous Principle: cardiac glycosides and resinoids
- Animals Poisoned: sheep, cattle, horses, poultry
Mustards

(*Brassica*)

- Poisonous principle: mustard oil (isothiocyanates).
- Animals poisoned: pigs, cattle, horses.
- All plant parts are toxic.
Marijuana
(Cannabis sativa)

- Dangerous, but uncommon
- Parts of Plant: leaves and stalks (most toxic)
- Poisonous Principle: resin tetrahydrocannabinol. Depression of central nervous system
- Animals Poisoned: cattle, horses
Sicklepod
(Cassia obtusifolia)

- Weakly toxic.
- Parts of Plant: leaves, stems, seeds
- Poisonous Principle: anthraquinones, glycosides, alkaloids
- Animals Poisoned: cattle, possibly others
Coffee Senna
(Cassia occidentalis)

- Weakly toxic.
- Parts of Plant: leaves, stems, seeds
- Poisonous Principle: anthraquinones, glycosides, alkaloids
- Animals Poisoned: cattle, possibly others
Bladderpod
*(Sesbania versicaria)*
Buttonbush
(*Cephalanthus occidentalis*)

- Poisonous principle: glycosides in the leaves.
- Forage of last resort.
- Found in or near water.
Goosefoot, Mexican Tea
(Chenopodium ambrosioides)

• Dangerous but rarely eaten.
• Parts of Plant: seeds
• Poisonous Principle: oxide ascaridol – causes nausea, muscular weakness, and vertigo
• Animals Poisoned: poultry (eating seeds)
• Folk remedy for worms
Mexican tea, *Chenopodium ambrosioides*
Mexican tea, *Chenopodium ambrosioides*
Poison Hemlock
(Conium maculatum)

- Dangerous but rarely eaten.
- Parts of Plant: leaves and unripe fruit
- Poisonous Principle: alkaloids, also contains conine and coniceine which are teratogenic
- Animals Poisoned: horses, cattle, swine, poultry, goats, sheep
Hemlock, Poison

Grazen P+D or Weedmaster at 1 qt per acre
Poison Hemlock
Poison Hemlock
Crotalaria
(Crotalaria spectabilis)

• Dangerous

• Parts of Plant:
leaves, stems, roots, seeds (dry or green)

• Poisonous
Principle:
pyrrolizidine alkaloid
monocrotaline
Crotalaria

- Animals Poisoned: all livestock – 2 g of seed fed daily for 7 days will kill 50 lb hog, 9 lb of dried leaves will kill 300 lb steer in 4 days.
Jimsonweed
(Datura stramonium)

- Dangerous
- Parts of Plant: all parts, but particularly seeds. 0.06 to 0.09 % of animal weight is fatal to cattle.
Jimson weed, *Datura stramonium*
Teens ending up in ER after ingesting Jimson weed

What many people might not realize about the Jimson weed (pictured above) is that consuming it can trigger a powerful hallucinogenic effect, and that the plant's chemical effects can be fatal.

TIM POTTER
McClatchy Newspapers

WICHITA, Kan. – Over the years, Jimson weed has drawn police Lt. Jimmy Queen. The teen went to a hospital and was released the same day, Queen said.

Police found the patch of

Jimson weed,
Datura stramonium
White Snakeroot
*(Eupatorium rugosum)*

- Dangerous
- Parts of Plant: all parts, green or dried
- Poisonous Principle: alcohol (trematol) and glycosides. Daily digestion necessary for toxicity
- Animals Poisoned: cattle, sheep, hogs, horses, mules, and goats

Nancy Lincoln (Abe’s Mother) died at the age of 35 from drinking the milk of a cow that has grazed on the poisonous white snakerooot. Abe was 9 at the time.
Bitter Sneezeweed
(Helenium amarum)

- Group 1 (dangerous)
- Parts of Plant: leaves, stems, flowers, and fruit
- Poisonous Principle: sesquiterpene lactone
- Animals Poisoned: sheep, cattle, horses

Very common in Western Arkansas
Bitter Sneezeweed

Small, threadlike leaves of bitter sneezeweed

The central flowers are in a ball like cluster.

The plants have a strong odor and bitter taste.
Bitter Sneezeweed

- Apply when 1 to 3 in. tall, usually in May
- 1-2 pts/acre:
  - 2,4-D
  - Grazon P+D
  - Weedmaster
  - Cimarron Max 1 pt + 0.25 oz
- Cimarron 0.25 to 0.33 oz/ac
Bitter Sneezeweed Control

2,4-D 1 pint acre untreated
Sumpweed
(Iva annua)

- Poisonous to cattle.
- Rare
- Not well researched
- Often found in swampy areas
- Shown to be toxic to embryos.
Lantana

- Parts of plant: all
- Poisonous Principle: Contains triterpenoid and other compounds that irritate the mucosa lining the gastrointestinal tract.
- Animals poisoned: cattle, sheep, humans, horses.
- Used as an ornamental. Often winter kills in AR
Sweet Clover
(Melolitus)

- Poisonous Principle: Moldy hay may contain dicoumarin which interferes with blood clotting.
- Animals Poisoned: cattle, horses, sheep.
Sweet Clover, *Melolitus sp*
Sweet Clover, *Melolitus sp*
Sweet Clover, *Melolitus sp*
Sweet Clover, *Melolitus sp*
Millet

_Pennisetum americanum_

Due to nitrate accumulation related to environmental conditions. Much more likely in hay versus fresh forage.
Perilla Mint
(*Perilla frutescens*)

- Dangerous.
- Eaten during dry summers when forage is scarce.
- Parts of Plant: leaves and stems
- Found along the edge of woods and streams
Perilla Mint

*(Perilla frutescens)*

- Poisonous Principle: perilla ketone, egomaketone, isoegomaketone
- Animals Poisoned: cattle and horses
Perilla Mint
Perilla Mint Control

- Cimarron 0.25 to 0.33 oz/acre
- 2,4-D 1 qt/acre
- Grazon P+D 1 to 2 pts/acre
- Weedmaster 1 to 2 pts/acre
- Cimarron Max 1 pt + 0.25 oz
Ground-cherry

*(Physalis spp)*

- Dangerous but rarely eaten.
- Parts of Plant: tops and unripe fruit
- Poisonous Principle: solanine glycoalkaloids
- Animals Poisoned: cattle
Pokeweed
(Phytolacca americana)

- Dangerous
- Parts of Plant: roots (most toxic), shoots, leaves, and berries
- Animals Poisoned: cattle, horses, hogs (roots), causes abortion in cows
Pokeweed, *Phytolaca americana*
Pokeweed
Pokeweed Control

- Cimarron 0.25 to 0.33 oz/acre
- 2,4-D 1 qt/acre
- Grazon P+D 1 to 2 pts/acre
- Weedmaster 1 to 2 pts/acre
- Cimarron Max 1 pt + 0.25 oz
Black Cherry
(Prunus serotina)

- Dangerous
- Parts of Plant: leaves, twigs, bark, seeds
- Poisonous Principle: hydrocyanic acid (prussic acid), hydrogen cyanide is released in stomach when fresh leaves are eaten
- Animals Poisoned: cattle, horses, sheep, goats, dogs, birds
Cherry Laurel
*(Prunus caroliniana)*

Cherry bark
Bracken Fern
(Pteridium aquilinum)

- Dangerous
- Parts of Plant: leaves and rhizomes, fresh or dry
- Poisonous Principle: causes thiamine deficiency
- Animals Poisoned: cattle, horses, sheep, chickens, hogs
Buttercup
(Ranunculus spp)

- Minor importance
- Parts of Plant: top leaves and stems
- Poisonous Principle: irritant oil (protoanemonin)
- Milk of cows is bitter and reddish in color
- Animals Poisoned: cattle, other animals less frequent
Buttercup Control

- Treat in the seedling stage. Late winter to early spring.
- 1-2 pt/ac 2,4-D or...
- Grazon P+D
- Weedmaster
- Cimarron 0.25 to 0.33 oz/acre
- Cimarron Max 1 pt + 0.25 oz
Buttercup
Buttercup

Hairy buttercup stem
Castorbean

(*Ricinus communis*)

- Dangerous
- Parts of Plant: leaves and seeds (contaminated grain)
- Poisonous Principle: alkaloids, hydrogen cyanide
- Animals Poisoned: horses, cattle, sheep, pigs, poultry, and dogs
Black Locust
*(Robinia pseudoacacia)*

- Dangerous
- Parts of Plant: inner bark, root sprouts, wilted leaves, and seeds
- Poisonous Principle: alkaloids and glycoside
- Animals Poisoned: all livestock
Black Locust
Black Locust
Black Locust
Groundsel
(Senecio)

• Contains alkaloids.
• Suspected of poisoning cattle and horses.
Hemp Sesbania
*(Sesbania hederacea)*

- Dangerous
- Parts of Plant: seeds
- Poisonous Principle: saponin
- Animals Poisoned: cattle
Horsenettle
(Solanum carolinense)

- Plant Parts: ripe berries, green berries and leaves.
- Poisonous Principle: toxic alkaloid solanine.
- Animals Poisoned: all livestock
Horsenettle
horsenettle
Horsenettle Control

- Apply at mid-bloom through fruiting
- Best – Grazon P+D at 3.0 pts./acre or Grazonext at 2.6 pts/ac
- Fair – WeedMaster at 4.0 pt./acre or 2,4-D at 3 pts/ac
- Add a nonionic surfactant at 0.25% v/v.
Black Nightshade
(Solanum nigrum)

- Dangerous
- Parts of Plant: leaves and especially unripe green fruit
- Poisonous Principle: solanine glycoalkaloids, causes death from respiratory paralysis
- Animals Poisoned: livestock and pets
Black nightshade, *Solanum nigrum*
Black nightshade, *Solanum nigrum*
Johnsongrass (Sorghum halepense)

May cause poisoning due to nitrate accumulation related to environmental conditions. Much more likely in hay versus fresh forage.
Johnsongrass

Big ligule

White midrib
Johnsongrass Control

Outrider

- Rate 1.33 oz per acre
- No injury to bermudagrass
- 14 day grazing/haying restriction
- About $15/acre
Outrider (sulfosulfuron) Use

- Add 0.25% surfactant
- Apply to 18 to 24 inch johnsongrass
- Aim for spraying after the johnsongrass re-grows after the first cutting – early June.
- Johnsongrass must be actively growing. Warm temperatures, good moisture required.
- Do not spray big, tough, full seed head, drought stressed johnsongrass.
Outrider treated plot

Untreated
Poison Ivy
*(Toxicodendron radicans)*

- Toxic Principle: phenolic compound urushiol
- Mucous and membrane irritant
- No effect on livestock.
- Breathing smoke may cause irritation.
Poison ivy, *Toxicodendron radicans*
Poison ivy
Poison ivy, *Toxicodendron radicans*
Poison ivy, *Toxicodendron radicans*
Poison ivy, *Toxicodendron radicans*
Poison ivy, *Toxicodendron radicans*
Common Cocklebur
*(Xanthium strumarium)*

- Dangerous
- Parts of Plant: seeds and very young seedlings
- Poisonous Principle: Diterpenoid glycoside (animals can develop a tolerance)
- Animals Poisoned: swine, cattle, and sheep. Death occurs in 12 to 24 hours
Cocklebur
Common Milkweed

Asclepias syriaca
Milkweed

*(Asclepias)*

- Cardiac failure due to physiologic effects
Common Milkweed Control

- Grazon P+D 2-3 pts/acre
- Surmount 3 pts/ac