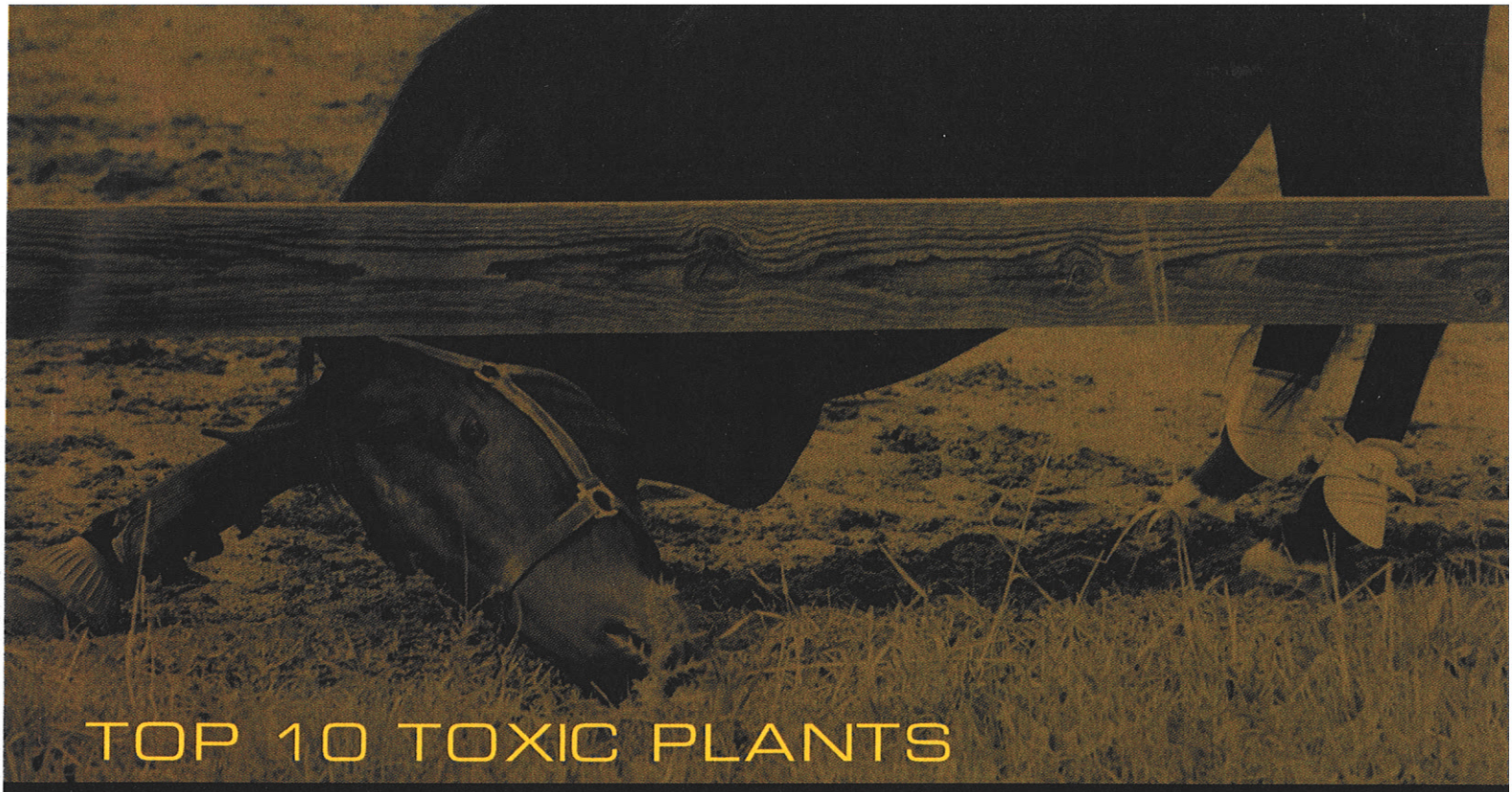
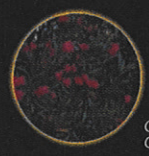


Gemma Giannini

TOP 10 TOXIC PLANTS IN TEXAS

DO YOU KNOW WHAT YOUR HORSE IS EATING WHEN YOU'RE NOT AROUND?



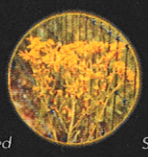
Common Oleander

Largeleaf Lantana

Silverleaf Nightshade

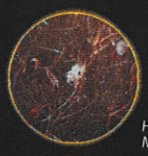
Kleingrass

Jimsonweed



Senecio

Woolly Loco



Horsetail Milkweed

Dallisgrass Ergot

Singletary Pea

By Megan McClarney
Plant photos courtesy Dr. Catherine Barr

Many Texas farmers and ranchers pride themselves on having a beautiful, lush landscape for their horses to graze, and personally enjoy the aesthetics such fertile surroundings provide. But there are hidden dangers growing in and around Texas pastures that disguise themselves as tasty treats for horses and can be harmful — even fatal — when ingested.

To help horse owners identify and combat these dangerous plants, Dr. Catherine Barr and Dr. John Reagor, toxicologists from the Texas Veterinary Medical Diagnostic Lab at Texas A&M University, have compiled a list of the state's 10 most common poisonous plants exclusively for readers of *The Texas Thoroughbred*. Much of the information is excerpted from their book, *Toxic Plants of Texas*, which was co-authored by Charles Hart, Tam Garland and Bruce Carpenter.

In this abbreviated guide prepared exclusively for Texas Thoroughbred Association members, the 10 most hazardous plants in Texas are listed in order

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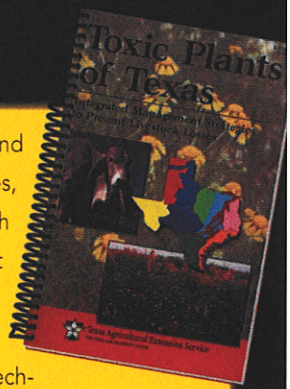
Vegetational Areas of Texas

of their significance as a threat to the equine population. Accompanying each plant's description is a photo to help with identification, as well as a map that depicts the plant's most common habitat.

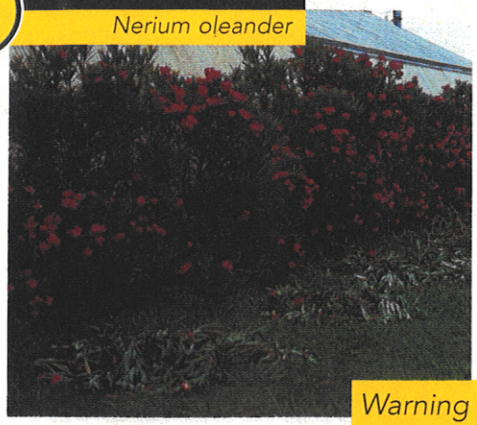
"Thoroughbreds are either pastured or kept in barns, and it is good to be knowledgeable about what plants are in their environment so you can remove the toxic ones as quickly as possible," Barr explained. "Horses that are kept in barns are more likely to encounter our top two toxic plants — oleander and lantana — since these are often used in landscaping."

"As we all know, horses that become bored when tied will munch on anything they can reach," she said. "Preventative maintenance is the best medicine of all."



To learn more about these and other plants that are harmful to horses, refer to *Toxic Plants of Texas*, which identifies 106 of the state's most poisonous plants through detailed information, full-color photographs and recommended management techniques. The 256-page book is available for $20 from the Texas Agricultural Extension Service; the book and an accompanying CD-ROM are priced at $30. To order this handy resource, call (888) 900-2577 or order online at http://texaserc.tamu.edu/catalog/topics/Animal_Health.html.

1 Common Oleander
Nerium oleander



Warning Signs:

- sudden death (no observed clinical signs)
- colic
- weakness
- salivation
- very fast or slow heart rate

Description: An evergreen, ornamental shrub or tree introduced to Texas that grows 15 to 25 feet tall. Leaves are up to 12 inches long and 1 1/2 inches wide, hairless and positioned in whorls of three or four. Each leaf has a prominent midrib with secondary veins parallel to each other extending to the leaf margin. Odorless flowers vary in color and are produced in clusters at the ends of branches.

Location: Often found as an ornamental plant in East, Central and South Texas. Regions 1, 2, 3, 4, 5, 6, 7, 10.

Toxic Agent: Oleandrin, a cardiac glycoside, is the most prominent toxin. As little as 0.005% of an animal's body weight of dry leaves may be lethal. For example, as few as 10 to 20 medium-sized leaves may kill an adult horse by causing heart failure. Green leaves of growing shrubs are bitter and seldom eaten. Wilted clippings and dead leaves, which remain toxic, are palatable and readily consumed by horses. Any compost that contains oleander leaves can also cause poisoning. Death can occur within hours of ingestion.

Preventative Maintenance: Remove all plants currently present and keep all animals away from clippings and removed plants.

2 Largeleaf Lantana
Lantana camara

Warning Signs:

- sluggishness
- weakness
- bloody diarrhea
- depression
- jaundice (yellow whites of the eyes, yellow skin, yelllow fat and liver after death)
- secondary photosensitization (hypersensitivity to light; sign not usually exhibited by horses)

Description: Branching shrub found in most plant nurseries that grows up to 6 feet tall, with spreading, ascending branches that usually have a few small prickles. New growth has square stems. Branches are opposite and arise from leaf axils. Oval leaves are rough and have serrated edges. The many-flowered heads are on long stems usually arising from the axils of the leaves, and are often of two colors. There are pink-and-white, yellow-and-orange and orange-and-red varieties. Some of the newer ornamental varieties have single-colored flowers. The clustered, round fruits are 1/8-inch in diameter and black when ripe.

Location: Common in all areas except deep East Texas, the Western Panhandle and Trans-Pecos area; plant often grows under brush and along fences, where birds apparently deposited the seeds. Regions 2, 3, 4, 5, 6, 7, 8.

Toxic Agent: Triterpenes lantadene A and lantadene B. The degree of liver injury produced by the plant directly reflects the amount of lantana that has been ingested. Low levels give slight liver damage, producing increases in liver enzymes present in the serum. Higher amounts result in cholestasis and microscopic changes in the liver. Very high doses result in widespread death of liver cells.

Preventative Maintenance: Through proper range management, horse owners should provide adequate palatable forage to prevent excess consumption of lantana. Poisoned horses should remain in the shade and be given sun-bleached hay, feed and water.

3 Silverleaf Nightshade
Solanum elaeagnifolium

Warning Signs:

Nervous effects include:
- incoordination
- excessive salivation
- loud, labored breathing
- trembling
- progressive weakness or paralysis
- nasal discharge

Gastrointestinal irritation effects include:
- abdominal pain
- diarrhea, sometimes with blood

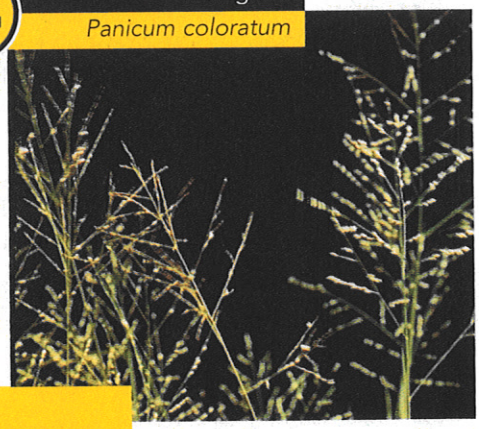
Description: Upright, usually prickly perennial in the potato family that normally grows 1 to 3 feet tall. Plant reproduces by seed and creeping rootstalks. Its characteristic silver color arises from tiny, densely matted, star-like hairs that cover the entire plant. Leaves have wavy margins and are lance-shaped to narrowly oblong. The flashy violet or bluish (sometimes white) flowers are followed by round, yellow fruits up to 1/2-inch in diameter from May to October.

Location: A serious weed of prairies, open woods and disturbed soils in southwestern United States and Mexico. Regions 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.

Toxic Agent: Solanine. Leaves and fruit are toxic at all stages of maturity, with the highest concentration in ripe fruits. Animals can be poisoned by eating 0.1% to 0.3% of their weight in silverleaf nightshade, which may cause severe colic.

Preventative Maintenance: Because this plant is relatively unpalatable, problems usually occur after serious overgrazing or if nightshade is baled up with hay or treated with Grazon (a non-toxic, brand-name herbicide that changes palatability) without removing horses from the pasture. Do not feed horses from the ground where ripe nightshade fruits are present. If infestation becomes severe, apply Grazon P + D®, at 0.6 to 0.9 pound a.i./acre (active ingredients per acre) as an aerial or ground broadcast treatment in the spring when plants begin to flower. For individual plant treatments, mix Grazon P + D® as a 1% solution in water. Mechanical control practices that disturb soil surface may make plant infestations more severe.

4 Kleingrass
Panicum coloratum



Description: A tufted, perennial bunch grass that grows 20 to 50 inches tall with stems arising from firm, often knotty, bases. Plant gives rise to an open-flowering head with rounded seeds.

Location: Originally introduced to Texas from Africa in the 1950s. Since that time, hundreds of thousands of acres statewide have been planted to a monoculture of kleingrass. Regions 3, 4, 5, 7.

Toxic Agent: Saponins in grass cause liver damage in horses. Green growth after moisture or grazing is thought to be more toxic than old or dormant growth.

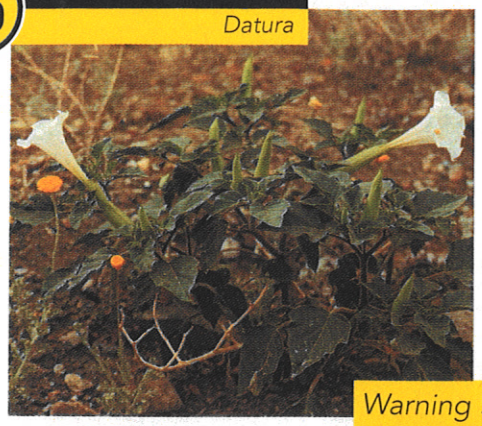
Preventative Maintenance: Although kleingrass provides abundant, good-quality forage for cattle with proper range management, horses should not be fed or allowed to graze on kleingrass.

Warning Signs:

Very hard to detect among horses — no classical signs. A serum chemistry profile can be very helpful. Poor body condition and weight loss (i.e., "hard keepers") may be the only early signs. With long-term exposure, liver damage may be lethal.

5 Jimsonweed

Datura



Other common names: Moonflower, Angel's Trumpet, Thornapple

Warning Signs:

- intense thirst
- distorted vision
- uncoordinated movement
- high body temperature
- rapid, weakened heartbeat
- dilated pupils
- convulsions
- coma and death

Description: Coarse-looking, ill-scented, herbaceous annual weeds of the nightshade family. Very distinctive flowers are large, solitary, showy, erect and white or purplish and may appear from April to October. Flowers grow in the leaf axils. Leaves are alternate, simple, hairless and toothed. Except that they are larger, jimsonweed seedpods resemble those of cocklebur, growing as a spiny capsule up to 2 inches long.

Location: Distributed widely throughout Texas. Normally grows in rich soils on disturbed sites, waste places and in open areas. Regions 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.

Toxic Agent: Tropane alkaloids (atropine, scopolamine, hyoscyamine). All parts of the plant are toxic, including seeds. Consumption of as little as 10 to 14 ounces of the plant, or less than 0.1% of an animal's body weight, can cause poisoning. Plants have been ingested by humans for their hallucinogenic effects.

Preventative Maintenance: No medicinal treatments are specified for poisoned livestock, although stimulants such as pilocarpine and physostigmine have been used. Extremely unpalatable; horses usually are poisoned only when the plant is baled into hay or if horses are hungry and confined in a pasture where the plants are present. Grubbing or herbicides easily control jimsonweed.

Merri Melde

"As we all know, horses that become bored when tied will munch on anything they can reach. Preventative maintenance is the best medicine of all."

6 Senecio Species

All of the following three plants have the same toxicity, warning signs and preventative maintenance strategies

Texas Groundsel, Texas Squaw-Weed *(Senecio ampullaceus)*

Description: Cool-season, annual herb that grows 12 to 30 inches tall, whitish in color with hair, but can also be nearly hairless. Unlobed, clasping leaves become gradually smaller toward the top of the plant. Showy, yellow, daisy-like flowers are produced in the spring. The seedling, or winter rosette, often has a purplish cast to the underside of the leaves, especially on the midrib.

Location: Eastern half of the state, especially in sandy soils. May predominate in freshly cleared forest. Regions 1, 2, 3, 4, 5, 6, 7.

Threadleaf Groundsel *(Senecio douglasii)*

Description: Many-stemmed, evergreen composite with gray-green stems and leaves. Leaves are divided into three to seven segments and may be hairy or nearly smooth. Stems are herbaceous, although somewhat woody at the base, and may have variable hairiness. Showy, yellow flowers emerge from March through November.

Location: Common in grassland areas of West Texas. Disturbance and overgrazing cause this plant to increase in abundance. Regions 6, 7, 8, 9, 10.

Butterweed *(Senecio glabellus)*

Description: Cool-season annual that usually grows 18 to 20 inches tall. Basal leaves, up to 4 inches long, are deeply lobed, with oblong, lateral lobes having wavy margins. Usually single-stalked and can be unbranched or branched above, depending on moisture and soil fertility. Numerous yellow flowers stand on short stalks, forming a large, terminal cluster.

Location: Large populations of butterweed are usually present only in the eastern third of Texas. Often found in clay or heavy loam soils in disturbed areas, stream bottoms, ditches and flood plains. Regions 1, 2, 3, 4, 5.

Toxic Agent: Pyrrolizidine alkaloids, which cause progressive, irreversible liver damage. Most losses are from chronic poisoning, which occurs when horses consume as little as 0.25% of their body weight.

Preventative Maintenance: There is no available treatment for poisoning, because liver damage is severe, progressive and permanent. Proper mineral supplementation of range, especially with phosphorus, helps somewhat. Treat individual plants by applying Grazon P + D (2% solution in water) directly to leaves. For widespread population, aerial or ground broadcast applications of 0.94 pound a.i./acre (active ingredients per acre) of Grazon P + D or 0.25 ounce a.i./acre of Escort®, (a herbicide) have shown positive results. Remove horses from treated pastures until the plants are completely dead (treatment can change the plant's palatability).

Warning Signs:

Often, up to six months elapse between consumption of this plant species and appearance of chronic signs. During this period, horses may even gain weight and appear thrifty.

First signs of poisoning include:

- standing apart from other animals
- depression and sluggishness
- lack of appetite
- weight loss

Signs of advanced stage include:

- continuous walking, sometimes without avoiding objects
- sudden nervous appearance upon disturbance
- frequent voiding of small amounts of urine
- bile-stained (yellow) feces
- skin swollen with excessive fluid and possibly emitting a sweetish, unpleasant odor
- death can occur quickly or quietly after a period of depression

7 Woolly Loco

Astragalus mollissimus

Description: Stout, multi-branched, perennial legume with leaves that have 19 to 29 oval to oblong leaflets covered with fine, soft, short hairs. Thick, woody root gives rise to stems lying close to the ground. Flowers are purple, lavender or yellow and emerge in April through June.

Location: Common in upland, mesa and mountain areas of the state's Trans-Pecos and Panhandle regions. Regions 7, 8, 9, 10.

Toxic Agent: An alkaloid called swainsonine, which causes damage to the brain, liver, digestive organs, placenta and testes. Damage is reversible except in the brain. Horses are particularly susceptible to woolly loco. Clinical signs appear at about 30% of a horse's body weight in consumption; consumption of about 75% of body weight may be fatal.

Preventative Maintenance: Quickly move affected animals to locoweed-free pastures and place them on good feed. Management to reduce locoweed poisoning is most critical in early spring. Horses imported to Texas are most susceptible to poisoning; native horses generally avoid locoweed when good quality forage is available. Maintaining good range condition and sound supplemental protein and mineral feeding programs are the best prevention techniques.

Warning Signs:

Horses appear listless, but upon being stimulated become excessively excited, even to the point of inflicting fatal injury to themselves. Horses with chronic locoism rarely recover and are dangerous to ride because of unpredictable and permanent behavioral changes.

8 Horsetail Milkweed

Asclepias subverticillata

Description: An erect-stemmed plant that grows up to 5 feet tall. Narrow leaves are in whorls of three or paired opposite, with margins rolled backward. Greenish-white flowers give rise to pods 1 to 3 inches long from May to September. Seeds have tufts of long, silky hairs.

Location: Abundant in West Texas, horsetail milkweed has also been found in the South Texas Plains and Gulf Coast Prairie regions. Often abounds in open pastures and along arroyos, trails, roadsides and bar ditches. Regions 6, 7, 8, 9, 10.

Toxic Agent: Suspected to be resinoid galitoxin. A toxic dose is generally 0.2% of a horse's body weight in green plant material. Plants are most toxic before maturing, and somewhat less so as they dry. Horsetail milkweed is generally not palatable, but it retains enough toxicity to be dangerous in hay, which is how many equine poisonings occur.

Preventative Maintenance: Horses dislike the taste of milkweeds and will seldom graze this plant unless they are confined to milkweed-infested areas. Losses result from overgrazing and drought. Move affected horses to shady area and keep them quiet while offering plenty of food and water. No medicinal treatment is specified, but sedatives, laxatives and intravenous fluids may help.

Warning Signs:

Signs produced by whorled species of *Asclepias* are different than those produced by other milkweeds. Effects are on the nervous system, rather than on the cardiac system. Clinical signs appear within a few hours of ingestion of a toxic dose, and death follows from one to a few days in most fatal cases.

- staggering, incoordination or excitement
- head tremors, muscle tremors or convulsions
- "star-gazing" posture
- depression, labored breathing or dilated pupils, progressing to death

9 Dallisgrass Ergot
Claviceps paspali

Description: Dallisgrass (*Paspalum dilatatum*) seed heads are often infected with the fungus *Claviceps paspali*. Fungal spores germinate in the flower, grow in the premature seed and produce honeydew that is transferred to other seed heads by insects. In an infected flower, the round, fungal body or sclerotium that forms instead of a seed is up to 1/8-inch wide with a cream-colored center. Its outer coat may vary from white to orange, red or black because of other fungi growing on the ergot body.

Warning Signs:

- hyperexcitability
- uncontrollable muscle tremors
- incoordination ("sawhorse" stance)
- falling when forced to exercise
- inability to regain feet

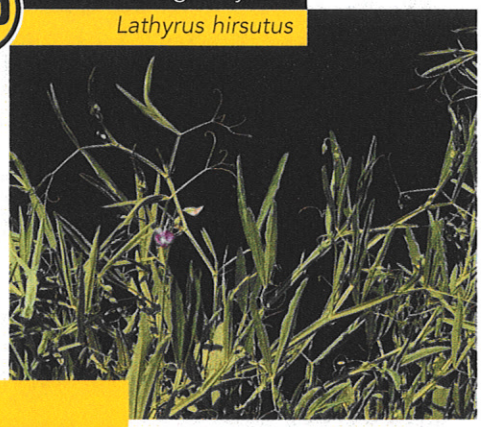
Horses with nervous ergotism tend to be destructive and often injure themselves, sometimes requiring euthanasia.

Location: Found in all areas of Texas, but widespread ergot infection is usually limited to the eastern half of the state. High humidity and soil moisture required for ergot production also occurs in limited areas along streams and in canyon floors in West Texas. Regions 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.

Toxic Agent: Sclerotia on *Paspalum* grasses contain paspalitrems, which are termorgenic mycotoxins responsible for dallisgrass staggers. Horses are not usually poisoned unless they consume *Paspalum* hay that contains ergot.

Preventative Maintenance: Treat nervous ergotism by removing the source from horse's diet. Some severely poisoned horses have recovered after a few days in a padded surgical recovery room. To prevent poisoning, owners must recognize ergot-infected seed heads and prevent horses from consuming them. Remove seed heads by mowing before cutting for hay or grazing the pasture. If grazing is continuous, most seed heads are consumed before the toxin is produced.

10 Singletary Pea
Lathyrus hirsutus



Description: A legume with winged stems that grow from 10 to 40 inches long. Compound leaves have two long, narrow leaflets (similar in shape to rabbit ears) up to 3 inches long and terminate in a branched tendril. Small, pea-like flowers are red to bluish. Distinctive pods, 1 to 1 1/2 inches long, are covered with hair attached to small, raised bumps. Each pod contains four to 10 mottled, round seeds.

Location: Commonly grows along roadsides and in pastures where it has been allowed to go to seed, particularly in North Central and Northeast Texas. Regions 1, 3, 4.

Toxic Agent: Toxic amino acids contained in seeds. Lathyrism, the neurological syndrome most often produced by chronic consumption of the seeds, can affect all species including humans, but horses are the most sensitive. Horses are usually affected by hay that contains intact pods with seeds. The seeds can cause nerve damage leading to paralysis.

Preventative Maintenance: Remove all hay containing seeds from horses; if seeds are consumed, most horses will recover within four to six weeks. If a horse continues to eat the seeds, the condition will become irreversible.

Warning Signs:

- incoordination of rear legs
- unusual stance with rear legs too far forward
- exaggerated stepping of rear legs
- paralysis of rear legs