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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 form 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 form 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) - <u>Toxin(s) involved:</u>** Hyoscyamine, Hyoscine, and Atropine. **<u>Potential for Toxicity:</u>** High. **<u>Toxic when dry?</u>** N/a. **<u>Clinical Signs:</u>** Within minutes to hours of ingestion, symptoms such as behavioral changes, colic or diarrhea appear. **<u>Treatment:</u>** Symptomatic therapy and activated charcoal to prevent further absorption. Severely affected animals may benefit from treatment with Physostigmine.

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

- **Onions and Garlic (Allium spp) – <u>Toxin(s) involved:</u>** N-propyl disulphide. **<u>Potential for Toxicity:</u>** Low. **<u>Toxic when dry?</u>** Yes. **<u>Clinical Signs:</u>** More than 25% of the diet as onions will result in fast, weak pulse; staggering and collapse as a result of anemia. **<u>Treatment:</u>** Reduce stress, whole blood transfusions in severely anemic animals.

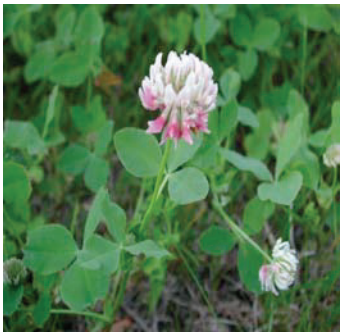
- **Poison Hemlock (Conium maculatum) – <u>Toxin(s) involved:</u>** Coniine, gamma-coniceine. **<u>Potential for Toxicity:</u>** High. **<u>Toxic when dry?</u>** Less toxic when dry. **<u>Clinical Signs:</u>** Toxins block spinal cord reflexes leading to muscle tremors, incoordination, paralysis, frequent urination, and sudden death.4-5 pounds of leaves are lethal to a horse. **<u>Treatment:</u>** Supportive Therapy.

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

- **Water Hemlock (Cicuta maculate) – <u>Toxin(s) involved:</u>** Cicutoxin, and cicutol. **<u>Potential for Toxicity:</u>** Extremely High. **<u>Toxic when dry?</u>** Yes. **<u>Clinical Signs:</u>** The most toxic poisonous plant known. 0.05%BW intake is lethal. Signs include convulsions and death due to respiratory failure. **<u>Treatment:</u>** 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) – <u>Toxin(s) involved:</u>** Coumarin. **<u>Potential for Toxicity:</u>** Moderate. **<u>Toxic when dry?</u>** Yes *fresh undamaged sweet clover is safe for consumption. **<u>Clinical Signs:</u>** Toxin, coumarin, can be converted to dicoumarol in moldy hay containing sweet clover. Signs include weakness, visible bleeding, and pale mucous membranes. **<u>Treatment:</u>** Vitamin K administration.

<u>Common Forage Plants Causing Toxicity in Horses</u>



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

- **Tall fescue (festuca arundinacea) – <u>Toxin(s) involved:</u>** Acremonium coenophialum. **<u>Potential for Toxicity:</u>** Moderate. **<u>Toxic when dry?</u>** Yes. **<u>Clinical Signs:</u>** Toxic effects in broodmares only including prolonged gestation, retained placenta and agalactia. **<u>Treatment:</u>** Remove the mare form 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.) – <u>Toxin(s) Involved:</u>** Cyanide **<u>Potential for Toxicity:</u>** High **<u>Toxic when dry?</u>** Probably not **<u>Clinical Signs:</u>** Breathing difficulties, anxiety, staggering, convulsions, collapse, and death, within minutes of ingestion **<u>Treatment:</u>** If horse is alive after 2-3 hours, chances are good it will recover. Veterinary treatment includes intravenous administration of sodium thiosulfate and sodium uirite.

- **Oak (Quercus spp.) –** <u>Toxin(s) Involved:</u> Gallotoxins. **<u>Potential for Toxicity:</u>** Moderate. **<u>Toxic when dry?</u>** Unknown. **<u>Clinical Signs:</u>** 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. **<u>Treatment:</u>** Aggressive fluid therapy and low stress environment.

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

<u>Common Ornamentals causing toxicity in Horses</u>

- **Rhododendron, Mountain Laurel, Azalea (Rhododendron spp.) – <u>Toxin(s) involved:</u>** Grayanotoxins (glycosides) **<u>Potential for Toxicity:</u>** Moderate. **<u>Toxic when dry?</u>** No. **<u>Clinical Signs:</u>** 0.2% BW green leaves will cause colic, abnormal heart rate and rhythm, convulsions, coma, and death. **<u>Treatment:</u>** Supportive Therapy.

- **Spurge (Euphorbia spp.) – <u>Toxin(s) involved:</u>** Diterpene esters. **<u>Potential for Toxicity:</u>** Moderate. **<u>Toxic when dry?</u>** Yes. **<u>Clinical Signs:</u>** Blistering upon contact, colic and gastrointestinal irritation. **<u>Treatment:</u>** Remove plants from animal's diet and they will recover uneventfully.

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

<u>Resources</u>

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

- Photos courtesy of Virginia Tech Weed ID Guide.