Common Plants Causing Toxicity to Horses in Virginia
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Common Pasture Weeds Causing Toxicity in Horses

- **Brackenfern (Pteridium aquilinum)** – **Toxin(s) involved:** Thiaminase. **Potential for Toxicity:** Moderate. **Toxic when dry?** Yes. **Clinical Signs:** Thiamin deficiency resulting in neurologic symptoms including incoordination and severe tremors. Requires significant intake over 1-2 months. **Treatment:** Daily thiamin injections for up to two weeks. If not treated, death may occur within 2-10 days.

- **Buckwheat (Fagopyrum esculentum)** – **Toxin(s) involved:** Fagopyrin. **Potential for Toxicity:** Low. **Toxic when dry?** Yes. **Clinical signs:** Photosensitization after a moderate-large intake. Most common when horses fed hay contaminated with the weed. **Treatment:** Remove horse from the source. Protect from sunlight. Recovery is generally quick.

- **Buttercup (Ranunculus spp)** – **Toxin(s) involved:** Protoanemonin. **Potential for Toxicity:** Low. **Toxic when dry?** No. **Clinical Signs:** Oral and gastrointestinal irritation and blistering. **Treatment:** Recovery is uneventful when animals removed from source.
- **Curly Dock (Rumex crispus)** – **Toxin(s) involved:** Soluble Oxalates. **Potential for Toxicity:** Moderate. **Toxic when dry?** N/A. **Clinical Signs:** Oxalates bind to calcium and magnesium in the blood leading to muscle tremors, weakness, depression, and recumbency. **Treatment:** Intravenous Ca, Mg, glucose, electrolytes. Oral limewater to decrease further oxalation.

- **Groundsel/ragwort (Senecio vulgaris)** – **Toxin(s) involved:** Pyrrolizidine alkaloids. **Potential for Toxicity:** Extremely high. **Toxic when dry?** Yes. **Clinical Signs:** 15 mg/kg BW over 2 weeks induces irreversible liver disease. May also cause photo-sensitization, weight loss, and jaundice. **Treatment:** Once liver damage is done, treatment is unsuccessful. Humane euthanasia recommended.

- **Hemp Dogbane (Apocynum cannabinum)** – **Toxin(s) involved:** Cynarin and apocynein. **Potential for Toxicity:** Low-moderate. **Toxic when dry?** Yes. **Clinical Signs:** Diarrhea, colic, hemorrhagic, gastroenteritis, abnormal heartbeat. 15-30 grams of leaves can be lethal. **Treatment:** Symptomatic treatment.

- **Horse Nettle (Solanum carolinense)** – **Toxin(s) involved:** Solanine. **Potential for Toxicity:** Moderate. **Toxic when dry?** Yes. **Clinical Signs:** Toxic effects more common when plant is in processed feed. Symptoms include Salivation, colic, diarrhea, muscle tremors, and weakness. **Treatment:** Fluid therapy, activated charcoal, via stomach tube. Physostigmine may be used cautiously in severely poisoned animals.
- **Jimsonweed (Datura stramonium)** - **Toxin(s) involved:** Hyoscyamine, Hyoscine, and Atropine. **Potential for Toxicity:** High. **Toxic when dry?** N/a. **Clinical Signs:** Within minutes to hours of ingestion, symptoms such as behavioral changes, colic or diarrhea appear. **Treatment:** Symptomatic therapy and activated charcoal to prevent further absorption. Severely affected animals may benefit from treatment with Physostigmine.

- **Milkweed (Asclepias species)** – **Toxin(s) involved:** Cardenolides. **Potential for Toxicity:** Moderate. **Toxic when dry?** Yes. **Clinical Signs:** Colic, incoordination, tremors, heart problems, respiratory difficulty. **Treatment:** Supportive therapy.

- **Onions and Garlic (Allium spp)** – **Toxin(s) involved:** N-propyl disulphide. **Potential for Toxicity:** Low. **Toxic when dry?** Yes. **Clinical Signs:** More than 25% of the diet as onions will result in fast, weak pulse; staggering and collapse as a result of anemia. **Treatment:** Reduce stress, whole blood transfusions in severely anemic animals.
- Poison Hemlock (Conium maculatum) –
  **Toxin(s) involved:** Coniine, gamma-coniceine.  
  **Potential for Toxicity:** High.  
  **Toxic when dry?** Less toxic when dry. 
  **Clinical Signs:** Toxins block spinal cord reflexes leading to muscle tremors, incoordination, paralysis, frequent urination, and sudden death. 4-5 pounds of leaves are lethal to a horse.  
  **Treatment:** Supportive Therapy.

- Pokeweed (Phytolacca Americana) –
  **Toxin(s) involved:** Phytolaccatoxin and Phytolaccigenin.  
  **Potential for Toxicity:** Low.  
  **Toxic when dry?** Yes.  
  **Clinical Signs:** Colic and diarrhea.  
  **Treatment:** Supportive Therapy.

- Water Hemlock (Cicuta maculate) –
  **Toxin(s) involved:** Cicutoxin, and cicutol.  
  **Potential for Toxicity:** Extremely High.  
  **Toxic when dry?** Yes.  
  **Clinical Signs:** The most toxic poisonous plant known. 0.05%BW intake is lethal. Signs include convulsions and death due to respiratory failure.  
  **Treatment:** Due to rapid 15 minute - 8 hours following ingestion, veterinary intervention is unlikely. In some cases sodium Phenobarbital may help.
Yellow and White Sweet Clover (Melilotus spp) – Toxin(s) involved: Coumarin. **Potential for Toxicity:** Moderate. **Toxic when dry?** Yes *fresh undamaged sweet clover is safe for consumption. Clinical Signs:** Toxin, coumarin, can be converted to dicoumarol in moldy hay containing sweet clover. Signs include weakness, visible bleeding, and pale mucous membranes. **Treatment:** Vitamin K administration.

**Common Forage Plants Causing Toxicity in Horses**

- **Alsike Clover (Trifolium hybridum)** – Toxin(s) involved: Unknown. **Potential for Toxicity:** Low-moderate. **Toxic when dry?** Yes. **Clinical Signs:** Primary sign is photosensitization especially in non-pigmented areas. May advance to chronic liver damage with prolonged intake. **Treatment:** Remove horse from the source. Prognosis is good if photosensitivity is only sign, poor when liver damage is involved.

- **Tall fescue (festuca arundinacea)** – Toxin(s) involved: Acremonium coenophialum. **Potential for Toxicity:** Moderate. **Toxic when dry?** Yes. **Clinical Signs:** Toxic effects in broodmares only including prolonged gestation, retained placenta and agalactia. **Treatment:** Remove the mare from fescue for the last 30-90 days prior to expected foaling date. Treatment with oral Domperidone at least 15 days prior to expected foaling date.
Common Trees Causing Toxicity in Horses

- **Black Locust** (Robinia pesudoacacia, and neomexicana) – **Toxic(s) involved:** Robin. **Potential for Toxicity:** Moderate. **Toxic when dry?** Unknown. **Clinical Signs:** Colic, constipation, diarrhea, muscle weakness, laminitis and irregular heartbeat may occur within one hour of eating; Fatalities are rare. **Treatment:** Prevent further ingestion and treat clinic signs.

- **Black Walnut** (Juglans nigra) – **Toxin(s) involved:** Unknown. **Potential for Toxicity:** Moderate. **Toxic when dry?** Yes. **Clinical Signs:** Horses bedded on shavings containing 20% more black walnut develop severe laminitis, limb edema and colic within 12/18 hours. **Treatment:** Remove the bedding, treat the clinical signs.

- **Buckeye/ Horse Chestnut** (Aesculus spp.) – **Toxin(s) involved:** Aesculin, fraxin and possibly narcotic alkaloid. **Potential for Toxicity:** Moderate. **Toxic when dry?** Unknown. **Clinical Signs:** Toxin is found in leaves and young sprouts. Clinical signs include colic and neurologic signs such as trembling, staggering, and difficulty in breathing. **Treatment:** Supportive Therapy.
• Cherry (Prunus spp.) – Toxin(s) Involved: Cyanide. Potential for Toxicity: High Toxic when dry? Probably not. Clinical Signs: Breathing difficulties, anxiety, staggering, convulsions, collapse, and death, within minutes of ingestion. Treatment: If horse is alive after 2-3 hours, chances are good it will recover. Veterinary treatment includes intravenous administration of sodium thiosulfate and sodium urate.

• Oak (Quercus spp.) – Toxin(s) Involved: Gallotoxins. Potential for Toxicity: Moderate. Toxic when dry? Unknown. Clinical Signs: New young leaves and green acorns most toxic leading to poor appetite, weight loss, diarrhea or constipation, increased drinking, increased urination, edema, death is possible. Treatment: Aggressive fluid therapy and low stress environment.

• Red Maple and hybrids of red maple (Acer rubrum) – Toxin(s) involved: Unknown. Potential for Toxicity: Extremely High. Toxic when dry? Yes. Clinical signs: Massive destruction of red blood cells leading to breathing difficulties, jaundice, dark brown urine, and death. Treatment: Supportive therapy, Ingestion of 1 ½ kg is toxic, 3 kg is lethal to horses (50-75% death/euthanasia rate).

Common Ornamentals causing toxicity in Horses

• Rhododendron, Mountain Laurel, Azalea (Rhododendron spp.) – Toxin(s) involved: Grayanotoxins (glycosides). Potential for Toxicity: Moderate. Toxic when dry? No. Clinical Signs: 0.2% BW green leaves will cause colic, abnormal heart rate and rhythm, convulsions, coma, and death. Treatment: Supportive Therapy.
• Spurge (Euphorbia spp.) – **Toxin(s) involved:** Diterpene esters. **Potential for Toxicity:** Moderate. **Toxic when dry?** Yes. **Clinical Signs:** Blistering upon contact, colic and gastrointestinal irritation. **Treatment:** Remove plants from animal’s diet and they will recover uneventfully.

• **Yew, English or Japanese (Taxus spp.)** – **Toxin(s) involved:** Taxine (alkaloid). **Potential for Toxicity:** Extremely High. **Toxic when dry?** Unknown. **Clinical Signs:** Within one hour of ingestion: paresis, ataxia, trembling and death within 15 minutes of appearance of clinical signs. **Treatment:** Supportive therapy including activated charcoal and saline cathartic. Atropine to counter depression.

**Resources**

• Equine Nutrition Problems: Toxic Plants in the Mid-Atlantic  
  o Erin D. Pittman, Institute of Applied Agriculture, University of Maryland, College Park, MD 20742.

• Photos courtesy of Virginia Tech Weed ID Guide.