

## Forage Value & Poisonous Plants

Forage value - Based on the most limiting nutrients on rangelands in the western U.S.

- Energy –
  - Structural carbohydrates (e.g. \_\_\_\_\_)
  - \_\_\_\_\_ & \_\_\_\_\_
  - Fats (to a limited degree, but important for birds and rodents).
- Nutrients –
  - \_\_\_\_\_ - Nitrogenous compounds
  - \_\_\_\_\_ = generally most limiting mineral on rangelands
  - \_\_\_\_\_ = Carotene or Vitamin A

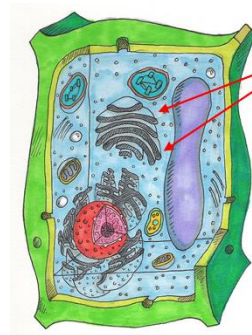
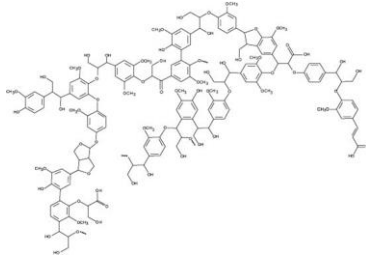
What affects plant nutritive value?

1. Cell structure (Ratio of Cell Wall to Contents)
2. Degree of Lignifications
3. “Anti-quality” factors

Cell structure: (Wall:Contents)

Degree of Lignification

- Lignin = indigestible portions of cell walls that impregnates cellulose to form wood.



### Cell solubles

Sugars  
Starch  
Organic acids  
Protein

### Cell wall

Pectin  
Cellulose  
Hemicellulose  
Lignin  
Cutin  
Silica

“Anti-quality” Factors – Compound that reduce forage quality or are toxic

- Plants may contain compounds that:
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
- Make plants “\_\_\_\_\_”
- More common in forbs and shrubs than grasses

Act on two different ways:

- Inhibitors – Inhibit or reduced digestion
  - Bind with nutrients to reduce digestibility
  - Kill microbes and inhibiting microbial growth in gut
- Toxins – Affect herbivores directly
- Cause illness or death

Toxic or Poisonous Plants

What is a toxic plant?

What effects do toxic plants have?

- Death
- Birth Defects (called “Teratogenic” effects)
- Reproductive Dysfunction
- Bloat
- Dermatitis and Skin Sores
- Neurological Effects
- Etc. etc. etc.

Type	Name	Longevity	Origin
Forb	Tailcup Lupine	Perennial	Native
Forb	Tall Larkspur	Perennial	Natve

❖ **Tailcup Lupine**

**Perennial**

**Native**

- \_\_\_\_\_ Seedhead
- Purple Flowers
- Palmately \_\_\_\_\_ Leaves
- Contains alkaloids
  - Nervousness
  - Excessive salivation or frothing at the mouth
  - Reluctance to move about
  - Difficulty breathing
  - Twitching leg muscles
  - Loss of all muscular control
  - Some lupines cause birth defects
  - Coma & Death



❖ **Tall Larkspur**

**Perennial**

**Native**

- \_\_\_\_\_ Seedhead
- Purple Flowers
- Palmately \_\_\_\_\_ Leaves
- Contains Alkaloids
  - More livestock die from this plant than any other plant in North America
- Symptoms:
  - Nervousness
  - Rapid, irregular pulse
  - Weakness & staggering
  - Animal may fall suddenly
  - Death
- Excitement and physical exercise intensifies all signs of poisoning

