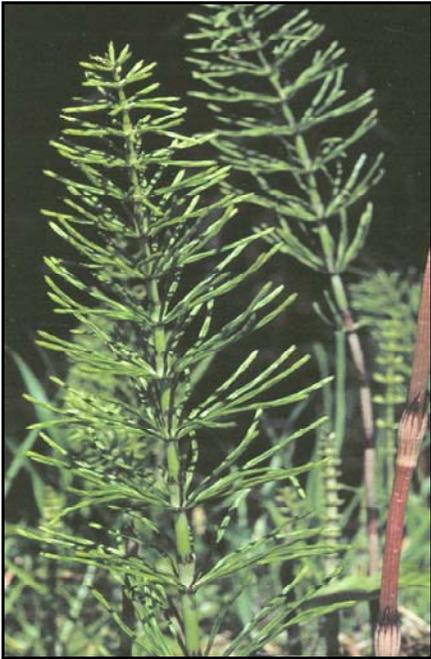
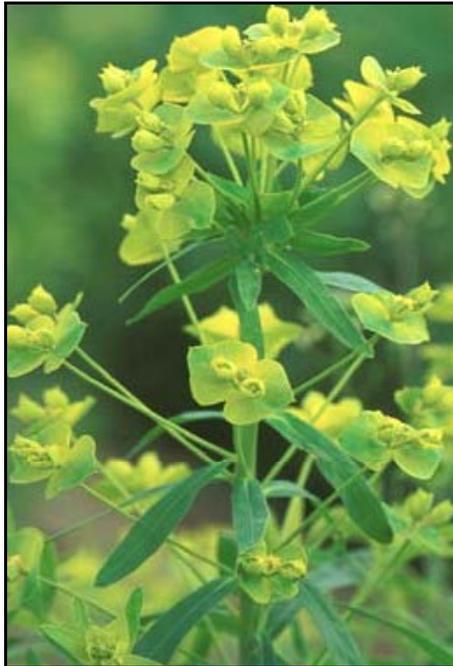


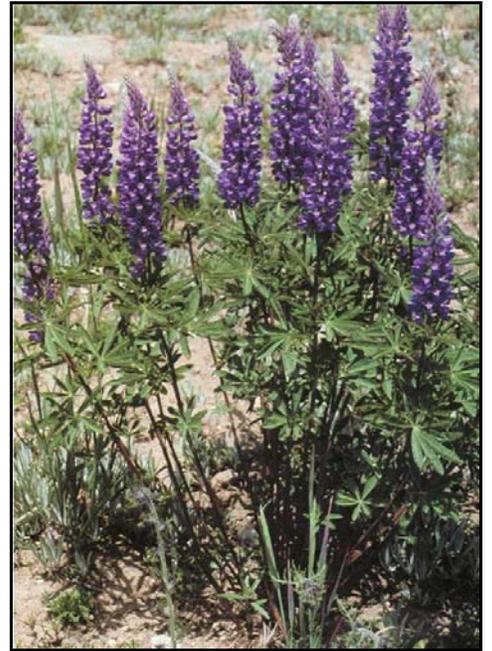
A GUIDE TO PLANTS THAT ARE POISONOUS TO HORSES AND LIVESTOCK



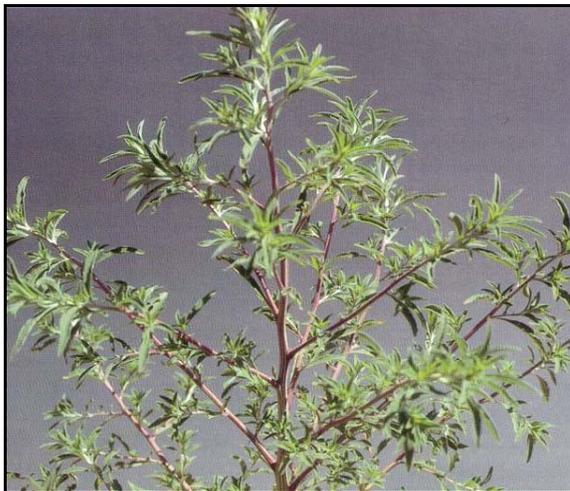
Field Horsetail



Leafy Spurge



Wyeth Lupine



Kochia



Yellow Starthistle

Spokane County Noxious Weed Control Board
222 N. Havana
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www.spokanecounty.org/weedboard

PLANTS TOXIC TO HORSES AND LIVESTOCK

The following is a guide of several plants that can be found growing in Spokane County and the Pacific Northwest that are poisonous to horses and livestock. Prevention is the best medicine for dealing with poisonous plants. Ensure that your horses and livestock have adequate hay and/or healthy pasture to graze, avoid overgrazing and learn to recognize poisonous weeds.

Most poisonous plants have an unpleasant taste that animals avoid if they have anything else to eat. However, if they have no choice but to eat these plants, they might develop a taste for them.

Watch for unusual behavior in your animals. If you suspect a poisoning, consult a veterinarian as soon as possible. Be sure to collect samples of the plants you suspect caused the poisoning for positive identification.

THE FOLLOWING PLANTS HAVE A HIGH TOXICITY RATING:

CASTORBEAN (*Ricinus communis*)

Toxicity rating: High. Death is likely with consumption of small amounts.

Toxins: Phytotoxin ricin; ricinine and irritant oil. The seeds are the primary source, but the rest of the plant may be considered to be slightly toxic as well.

Animals affected: All animals, including humans, may be affected.

Signs: Stomach irritation, diarrhea, abdominal pain, increased heart rate, profuse sweating, collapse, convulsions, death. The seed is only toxic if the outer shell is broken or chewed open. Seeds swallowed intact usually pass without incident. Signs of toxicity may not manifest for 18 – 24 hours after ingestion.

Description of plant: A stout, robust shrub-like plant with reddish-purple stems that can reach 12 inches in height. It has large, palmate leaves with 5 – 22 serrated leaf margins. Long, purple stems are attached near the centers of the leaf blades. Greenish-white or reddish-brown flowers are produced in narrow, upright clusters. The spiny fruit contains 3 seeds that are often reddish and are said to resemble well-fed ticks.

Herbicides often increase the palatability of plants by affecting the sugar content. Make sure you are cautious when grazing animals after herbicide applications. Avoid grazing treated areas until plants have dried, preferably waiting until plants are dead before introducing animals to the site.

COAST FIDDLENECK (*Amsinckia intermedia*)

Toxicity rating: High

Toxins: Pyrrolizidine alkaloids. All parts of plant, especially the seeds.

Animals affected: All animals.

Signs: Liver damage, fibrosis, depression, incoordination, death
Accumulate levels of nitrates are potentially toxic to cattle, but probably not horses. Toxins can be passed on in the milk of lactating animals and alkaloids can be transferred through the placenta to the baby.

Description of plant: An annual weed with bristly stems 1 to 2 ½ feet tall with alternate leaves that are hairy and ovate. Yellow flowers are arranged on one side of a “fiddleneck” shaped axis.



COMMON COCKLEBUR (*Xanthium strumarium*)

Toxicity rating: High

Toxins: Glycoside, carboxyatractyloside, sesquiterpene lactones
The seeds and seedlings contain the highest quantity of toxin, yet the whole plant can be considered toxic. The seed burs can cause mechanical damage.

Animals affected: All animals may be affected, cattle, swine, sheep and poultry are more at risk than horses or pets.

Signs: Gastrointestinal irritation, weakness, breathing difficulty, hypoglycemia, cardiac abnormalities, death. Liver damage may result from toxins and death is likely if 0.75% of body weight is ingested.

Description of plant: An annual that grows 2 - 4 ft tall with an erect stem that is branched, ridged, spotted and rough. Leaves are triangular or heart-shaped and are rough on both sides. Flowers are small and the fruit is a hard, oval, prickly bur that contains 2 brown seeds.



COMMON GROUNDSEL (*Senecio vulgaris*):

Toxins: Pyrrolizidine alkaloids (same as found in Tansy Ragwort)

Animals affected: Horses are most sensitive, followed by cattle, hogs and chickens.

Signs: Lethargy, liver lesions, weakness, staggering, death.
Liver damage is permanent. Large amounts of groundsel can kill an animal in a few weeks or less.

Description of plant: An annual (sometimes biennial) noxious weed that grows 6 to 18 inches tall and has coarse, alternate leaves and yellow flowers. It is usually one of the first plants to grow in the spring.

DEATH CAMAS (*Zigadenus venenosus*)

Toxicity rating: High

Toxins: Steroidal, glycosidal alkaloids. All parts of the plant are toxic throughout the year, however poisoning occurs most often in the spring when death camas is abundant.

Animals affected: Sheep are poisoned more frequently than cattle and horses.

Signs: Salivation, weakness, respiratory difficulty, nausea, convulsions, coma, death. Respiratory problems occur in sheep after eating ½ to 2 pounds. The bulbs are less accessible to livestock, but they are reported to cause severe illness and death in humans who confuse it for wild onion.

Description of plant: A native perennial with scaly, underground bulbs that emerge in early spring. Plants have 5 – 6 thick, basal leaves with a grass-like appearance. Plants can reach 2 feet tall and have white to yellowish flowers.

FOXGLOVE (*Digitalis purpurea*)

Toxicity rating: High

Toxins: Digitoxin and cardiac glycosides. The whole plant is toxic. Ingestion of this plant can be fatal at any time during the life of the plant.

Animals affected: All animals.

Signs: Dizziness, vomiting, irregular heartbeat, delirium, hallucinations, convulsions, sudden death. Because of the unpalatable nature of the plant, poisoning is infrequent, when it does occur it is often severe and dramatic.

Description of plant: A biennial plant with soft, hairy, toothed, ovate shaped leaves in a basal rosette. Second year growth produces flowering stems 3 – 6 feet tall with spikes that have purple to white spotted, thimble-like flowers that hang down and last about 6 days. First year growth can be mistaken for Comfrey.



There are several plants that are considered "Nitrate-Accumulating" plants. Animals that eat 0.05% of their body weight can be poisoned. Cows seem to be the most susceptible and poisoning usually occurs due to infested hay and when there is a high consumption rate. Fertilization, soil and drought conditions are factors in how high the nitrates are in plants. Some plants to watch out for include:

Corn	Pigweeds
Kochia	Russian Thistle
Lambsquarter	Sorghum/Sudan
Nightshades	Oat Hay

LOW LARKSPUR (*Delphinium nuttallianum*)

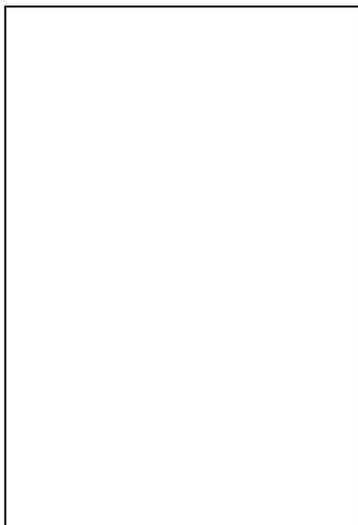
Toxicity rating: High

Toxins: Delphinine alkaloids, cardiac glycosides. All parts of the plant are toxic, but new growth and the seeds contain the highest concentration of toxic substances.

Animals affected: Primarily cattle; losses are rare in sheep and horses.

Signs: Nervousness, weakness, salivation, nausea, bloating, rapid heart rate, death. Excitement and physical exercise after ingesting large amounts can intensify all signs of poisoning. Cattle seem to be attracted to larkspur and are lethally poisoned after eating 0.7% of their body weight in an hour.

Description of plant: A simple, rarely branched perennial that grows 10 – 20 inches in height with a tuberous root system. Leaves are deeply divided into finger-like lobes. Large, showy flowers are blue-purple or sometimes pale blue or white with prominent spurs.



PIGWEEED (*Amaranthus retroflexus*)

Toxicity rating: High

Toxins: Nephrotoxin that causes kidney failure; soluble oxalates and is capable of accumulating nitrates.

Animals affected: Cattle and swine; goats and sheep

Signs: Breathing problems, trembling, weakness, abortions, coma, death. Animals need to consume pigweed in fairly significant quantities over several days before signs appear.

Description of plant: A large, coarse, annual with red stems and oval, wavy-margined, alternate leaves. The green, inconspicuous flowers are in short, compact clusters along with green spines.



POISON HEMLOCK (*Conium maculatum*):

Toxicity rating: High

Toxins: Coniine and gamma-coniine. All parts of the plant are poisonous, the toxicity increases throughout the growing season, the roots become toxic only later in the year.

Animals affected: All animals.

Signs: Nervousness, trembling, incoordination, depression, coma, death, birth defects. Can cause respiratory failure in less than 3 hours. Animals show signs within 2 hours. A lethal dose for a horse is 4 - 5 pounds of leaves; cattle may be poisoned with 1 - 2 pounds and sheep with a half pound or less.



Poison Hemlock continued:

Description of plant: A biennial noxious weed that grows 3 to 8 ft tall and has a smooth, purple-spotted stem and triangular, finely divided leaves. Leaves and roots have a parsnip-like odor. White flowers arranged in umbrella-like clusters open in early summer.

PINE NEEDLES (*Pinus ponderosa*)

Toxicity rating: High

Toxins: Isocupressic acid

Animals affected: Primarily cattle

Signs: Abortion, indigestion, high doses may develop renal and neurological disease. Abortions generally occur between 48 hours and 2 weeks after exposure to pine needles. Dosage is highly variable, some cows are sensitive and a small amount of needles may induce an abortion.



TANSY RAGWORT (*Senecio jacobaea*)

Toxicity rating: High

Toxins: Pyrrolizidine alkaloids. Generally unpalatable to livestock, it is only eaten if no other food source. Toxic when fresh or in dry hay.

Animals affected: All animals, especially cattle and horses.

Signs: Lethargy, diarrhea, weakness, crustiness around eyes/nose, red and watery eyes, irreversible liver damage. Cattle may develop a pig-like odor. Animals eating 5 % or more of their diet of pre-bloom tansy for a period of 20 days can expect to die within 6 months.

Description of plant: A biennial or short-lived perennial noxious weed. The sturdy plant can grow 1 to 6 feet tall, with single or multiple stems with yellow flower heads. The flowers give off an unpleasant “weedy” odor. This plant is not commonly found growing in Spokane County.

Russian Knapweed and Yellow Starthistle can cause a neurological disease called nigropallidal encephalomalacia, better known as “Chewing Disease”. The effects of the toxins are cumulative and horses will not eat these plants unless it is the only forage available. Chewing Disease can eventually cause death by starvation.

WESTERN WATERHEMLOCK (*Cicuta douglasii*)

Toxicity rating: High

Toxins: Cicutoxin. The root contains the highest concentration of poison, but the whole plant can be considered toxic. This is one of the most toxic plants in the United States. Animals have been poisoned by drinking water that had been contaminated with trampled water hemlock roots, humans are poisoned when this plant is mistaken for water-parsnip.

Animals affected: All animals, including humans

Signs: Nervousness, breathing difficulties, tremors, collapse, sudden death. As little as 8 ounces can kill a horse. Signs will develop within minutes of ingestion, death can occur in 30 minutes. If the animal survives 4 to 6 hours, they may recover but could suffer permanent damage to the heart.

Description of plant: A perennial native plant with erect stems that grows up to 7 feet tall. Stems are smooth, purple-striped and hollow. A yellow liquid exudes from cut stems and roots. Leaves are toothed and white flowers bloom in late spring or early summer in umbrella-like clusters. It grows primarily along streambanks and irrigation canals, but likes pastures or untilled areas. The cut root to the right shows the chambers that are a distinct characteristic.



WYETH LUPINE (*Lupinus wyethii*)

Toxicity rating: High

Toxins: Poisonous alkaloids; D-lupinine
All parts of the plant are toxic, especially pods with seeds.

Animals affected: All animals are susceptible, primarily sheep

Signs: Spasms, cerebral excitement, breathing problems, behavioral changes, birth defects, death. Sheep seem to be the most susceptible, death can occur when they have eaten as little as 0.25% of their body weight. Cows that eat these plants in the first 40 – 70 days of pregnancy can have deformed calves, a condition known as crooked calf syndrome.

Description of plant: A perennial plant that reproduces by seed. Stems are upright and branched, often forming large showy clumps up to 18 inches in height. Flowers range from white to purple forming on elongated spikes and leaflets and stems are covered with fine hairs. Palmate leaves are composed of 6 – 8 leaflets.

Animals that are allowed to graze potato fields after freeze/thaw or feed on spoiled potatoes in the spring can be poisoned. The toxin solanin causes paralysis of the throat, constipation even death.

THESE PLANTS HAVE A MODERATE TOXICITY RATING:

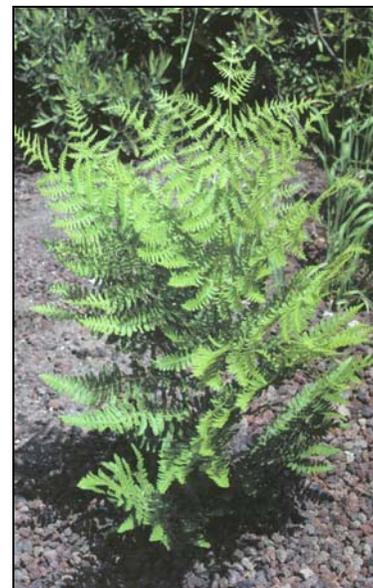
BRACKENFERN (*Pteridium aquilinum*)

Toxicity rating: Moderate

Toxins: Thiaminase and ptaquiloside. All parts of the plant are toxic, especially the roots. Thiaminase causes Vitamin B1 deficiency in horses and swine, leading to degeneration of peripheral nerves; ptaquiloside affects the bone marrow in cattle, sheep and goats.

Animals affected: Cattle, sheep, goats, horses, swine

Signs: In horses and swine: weight loss, weakness, abnormal heart rate, inability to rise, death. In ruminants: bruising, hemorrhaging, breathing difficulties, weight loss, death. Brackenfern is not considered palatable, but horses will eat it if no other forage is available, and may acquire a taste for it. It is toxic when 20% or more of the diet contains brackenfern. Cattle show signs after grazing on it for 1 to 2 months.



Description of plant: A perennial fern that can grow 1 ½ to 6 feet tall, with creeping rhizomes. Fronds are leathery and hairy on the underside. Brown spores are along the undersurface of each frond.

FIELD HORSETAIL / SCOURINGRUSH (*Equisetum spp.*)

Toxicity rating: Moderate for most animals, high toxicity in horses

Toxins: Thiaminase. All parts of the plant are toxic, both fresh and dried. Hay containing this weed may be more poisonous than fresh plants in the field.

Animals affected: Horses, other animals can be affected.

Signs: Weight loss, weakness, gait abnormalities, abnormal heart rate, inability to rise, death. Horses suffer from Vitamin B1 deficiency, causing degeneration of peripheral nerves.

Description of plants: Both are tenacious perennial plants with stiff, hollow stems that are round and jointed. Scouringrush appears in early spring as a tan shoot, developing into cane-like shoots that grow 1 to 6 feet tall, stems have a terminal spore-producing cone on the end. Field horsetail has green shoots that bear pine needle-like branches that look like a horse's tail.

HOUNDSTOUNGUE (*Cynoglossum officinale*)

Toxicity rating: Moderate

Toxins: Pyrrolizidine alkaloids. All parts of the plant are toxic; most poisonous in the rosette stage.

Animals affected: Horses and cattle

Houndstongue continued:

Signs: Weight loss, jaundice, depression, diarrhea, photosensitivity of non-pigmented skin. Horses and cattle are most susceptible while sheep seem to be tolerant. The alkaloids have a cumulative effect on the liver and can induce fatal poisoning once 5 – 10% of an animal's body weight has been consumed.

Description of plant: A biennial growing 1 to 4 feet tall and reproducing by seed. The heavy "tongue" shaped leaves are alternate up the stem and are about 4 – 12 inches long. The leaves are hairy and rough and feel like a dog's tongue. The flowers are reddish-purple and borne at the end of the stem. Seedpods are covered with barbs that enable them to stick to animals, clothing, etc.

LEAFY SPURGE (*Euphorbia esula*)

Toxicity rating: Moderate

Toxins: White, latex sap that has co-carcinogenic factors that can increase the cancer-causing properties of other substances. All parts of the plant are toxic.

Animals affected: Any animal consuming spurge exclusively, or that come into contact with the sap. Humans that come in contact with the sap can experience severe skin irritations as well as temporary blindness (seldom permanent) if sap gets in their eyes.

Signs: Gastrointestinal irritation, dermal and ocular irritation, weakness. Prolonged exposure to skin (legs and head primarily) will cause irritation, redness, swelling and salivation and head shaking if the oral mucosa is affected. Blistering and open sores are possible from exposure to the sap.

Description of plant: A perennial noxious weed that grows up to 3 feet tall and reproduces vigorously by rootstalks and seed. Leaves are alternate and stems are thickly clustered. Flowers are yellowish-green, small and arranged in numerous small clusters, paired with heart-shaped, green bracts.

LOCOWEEDS (*Astragalus* / *Oxytropis* spp.)

Toxicity rating: Moderate

Toxins: Glucosides, Selenium from soil.

Plants are poisonous throughout the growing season, even after they have matured and dried.

Animals affected: Cattle, sheep, horses

Signs: Depression, dull eyes, nervousness, abortions, inability to eat or drink, may become violent. As little as 2 pounds can cause acute poisoning in cattle within a few hours after being eat en.

Description of plants: Both are perennials. *Astragalus* (Twogrooved milkvetch) is an upright herb growing up to 30 inches. Stems are dark purple with hairy leaflets. Flowers are purple and clustered near the end of the branches. *Oxytropis* (Silky crazyweed) is a herbaceous legume that can reach 12 inches tall. Leaves are covered with fine hairs giving it a whitish-gray appearance; flowers are white and borne on a leafless stalk emerging from the center of the plant, forming a spike-like cluster.

MILKWEEDS (*Asclepias spp.*)

Toxicity rating: Moderate

Toxins: Cardenolides and resinoids. Leaves and other above ground parts of the plant are poisonous, Milkweed may cause losses at any time, but it is most dangerous during the active growing season.

Animals affected: Sheep and cattle, occasionally horses. Most livestock losses are a result of hungry animals being concentrated around milkweed infested corrals, bed grounds and driveways. Poisoning may occur if animals are fed hay containing large amounts of Milkweed.

Signs: Depression, weakness, difficulty breathing, violent spasms, bloating, gastroenteritis. An average size sheep that eats 30 – 100 grams of green leaves is likely to die of poisoning.

Description of plant: There are several milkweeds, the most toxic being Labriform milkweed. Other species in order of toxicity are: western whorled milkweed, woollypod milkweed and Mexican whorled milkweed. Refer to one of the references listed at the end for more information on these weeds.

THESE PLANTS HAVE A LOW TOXICITY RATING:

BUTTERCUPS (*Ranunculus spp.*)

Toxicity rating: Low to Moderate

Toxins: Ranunculan. The juice of the entire plant contains the toxins.

Animals affected: All animals, primarily cattle and sheep. When eaten, the buttercup irritates the mouth and intestinal tract.

Signs: Blisters and ulcers in mouth, in an infested pasture, milk cows can eat enough to taint their milk.

Description of plant: There are several buttercups found in northwest Washington, the most common being Creeping Buttercup, Tall Buttercup and Bur Buttercup. Please refer to one of the references listed at the end of this handout for more information on these plants.

DOWNY BROME (*Bromus tectorum*)

Toxicity rating: Low

Toxins: Large, coarse awns cause mechanical injury to mouth, eyes, noses

Animals affected: Grazing animals

Signs: Sores and infections to mouth, throat, intestines; weight loss.

Description of plant: An annual growing 4 to 30 inches tall, reproducing by seed. Leaf sheaths and flat blades are densely covered with soft hair. The seed head is dense, slender, drooping and often purple with nodding spikelets. Also known as cheatgrass.



ST. JOHNSWORT (*Hypericum perforatum*)

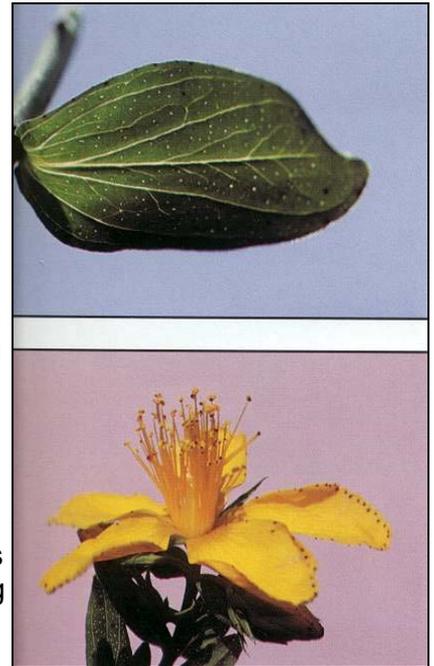
Toxicity rating: Low to moderate

Toxins: Hypericin. All parts of the plant are toxic

Animals affected: Most animals are susceptible

Signs: Sunburn, skin slough, eye irritation, inflammation of non-pigmented skin. Hypericin is a pigment that when absorbed by the body and activated by sunlight can result in a condition where white or light-skinned animals become seriously sunburned under normal exposure to sunlight. Animals must consume the plants for 4 to 5 days before clinical signs are noted.

Description of plant: A perennial noxious weed that reproduces by seeds or short runners. Stems are 1 to 3 feet high, erect with numerous branches that are rust-colored and woody at the base. Leaves are opposite, clasping the stem and oval shaped. Tiny, transparent dots are visible in the leaves when held up to the light. Flowers are bright yellow and have 5 petals with minute black dots around the edges.



Avoid planting these trees in or near your pastures: Black locust, Black walnut, Buckeye oak, Oleander, Red maple, Russian olive and Avocado. Instead, opt for aspens, cedars, cottonwoods, poplars and spruces.

Also, do not plant ornamentals such as yew shrubs, azaleas, chokecherry or boxwoods around the perimeters or anywhere your horse or livestock can reach them. Also, do not feed your animals clippings from these plants.

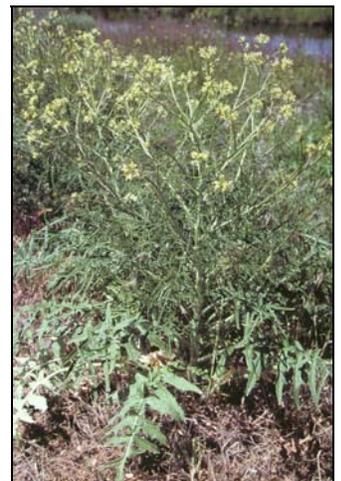
THE MUSTARD FAMILY:

Consumption of mustard plants by mares has caused a condition called Congenital Hypothyroid Dysmaturity Syndrome in foals. Signs of this condition include:

1. Abnormally long pregnancy
2. Foals commonly born with facial and lower jaw deformities
3. Deformities of the limbs

This syndrome occurs most often in mares that are bred late and fed hay that is contaminated with mustard. Or when pastured in early spring in fields that contain mustard plants, such as Blue Mustard, Tumble Mustard, Flixweed, Shepherd's-purse and Hoary Alyssum.

The syndrome appears to be caused by ingestion of certain mustards during late pregnancy. The chemical – glucosinolates, are broken down into compounds that are goitrogenic or act on the thyroid gland. Make sure that hay is free of mustards and keep mares that are late in pregnancy off weedy pastures that contain plants in the Mustard family.



Tumble Mustard

NIGHTSHADE FAMILY:

There are several plants in the nightshade family that are considered toxic, including:

1. Black Henbane
2. Bitter Nightshade
3. Hairy Nightshade
4. Cutleaf Nightshade
5. Jimsonweed

They contain a complex of glycoalkaloids and are highly toxic to cattle, sheep, horses, swine and poultry. People have been poisoned after eating the berries of nightshade plants.

Please refer to a plant reference guide or visit one of the websites listed at the end of this handout for more information on this large family of toxic plants.

This handout does not contain a complete list of plants that are toxic in Spokane County or northeast Washington. Please consult one of the references listed below for more information or contact your local Extension Agent.

REFERENCES:

1. Weeds of the West, 9th Edition, 2000. The Western Society of Weed Science in cooperation with the Western United States Land Grant Universities Cooperative Extension Services.
2. Western Washington Poisonous Plants Database;
www.horsesforcleanwater.com
3. Indiana Plants Poisonous to Livestock and Pets;
www.vet.purdue.edu
4. Cornell University Poisonous Plants Collection;
www.ansci.cornell.edu
5. War on Weeds, Noxious Weeds found in Montana;
www.mtwow.org