Toxic Plants & Compounds

Indiana Small Farms Conference 2014
JAMÓN IBERICO
(GUIJUELO)

30, - €/Kg.
White Oak

Red Oak
Sericea lespedeza

Tannins
Pokeberry
Indiana Plants Poisonous to Livestock and Pets
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Wild Cherry

Storm Damage
Wild Cherry

- Hydrogen cyanide - Prussic acid
- Results of a chemical reaction in the damaged leaves.
- For a 1200 lb cow, consuming 1 to 5 pounds of wilted black cherry leaves could be a lethal dose.
- Young leaves (spring) are more toxic.
Wild Cherry

- Poisoning signs in 15 minutes.- trembling, down
- If the animal does not die in the first hour, there is a good chance for recovery.
- Toxicity potential is gone when leaves turn brown.
- Not an exact science.
Carolina Horsenettle
Carolina Horsenettle

- Appears in June
- Nightshade (Solanaceae) family
- "Solanine," is a poisonous compound produced by the plant.
- Grows well in sandy soil
- Livestock generally do not eat it. Mama
- Hay-not generally a problem and should not be
Control

- If your pastures contain legumes, it becomes difficult
- Plowing it out is not an option
- Mow at 30 day intervals helps
- Roundup?
- Fall is the best time to apply herbicides
- SARE project?
Yew
Yew

- Newspaper
- Very toxic
- Death in a few hours
- Cattle, horse, sheep... goats ............deer
- Various toxins
- Fresh and dried yew are both toxic
- Yew eaten directly from plant is as toxic as yew clippings
Poison Hemlock
Poison Hemlock

- Found along roads, streams, trails, ditches, train tracks, forest edges, waste areas and in pastures.
- Biannual, matures in July
- Loss of appetite, excessive salivation, bloat, and a rapid but feeble pulse
- Not palatable
Poison Hemlock

• Silage
• Treat new growth in the fall with herbicides
• Get on top of new infestations
White Snakeroot

- **Plant Description:**
  - 1-3’ tall perennial herb
  - Opposite, oval, 3-4” pointed leaves with toothed margins, shiny lower surface with 3 prominent veins
  - Small white flowers in compound clusters in late summer
  - Shaded areas along wood lines and pasture

- **Toxic Properties:**
  - Trematone/tremetol
  - All plant structures toxic

- **Plant Control:**
  - Herbicide
  - Hand removal
  - Exclusion
White Snakerooot

- **Animals Affected:**
  - Cattle, Horses, Goats, Sheep and Swine
  - Nursing young and humans – ‘milk fever’

- **Clinical Signs:**
  - Depression
  - Stiffness
  - Sweating
  - Below normal temp
  - Trembling
  - Constipation
  - Jaundice
  - Throat paralysis
  - Heart, kidney, liver failure

- **Lethal Dose**
  - 1-10% of BW
  - Signs within 2 days – 3 weeks
  - Death 1 day – 3 weeks
  - Horses – 1 – 3 days

Photo: University of Wisconsin
Whatever!
Nitrate Poisoning

• **Favorable Conditions for Plant Nitrate Accumulation:**
  - Nitrates are common in plants (nitrates → amino acids)
  - Plant stress: drought, extreme shading/low light, herbicide, disease, acid soils, nutrient deficiencies
  - Excessive soil nitrogen
  - Significant rainfall after drought stress

• **Nitrate Accumulating Plants:**
  - Corn
  - Sudan grasses
  - Sorghums
  - Small grains (Oats)
  - Millet
  - Perennial grasses (johnsongrass, fescue)
  - Weeds (pigweed, lambsquarter, etc.)
  - Highest in immature forages
  - Highest in lower 1/3 of stem

Photo: Purdue University
Nitrate Poisoning

- **Prevention:**
  - Testing forages for nitrates (<5,000 ppm/≥10,000 ppm)
  - Ensiling
  - Appropriate fertility programs
  - Weed control
  - Determining nitrates in water sources

- **Animals Affected:**
  - All that consume roughage

- **Clinical Signs:**
  - Hemoglobin → Methemoglobin
  - Grayish/brownish discoloration of skin and membranes
  - Staggering, rapid pulse, labored breathing, frequent urination, abortion, death (.5-4 hours after lethal dose)

- **Human Concerns:** Nitrogen dioxide production during ensiling
Tall Fescue
Fescue Toxicity

- **Tall Fescue Description:**
  - Cool-season perennial grass
  - Tolerates poor soils and climates

- **Toxic Properties:**
  - Fungal endophyte produces toxins
    - (endo=in, phyte=plant)
  - Life Cycle: Seed → Seed

- **Management:**
  - Determine if fescue is infected
  - Replace with endophyte-free or novel-endophyte fescues
  - Manage fertilizer applications
  - Rotate animals during the hottest part of the summer
  - Dilute with legumes
  - Supplement with feeds

Photo: University of Missouri
Fescue Toxicity

• Animal Response:
  • Cattle – decreased feed intake, lower weight gain, poor reproductive performance, lowered milk production, higher body temps and respiration, rough hair coat, excessive salivation, loss of blood flow to extremities “fescue foot”
  • Horses – reproductive problems (abortions/stillborns, dystocia, thickened placentas, foundering, poor conception)
  • Sheep – least affected, fescue foot, increased body temp, poor wool production, poor weight gain, reproductive problems
Prussic Acid

- Sudangrass = lowest
- Forage sorghums = highest
- sorghum-sudangrass crosses = medium
- emulsion-dhurrin reaction = cyanide
Prussic acid

• Pasture - watch the short regrowth
• Green chop – ok but don’t wait a day
• Silage - fine given time
• Hay - not a problem
• Frost - get them out
What do you think?