

Public Safety
(PS)

Poisonous Plants



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Noxious vs Toxic



- ❧ Noxious-management is legally mandated
- ❧ Toxic-lethal or damaging if ingested, handled, etc
- ❧ Not all toxic weeds are noxious, not all noxious weeds are toxic
- ❧ Dosage makes the poison-all substances are toxic/medicinal in the right amount
 - ❧ Foxglove and henbane compounds can counteract monkshood poisoning

Plant Toxicity and Livestock

- ❧ Plant poisoning can occur throughout the year
- ❧ Some plants such as houndstongue are not usually palatable, but are when cut and dried with hay
- ❧ Snowstorms may cover desirable forage and leave poisonous plants easily accessible
- ❧ Poisonous plant cost \$340 million in 17 western states annually



Impacts of Poisonous Plants to Livestock

- ☞ Death
- ☞ Reproductive losses-
deformations
- ☞ Weight loss
- ☞ Failure to breed
- ☞ Veterinary bills
- ☞ Lost pastureland
- ☞ Feed and care costs



Hemlock



☞ Water Hemlock

- ☞ Cicutoxin
- ☞ 30-60g constitutes a lethal dose
- ☞ Symptoms occur within a half hour
- ☞ Tremors, chewing/teeth grinding, respiratory paralysis, and myocardial damage

☞ Poison Hemlock

- ☞ Coniine
- ☞ 2-4% of body weight is lethal
- ☞ Seeds and root most toxic
- ☞ Respiratory paralysis
- ☞ Claim to fame: killed Socrates

Hemlock



Delphinium



❧ Larkspur

- ❧ Tall and low
- ❧ Toxic to cattle
- ❧ Toxic from flower stage to immature pod
- ❧ Causes tremors and inability to stand

❧ Monkshood

- ❧ Poisonous to livestock and humans
- ❧ Toxins may be absorbed through skin

Delphinium



Death Camas



- ☞ All species toxic:
mountain, meadow, and
foothill
- ☞ Similar appearance to
wild onion (looks for a
V-shaped crease on
leaves)
- ☞ Sheep most susceptible
- ☞ Common in spring



Locoweeds



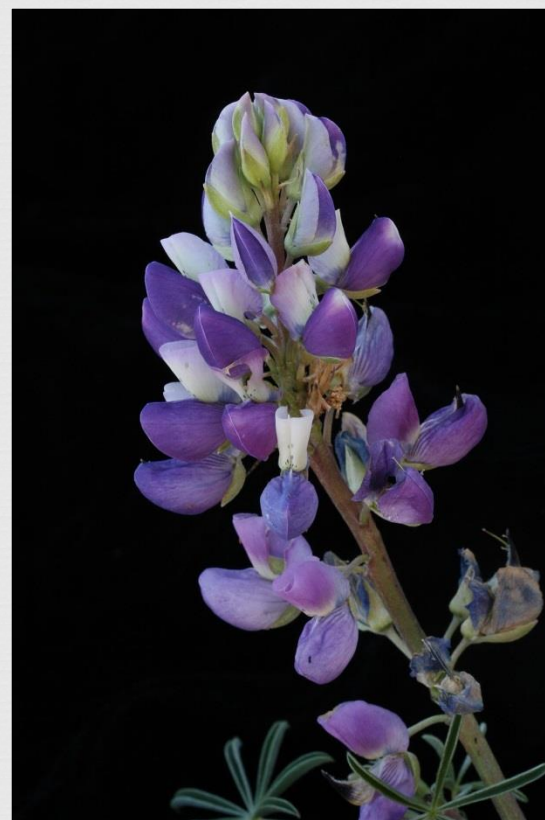
- ❧ Locoweeds and Milkvetch
- ❧ Addictive once consumed
- ❧ No effective treatment
- ❧ Animals may recover if removed from locoweed early
- ❧ Locoism: animals act neurotically



Lupine



- ❧ Silky, tailcup, velvet, and silvery are toxic
- ❧ Native perennial
- ❧ Cattle are susceptible during late first trimester and early second



Falsehellbore



- ❧ *Veratrum tenuipetulum*, *californicum*, and *viride*
- ❧ Also known as skunk cabbage and corn lily
- ❧ Over 50 poisonous alkaloids
- ❧ Most toxic in spring when it is palatable
- ❧ May cause abortion and deformities in sheep embryos, such as cyclopia
- ❧ Inexperienced human foragers may mistake it for wild leeks



Look alike



- ❧ Green gentian (*Frasera speciosa*)
- ❧ Native
- ❧ Has similar habit
- ❧ Once thought to be a biennial
- ❧ It is monocarpic and flowers once in its decades long lifespan



Ponderosa Pine



- ❧ Toxic to cattle
- ❧ Induces abortions, retained placenta
- ❧ Storms increase consumption
- ❧ Both dry and green needles toxic
- ❧ Susceptible during third trimester



Cheatgrass (Downy Brome)

- ❧ Not poisonous but plant becomes brittle after maturity (June)
- ❧ Mature seed heads become imbedded in clothes, fur, or nostrils and mouths of grazing animals
- ❧ High proteins content early in year



Houndstongue



- ❧ Principle toxin:
pyrrolizidine alkaloids
(also found in some
Senecio spp)
- ❧ Toxic to horses in small
quantities, 15 mg/kg of
body weight over two
weeks induces liver
disease



Black Henbane



- ❧ Principle toxins are tropane alkaloids
- ❧ Unpalatable and rarely eaten
- ❧ Toxic to humans as well
- ❧ Psychoactive compounds
- ❧ Claim to fame: used in pagan rituals-responsible for the popular imagery of witches riding brooms



Leafy Spurge



- ❧ Milky sap is a skin irritant and may blister the mouths of grazing animals
- ❧ Goats and sheep appear to be unaffected



St. John's Wort



- ❧ Principle toxin:
hypericin
- ❧ Absorbed by digestive tract and remains intact
- ❧ Causes
photosensitization
- ❧ Remain toxic when
dried



Russian Knapweed and Yellow Starthistle

- ❧ *Rhaponticum/Acroptilon repens*
- ❧ Perennial
- ❧ *Centaurea solstitialis*
- ❧ Annual
- ❧ Both cause chewing disease
- ❧ Incurable, animals act like they are grazing but starve
- ❧ Neurotoxic compounds affect prehension and chewing of food
- ❧ Liquefactive necrosis of brain tissue may occur
- ❧ Russian knapweed is more toxic of the two
- ❧ RK 59-71% YST 86-200% of body weight
- ❧ Animals develop a taste for plant once consumed

Russian Knapweed and Yellow Starthistle



Milkweeds



- ❧ Asclepiadaceae spp.
- ❧ Various toxins
- ❧ Affect myocardial conduction and contractility (inhibit sodium and potassium ATPase)
- ❧ Affects horses, cattle, sheep and goats, and domestic fowl
- ❧ Important food source for monarch butterflies and pollinators



Plants that can accumulate toxins

- ❧ Curly dock
- ❧ Kochia
- ❧ Russian thistle
- ❧ Canada thistle
- ❧ Pigweed/amaranth
- ❧ Paintbrush
- ❧ Penstemon
- ❧ Gum Weed
- ❧ Typically dependent on soil characteristics



Other Toxic Plant Species

- ❧ Senecio spp-alkaloids
- ❧ Bracken Fern-thiaminase
- ❧ Whitetop-glycosides
- ❧ Nightshades-alkaloids
- ❧ Sweetclover-moldy silage
- ❧ Fescue-similar to ergotism
- ❧ Sneezeweed-falling behind disease in sheep
- ❧ Oak-tannins
- ❧ Artemisia spp-sage sickness
- ❧ Foxglove-digitalis



Common symptoms of plant poisoning

- ☞ Photosensitization
- ☞ Abortion
- ☞ Birth defects/deformity
- ☞ Kidney, liver, heart failure
- ☞ Vomiting, frothing at the mouth, diarrhea
- ☞ Locoism and neurotic behavior
- ☞ Sudden death
 - ☞ Hemlocks and larkspur



Why Do Animals Eat Poisonous Plants

- ❧ Lack of desirable forage
- ❧ Time of year
- ❧ Palatability-may increase after being cut with hay, or after being treated with herbicide
- ❧ Animals learn what to eat from their mothers, moving them to a new location will result in them being unaware of what to eat
- ❧ Trial and error

Reducing Loss to Poisonous Plants

- ❧ Maintain forage supply/diverse pasture or range
- ❧ Utilize caution when animals are moved from one location to the next-beware of microclimates!
- ❧ Provide supplemental feed
- ❧ Choose weed free hay
- ❧ Know your poisonous plants!

Managing Toxic Plants



- ☞ Mechanical
- ☞ Chemical
- ☞ Biological
- ☞ Cultural
- ☞ Assess the situation to determine which method is necessary



Mechanical



- ❧ Remove seed heads
- ❧ Cut at least four inches below soil to remove root crown
- ❧ Remove all roots on perennial weeds to prevent regrowth
- ❧ Most effective on annuals and biennials
- ❧ Wear gloves when removing poisonous plants!



Chemical



- ⌘ Read label thoroughly
- ⌘ Remove livestock from treated area
- ⌘ Many herbicides cause plants to accumulate sugars
- ⌘ Increases palatability
- ⌘ Some plant species may still be palatable when dried



Biological



- ❧ Will not eradicate a population
- ❧ Naturally suppress infestations
- ❧ Use mechanical or chemical means at perimeter to prevent spread
- ❧ Not effective if trying to remove poisonous plant populations



Cultural



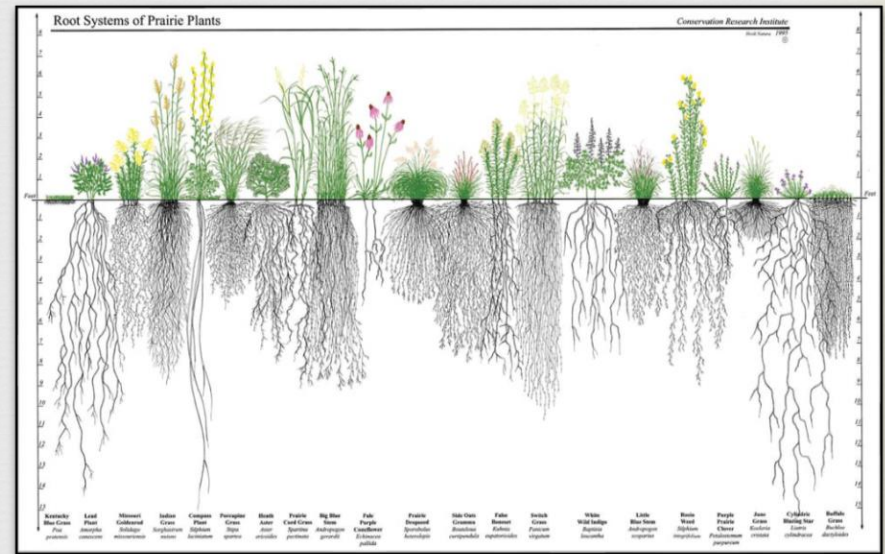
- ❧ Most important
- ❧ **Forgoing cultural control will mean an ongoing battle with weeds**
- ❧ Replanting
- ❧ Rotational grazing
- ❧ Resource utilization
- ❧ Weed-free forage and hay
- ❧ Once again, grazing is not a good management technique for poisonous species-for obvious reasons



Prevention



- ❧ No bare ground unless absolutely necessary, growth is prevented mechanically by barrier cloth, or if in industrial areas!
- ❧ Weedy species vs noxious weeds (role in environment)
- ❧ Weeds fill voids, don't give them one to fill



First Step In Weed Management

☞ We skipped it...what is the first step?



Identification



- ❧ Identification is the first step! Do not treat a weed infestation before knowing what it is
- ❧ Identify the area and root cause of the infestation
- ❧ Is it part of a natural cycle?
- ❧ Identify what control method will be most effective.
- ❧ Many herbicides cause sugar accumulation before death and treated plants may become more palatable!

Plants Poisonous or Harmful to Humans

- ❧ Likely to be consumed by accident
- ❧ Baneberry
- ❧ Twinberry honeysuckle
- ❧ Snowberry
- ❧ Red elderberry
- ❧ Hemlock
- ❧ Monkshood
- ❧ False hellbore
- ❧ Myrtle spurge



Weed Management Saves Lives



Resources



- ❧ A.P Knight. Plants Poisonous to Horses. CSU. Feb 2005
- ❧ R. Frost. Plant Toxicity: Poisonous Range Plants in Montana. MSU
- ❧ J. Julian. Poisonous Plants that Affect Livestock in Douglas County. CSU Douglas County
- ❧ A. P. Knight, R. G. Walter. A Guide to Plant Poisoning of Animals in N. America. Teton NewMedia. 2001