

ALL HAY IS NOT
CREATED EQUAL

SO JUST HOW MUCH DO YOU KNOW ABOUT HAY AND HAY QUALITY?

- How many of you own cattle, horses, sheep, and/or goats?
- How much hay do you think is put up in your county each year? \$\$\$\$\$\$\$\$ TONS BALES
- Do you feed hay?
- How much and how often?
- Did it cost you anything?
- What kind of hay do you feed?
 - Good hay right.... How do you know it is good?
 - What did you use to evaluate it?
 - If you had it tested do you know and/or understand what you are reading?

Sacked, Stacked, and Packed?

- How is hay sold?
- Usually by the bale.... So what does that mean???
- Square VS Round?
- Big VS Small?
- Tied with biodegradable twine or plastic/rodent resistant twine?
- Is it net wrapped? Silage wrapped?
- OR maybe sold by weight????????
- » So how much does it really weigh?

Square Bales

- Common sizes
 - Big Square Bales
 - Common Size 3'X3'X8' (may vary)
 - Common Weight 400-2000 lbs +/-
 - Wire tied VS Twine
 - Small Square Bales
 - Common Size 14"X18"X48-50" (may vary)
 - Common Weight 60 – 120 lbs +/-
 - Wire tied VS Twine





Advantage VS Disadvantages

- Advantages to small square bales
 - Ease of handling in stacking and feeding
 - Easier to transport
 - Easier to sell in small quantities
 - Horse people love these
 - » However Big Square Bales do harvest and transport more efficiently
- Disadvantages to small square bales
 - More labor intensive (Must be hauled in the day you bale)
 - Cost factors (Price per bale to haul and stack in barn)
 - Must be stored inside to maintain quality/barns required
 - » Big Square Bales require special equipment to handle and feed them as well

Round Bales

- Round bales
 - Typically used on the farm
 - Common Sizes 36"-76' high / 48"-64' wide
 - » 4'X5' 4'X6' 4'X6' 5'X6' 6'X6'
 - Common weight 400-2000 lbs
 - Twine, Net Wrap or Bailage
 - Disadvantages
 - » Not easy to transport/requires tractor and spike
 - » Lose of nutritional value when stored outside
 - » Plastic wraps must be cut off and disposed of properly
 - » Will usually only last two years before major lose occurs
 - Advantages
 - » Less labor intensive
 - » Can be stored outside if stored correctly/no barns







How is most hay evaluated when purchase from the farm?

- **By sight**..... So what are you looking for?
 - Species
 - Mix or blend
 - Maturity stage
 - Leafiness
 - Color
 - Foreign material
 - Odor / Smell

Mix or Blend

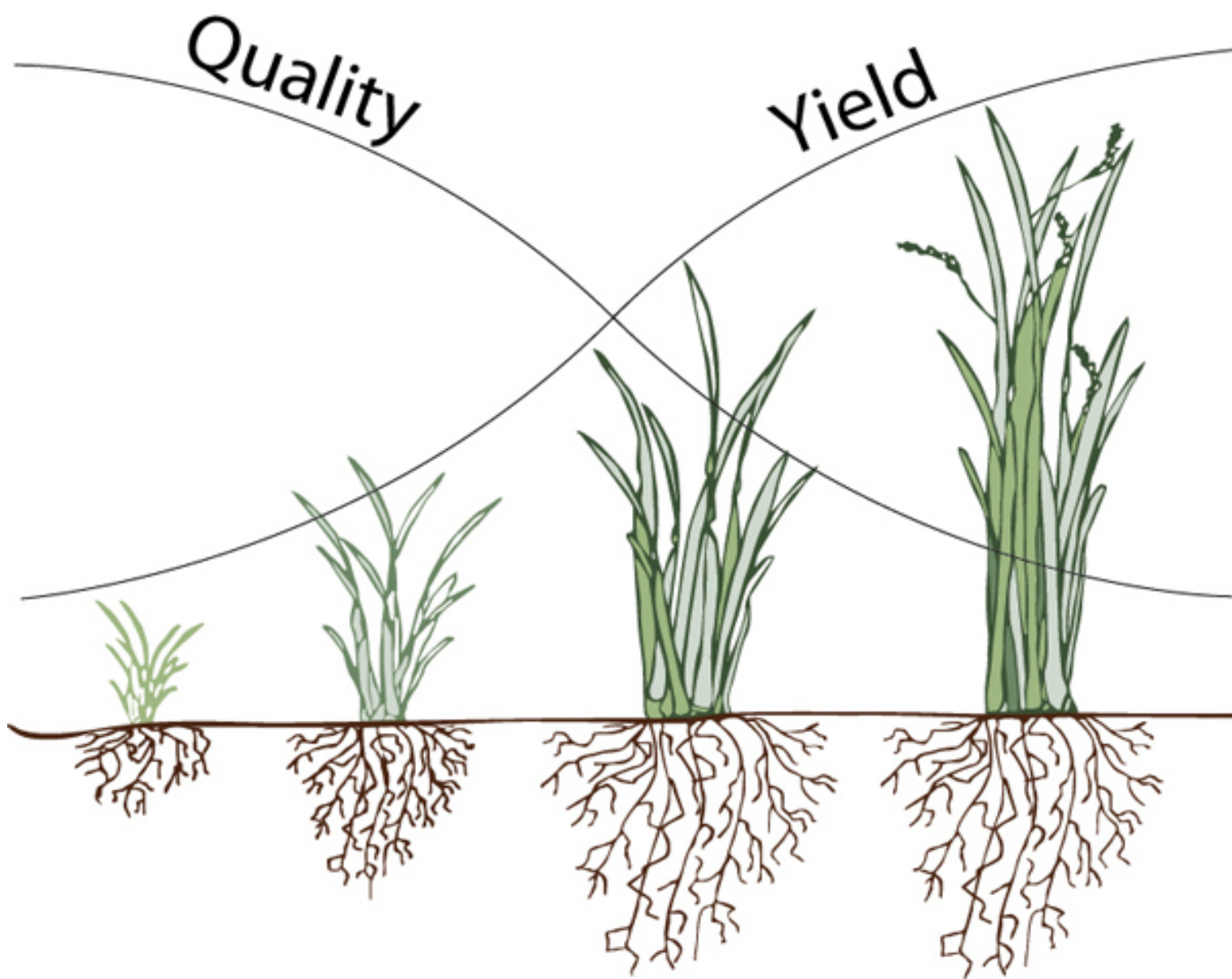
- Does it matter which species are in the bale?
- How much legume would you want in the bale before you call it a grass legume mix and paid for a grass legume mix? (Lohop Clover???)
- What does mixed grass hay mean?
 - Can you rank these grasses for quality
 - Fescue
 - Bromegrass
 - Orchardgrass
 - Depends ??????

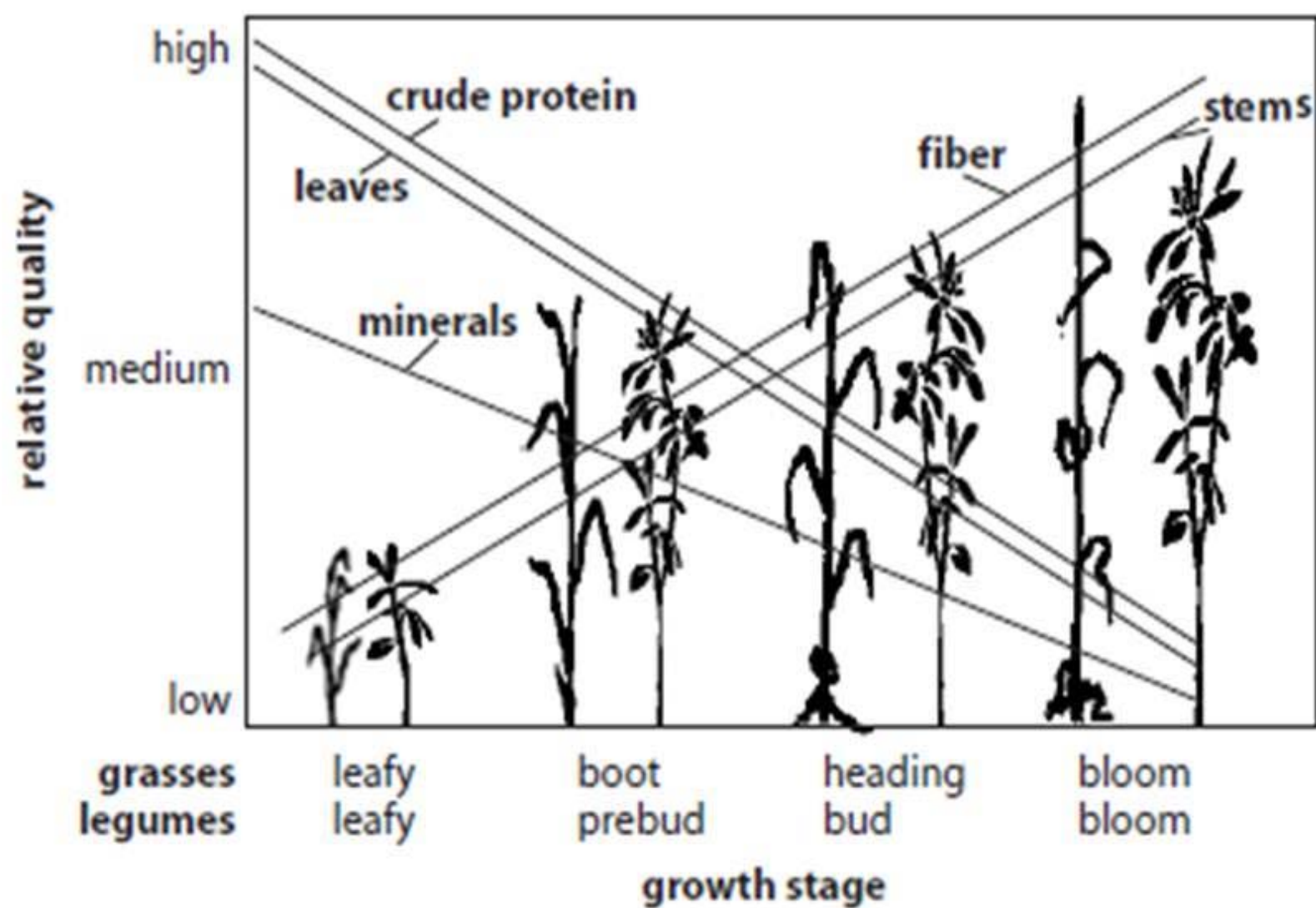
Species

- Just what kind of hay is it?
 - Grass hay (straight or mixed)
 - Cool season grass
 - Tall fescue, Orchardgrass, Brome grass, Timothy, Bluegrass
 - Wheat, Oats, Barley, Rye, ETC.
 - Warm season grass (Native Grass)
 - Switchgrass, Indiangrass, Big bluestem, Eastern gamagrass
 - Grass legume hay
 - Which grass and which legume. (Best is Alfalfa and Brome)
 - Is it at least 25-30% legume
 - Legume hay
 - Alfalfa, Red clover, Lespedeza, Birdsfoot trefoil, Bean, ETC.
 - Are you aware there are actual classification used to market hay throughout the United States

Maturity Stage

- The older the plant species is the lower the protein content gets but..... the more tonnage you harvest and bale.
- The younger the plant species is the higher the protein content is but.... the less tonnage/bales you make.
- Which is right?????
 - Quality (more gain on less feed)
 - Quantity (more hay to feed/sell)
 - \$\$\$\$\$\$??????
 - Stem size will tell you allot





Leafiness

- Leaves are what you want
 - Allot
 - Fully developed
 - Mixed throughout
 - Not shattering out and/or falling apart
- Leaves are where the most protein is found



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Color

- Green
 - Green
 - Green
 - Green

Why is netwrap green????

- Not yellow, brown, or black

Foreign Material

- If cattle will not eat it,
- If it has weight but no nutritional value,
- If it is left on the ground after the bale has been fed,
 - Sticks, Multiflora Rose, Trash, Broomsedge, Coralberry Buckbrush, Serecia Leapedeza, Sprouts, Hay too tough/old to eat, ETC.
- Then, why did you buy it????????????????
 - Major problem found to be present in many local hay bales

Odor and Condition

- Ruminant animals eat what smells good
- DAH!!!!
- Foul odors will usually affect taste as well
- Foul odors may indicate thing that might affect your livestock well being/health
 - Mold, Dust, Animal Urine, Animal Feces, Smoke, Diesel fuel, Chemical, ETC.
 - Learn what good hay smells like
 - This will only come with practice

Things affecting Quality Hay

- When it is harvested/cut?
 - Spring/Summer/Fall 1st, 2nd, 3rd, 4th Cutting
- How it was harvested/cut?
 - Sickle bar, mowing machine, disc bind, ETC.
- How it was stored?
 - Inside/outside
- How long it has been stored?
 - This years hay, last years, five years ago?????

Remember

- Crude Protein Does not mean Digestible Protein
- Protein content is directly related to your harvesting and storage techniques
- Look for TDN & Digestible Protein

Do All Cool Season Grasses Make Quality Hay?

- Perennials:

- Kentucky Bluegrass
- Smooth Bromegrass
- Orchardgrass
- Timothy
- Tall Fescue
- Reed Canarygrass
- Redtop
- Perennial Ryegrass

- *Annuals:

Annual Ryegrass
Oats
Wheat
Winter Rye
Barley

Tall Fescue

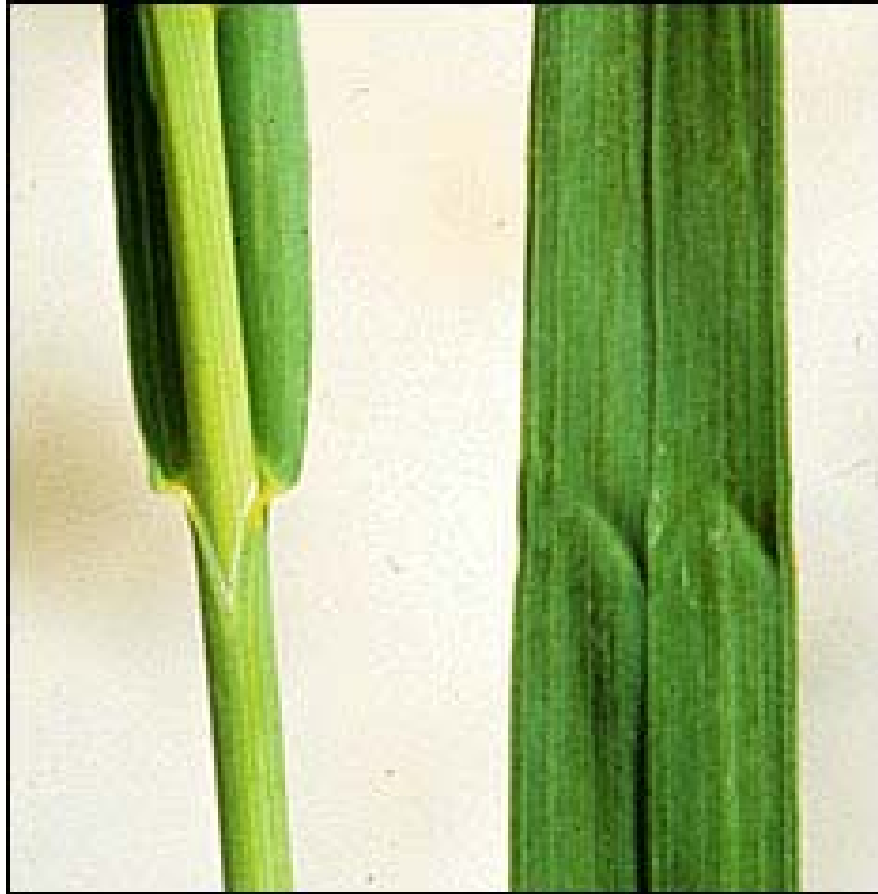


Tall Fescue

- Long growing seasons
- Perennial
- Can be **hayed** in the Spring / Fall
- Lower palatability as compared to some other grasses
- Good for winter pasture (Stockpiled)
- Infected with the endophyte *Neotyphodium* *cenophialum* causes fescue toxicosis
- Contains 10-15% CP
- There are novel endophytes that do not produce toxins

Smooth Brome *Bromus inermis*





Smooth Bromegrass

- Drought resistant
- High yields
- Quite palatable
- Grown successfully with alfalfa
- Used for **hay**, pasture, silage and erosion control
- Contains 4-20% CP
- An Alfalfa/Bromegrass mix is the best grass/legume hay combination for both tonnage and protein but is hard to establish and maintain
- 80% of growth is done by June 15th

Orchardgrass Inflorescence

Dactylis glomerata





Orchardgrass

- Shade tolerant
- Grows 2 -3 FT tall
- Less winter hardy / drought / heat tolerant than fescue
- Requires higher fertility than fescue
- Young established stands are susceptible to disease infestation
- Early and rapid spring growth (likes nitrogen)
- Mixes well with red clover for **haying** or grazing
- Only withstands moderate grazing
- Contains 8-18%CP
- Forage quality is high if managed right



Timothy:

- Primarily **hay** plant – good horse hay
- Produces clean hay – not dusty
- Lower nutritional value high fiber content
- Contains 8-12% CP
- Does not tolerate grazing well
- Requires above average management if grown in the Ozark Region due to soil quality and rainfall patterns



Reed Canarygrass

- Can tolerate cool, poorly drained, low pH soil sites ... Prefers moist, cool site and wet land
- Grows 2 – 6 FT tall
- Long growing season
- Primarily a deep rooted pasture plant
- By the time you make **hay** it will be very thick stemmed and coarse
- Contains 9-13% CP
- Recovers quickly from grazing
- Should be grazed early to be keep low and lush



Kentucky Bluegrass

- Grows 1-3 Ft tall
- High nutritive value as a pasture grass
- Limited hay usage
- Not highly productive unless well fertilized or grown with a legume
- Tolerates close grazing Keeping it grazed 1 - 2" short promotes productivity and sod formation





Perennial Ryegrass

- Grows 2 to 3 Ft tall
- Does not tolerate drought or poorly drained soils with low moisture content
- Tolerates a mildly acidic soil
- Very responsive to nitrogen fertilizers
- Will tolerate close grazing
- High nutritive value if harvested correctly
- Usually not a stand alone **hay** crop



Small Grain Forages:

- Oats, wheat, rye, barley
- Variety and planting ratge
- Awnless varieties
- Hay or Silage
 - 20% bloom stage
 - Milk stage
 - Dough stage
- Pasture
 - Fall leave 3 inches
 - Spring – stop before jointing (if you plan to grain it)

Legumes

- Most legumes require a higher pH range than grasses to establish and survive
- Liming will usually be a maintenance requirement if you want to keep them going in the Ozarks
- Excessive application of yearly nitrogen may result in too much competition from the grasses early on thus choking the legumes out
- A good pasture/hayfield mix of 25-30% legumes to 60-65% grasses may offset the need of added nitrogen fertilizers to your fields as most legumes are nitrogen fixers

Alfalfa (*Medicago sativa*)



Alfalfa:

- Alfalfa: 15-25% CP
- Grows 2 to 3 Ft tall
- Queen of all forages
- Requires a well drained soil and high quality fertilizations control for maximum production
 - ❑ 1.3-1.5% Ca
 - ❑ Grown Extensively in the U.S.
 - ❑ Pasture, green chop, silage, **hay** and dehydrated meal
 - ❑ Causes bloat
 - ❑ Wide Ca:P ratio

Alsike Clover (*Trifolium hybridum*)



Alsike Clover

- Adapts well to cool climate and wet soil
- Grows 1 to 3 Ft tall
- Short lived perennial
- Lodges badly
- Usually only one **hay** crop per year
- Better suited for low fertility soils on lower pH soils
- Has a similar look and grow habit as Red Clover

Birdsfoot Trefoil(*Lotus corniculatus*)



Birdsfoot Trefoil

- 13-21% CP
- Grows 12 to 30 inches tall
- Hard to establish high quality forage
- Must be planted in a new stand first as it does not compete well in established stands of grass
- Long lived and hardy if not overgrazed
- Pasture or hay
- Will not cause bloat

Red Clover (*Trifolium pratense*)



Red Clover



Red /Arrowhead Leaf Clover

- 12-22% CP
- Red clover grows 2 to 3 Ft tall
- Arrowhead Leaf Clover grows 2 to 4 Ft tall
- 1-1.8% Ca
- Primarily **hay** and/or pasture crop
- Short lived perennial
- Does not like wet conditions or continuous grazing
- Likes a well managed soil with good fertility

White Clover

(Trifolium repens)



White Clover Stolons



White Clover

- 15-28% CP
- Grows 8-12 inches tall
- Produces lots of leaf close to the ground
- Withstands close grazing and mowing
- Mostly used as pasture legume and a soil builder (Improves soil nitrogen content)
- Will grow on lower quality soil conditions
- Has bloat potential
- Usually **not considered** a high priority hay crop

Most varieties are susceptible to leaf and stem rots and do not persist in this area.

Therefore one year they are there the next year they are not.

They are reseeder

Kura Clover



Kura clover

- *Similar to White clover in growth habits.**
- *More tolerant of wet and acid soils than white clover.**
- Goes dormant during drought and is winter hardy.**
- Usually **not considered** a high priority hay crop**

Crownvetch



Crownvetch

- 12-25% CP
- Grows 2 to 4 Ft tall
- Does well in low fertility soils.
- *Good for erosion control
- *Establishment is slow
- *Seed is high \$
- *Does not do well inter seeded into Fescue.
- Will not cause bloat
- Usually **not considered** a high priority hay crop

Yellow Sweetclover

(Melilotus officinalis)



Sweetclover

- 11-18% CP
- Grows 4 to 8 Ft tall
- Coarse and Stemmy
- Small leaves
- Pasture, hay and silage Usually **not considered** a high priority hay crop
- Difficult to cure for hay
- Leaves contain coumarin that reduces palatability
- Drought tolerant and winter hardy
- May cause bloat and or scours
- Soil improving crop

Hop Clover (*Tifolium dubium*)





There is both large and small hop clover.

Commercial seed is not available

***usually by the time we harvest our
grasses Hop clover is very mature.**

Korean Lespedeza

(*Lespedeza stipulacea*)



Lespedezas:

- **13-16% CP**
- **Reseeding annually**
- **Primarily pasture crop but can be used for hay**
- **Withstands continuous close grazing**
- **Will not cause bloat**
- **Lespedezas are more tolerant of acid soils**
- **Provides excellent late summer grazing as a warm season legume**

Warm Season Grasses:

- Perennials:

- Big Bluestem
- Little Bluestem
- Caucasian Bluestem
- Indiangrass
- Switchgrass
- Side-oats gama
- Bermudagrass
- Eastern gamma
- Johnsongrass ??????

Annuals:

- *Crabgrass
- *Pearl millet
- *Sorghum/Sudans
- *Corn
- *Teff

Big Bluestem
Andropogon gerardii



Big bluestem

- Warm season perennial
- Grows 3 to 6 Ft tall
- High yielding and can withstands heavy grazing however like most warm season grasses it can not be grazed closer than 5-6 inches
- Highly palatable after maturity
- Pasture and **hay** crop
- Contains 4-11% CP
- More drought tolerant than most warm season grasses

Indiangrass – *Sorghastrum nutans*



Indiangrass

- Does not withstand close grazing
- Grows 3 to 6 Ft tall
- Long lived perennial
- Prefers well drained fertile clay soils
- Has a higher nutritive value than most warm season grasses
- Difficult to cure for hay
- Contains 5-11% CP
- Erect bunch grass

Switchgrass
Panicum virgatum



Switchgrass

- Easier to seed and establish
- Grows 3 to 7 Ft tall
- Very palatable in immature stage
- Poor feed value for stockpiled winter forage
- **Hay**, pasture, erosion control
- Contains 3-11% CP
- Spreads by rhizomes and seed
- Highly drought tolerant
- Will tolerate poorly drained soils

Sideoats Gramagrass



Side-oats Grama

- Usually grown with big bluestem
- Grows 2 to 3 Ft tall
- Palatable
- Remains palatable into winter
- Contains 7-13% CP
- Spreads by seed and rhizomes





Eastern Gamagrass

- Warm season perennial
- Grows 3 to 8 Ft tall
- Good nutritive value
- Well suited to sites with good moisture and fertility
- Pasture and Hay Crop
- Likes a loam/clay based soil
- Relative of corn
- Very palatable
- Hard to establish



AgriLIFE EXTENSION

5/24/2000
Texas A&M System

Bermudagrass

- Perennial, spreads by rhizomes and stolons
- Grows 15 to 24 inches tall
- Tolerates close grazing
- Extremely drought tolerant
- Mostly used for pasture or hay
- Common varieties are not as palatable
- Needs lots of Nitrogen
- Contains 7-18% CP
- Inadequate potassium is the main reason for forage decline and/or thinning

So how do you go about making quality hay?

- When is the best time to mow?
 - Most local hay is harvested too late for optimum protein content
- Do I need a mower/conditioner?
- Will a sicklebar mower work for me?
- Is a Disc bind better?
- What size tractor do I really need on the farm to bale with?
- How high do I cut my warm season grasses?
- How and when do I use a tedder?
- Just when do I fire up the baler and start baling?

Depends ????

Depends ???

Depends ??

Depends ?

And that is another
discussion in itself.

Final Words for Thought

- The best way to truly get a feel for the type of hay you are buying and/or feeding is to have it tested.
 - To formulate a total daily balanced ration you need hay test result
- What it all comes down to is not rumen fill but what they are getting when they fill their rumen.
- Cattle on poor quality/cheap hay can have a full belly and be starving to death.....
- As long as I have been around the cattle industry lower gains and light weaning weights have not been the best way to profit. You are going to have to feed them.