

Pasture Nutrition for Dairy and Beef Cattle

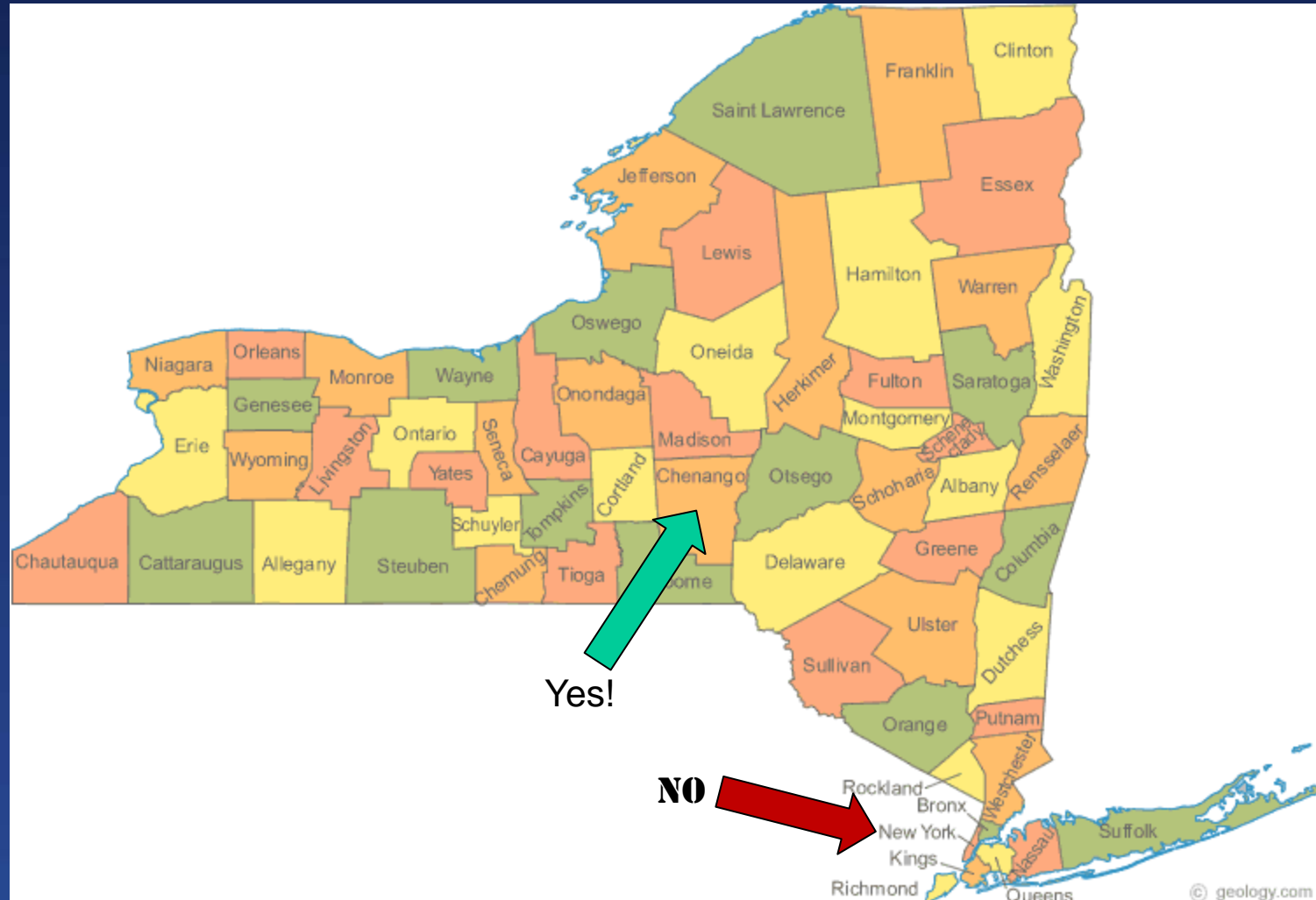


Karen Hoffman

Resource Conservationist – Animal Science

Norwich, NY

I am not from New York City!



Lactating Dairy Cows

- Highest nutritional requirements
- High dry matter intake
- Pasture nutrition challenges



Finishing Beef Cattle

- High nutritional requirements
- High dry matter intake
- Grass-finished nutrition challenges



The Value of Pasture and Good Nutrition

A high level of pasture management
+
An understanding of nutrition
=
Higher milk or ADG

A High Value Pasture is:

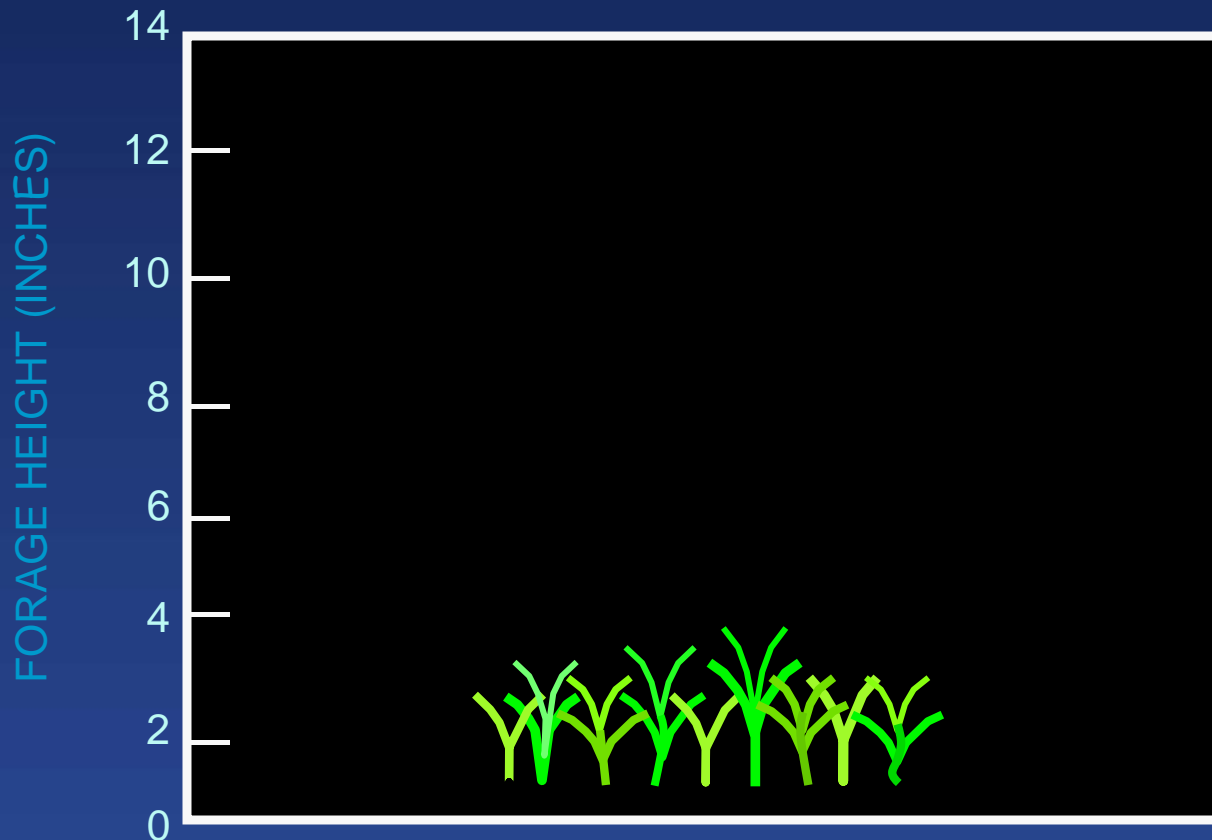
An area of land with an adequate amount, quality, type and distribution of forage.

Good pasture management complements or meets the nutritional requirements of the resident livestock, for as long a time period as possible.



Low Value Pasture

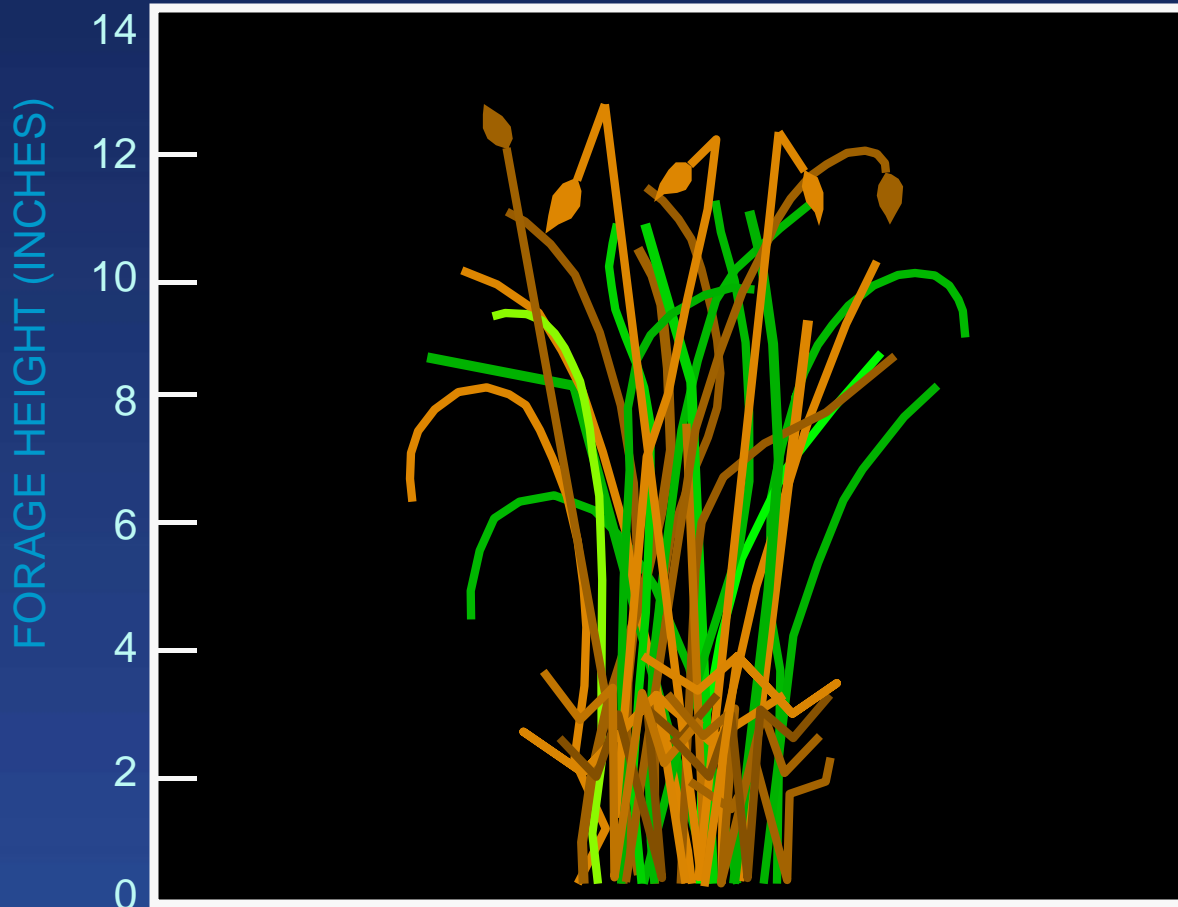
High in Forage Quality – Low in Forage Quantity





Low Value Pasture

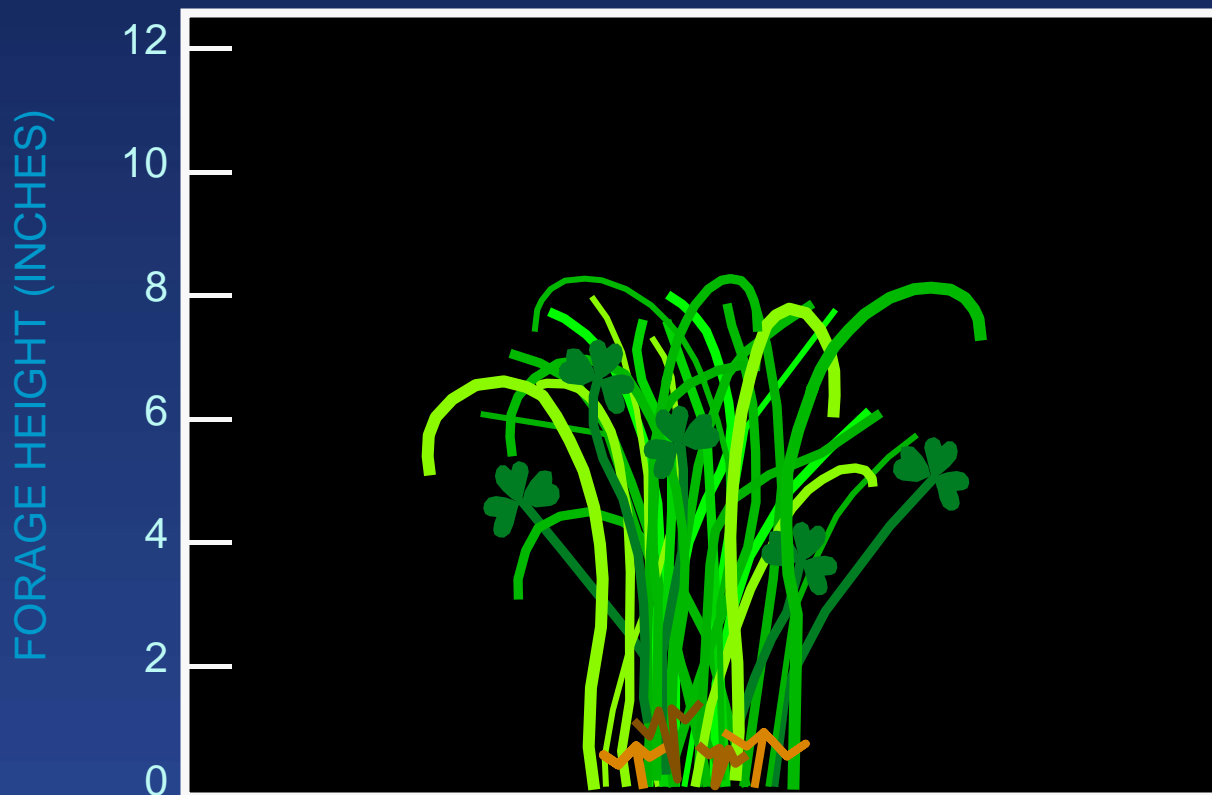
High in Quantity – Low in Quality






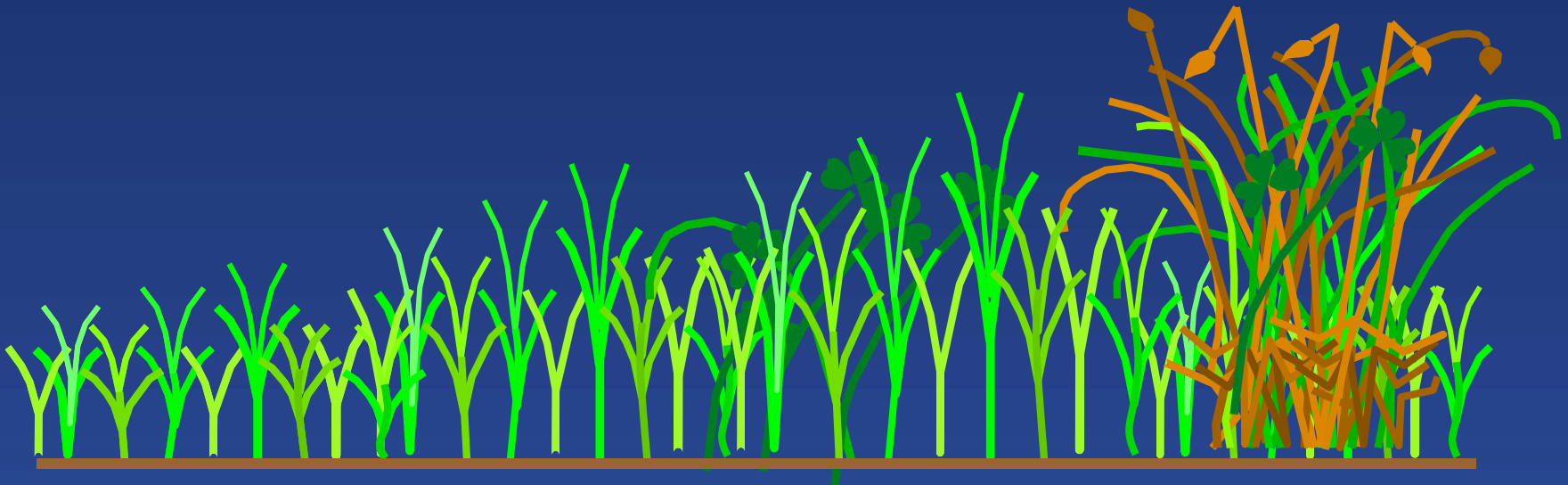
High Value Pasture

High Forage Yield – High Forage Quality

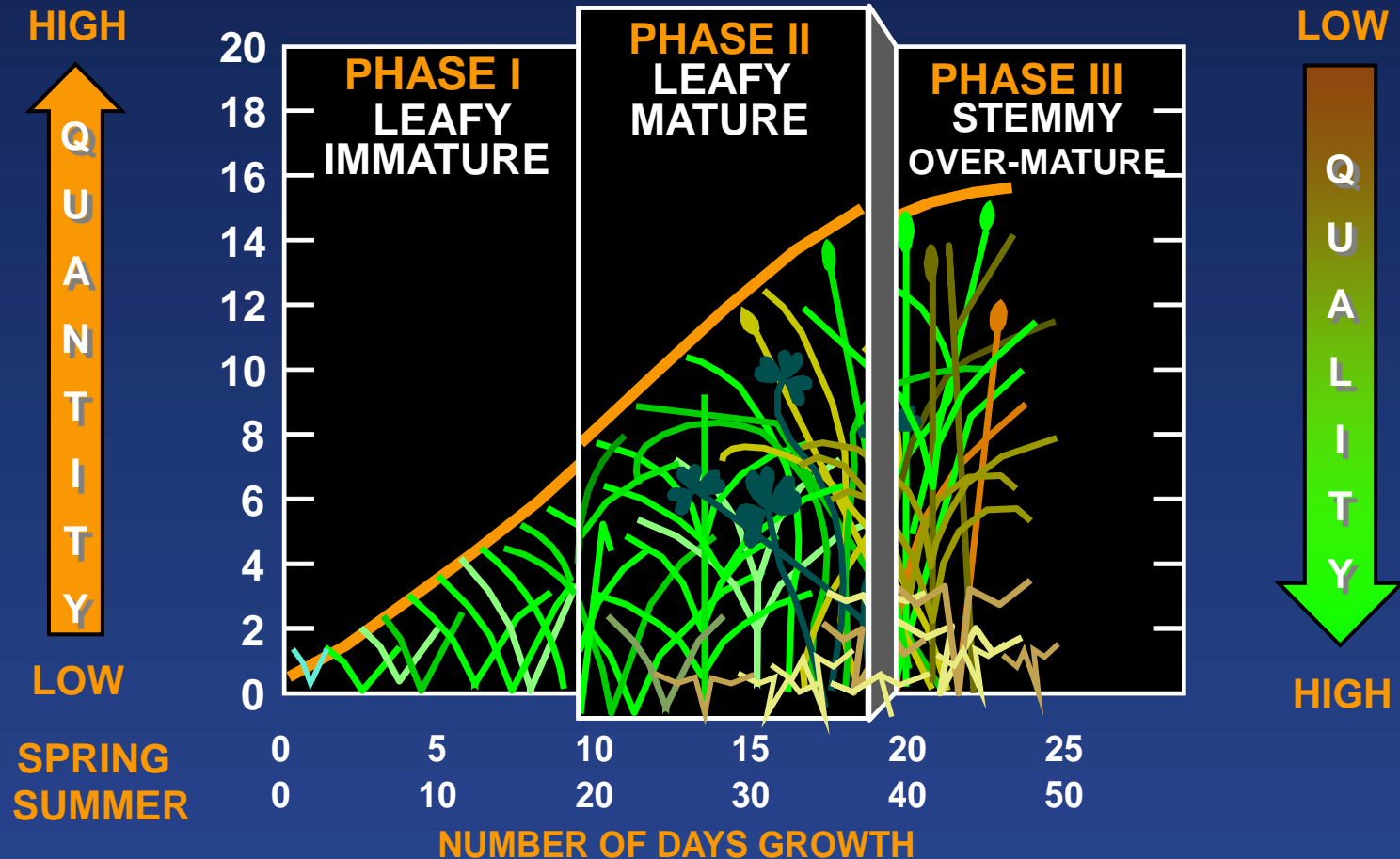


Pasture Plants are Alive and Actively Growing. They Change in Yield and Quality Every Day and Even Over the Course of a Few Hours.

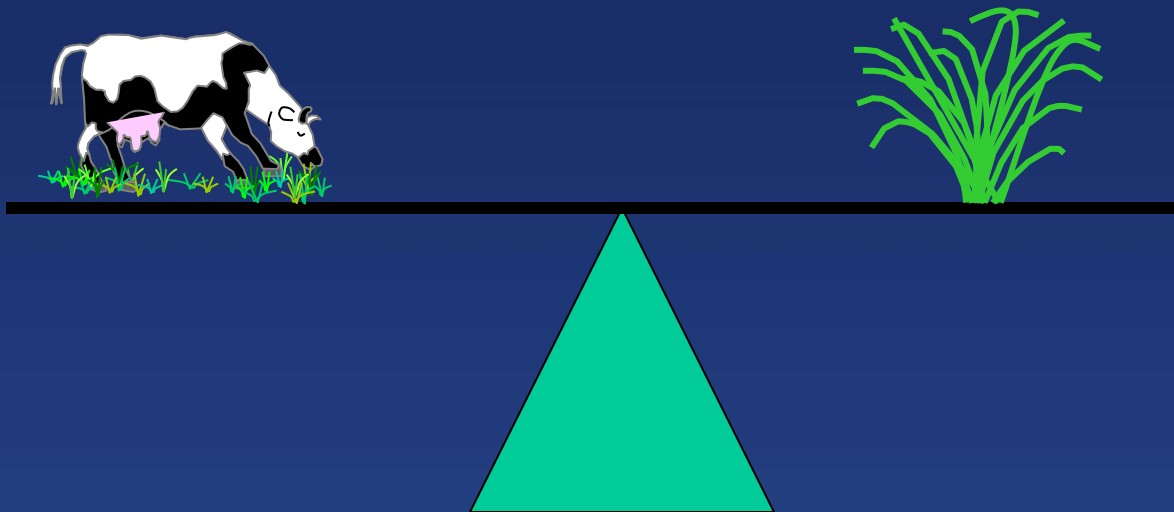
Time 



3 PHASES OF PASTURE GROWTH



The goal of a pasture plan is to ensure the forage supply is kept in balance with the forage demand



Once supply and demand are balanced, focus on nutritional balance of energy and protein

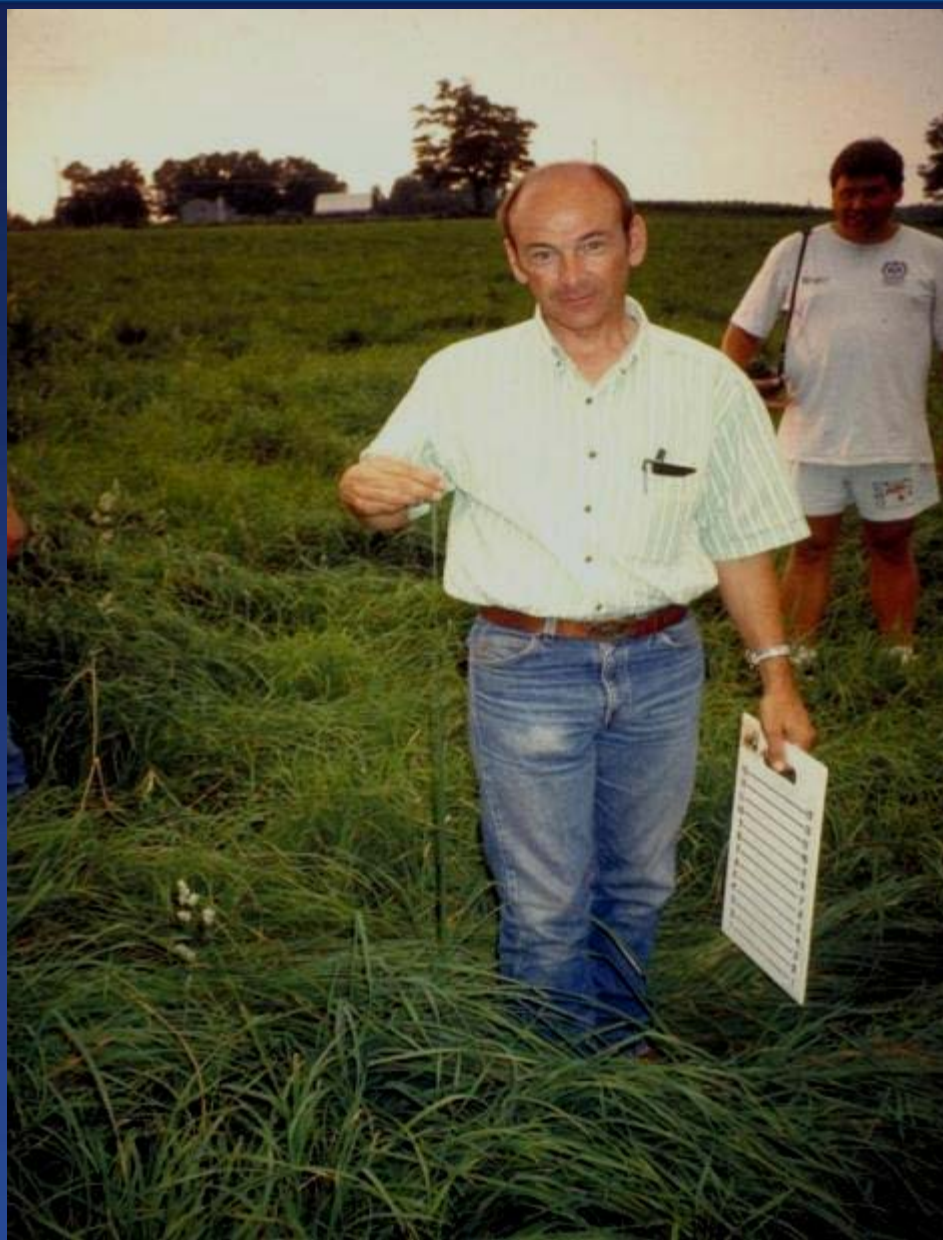
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20

16

12

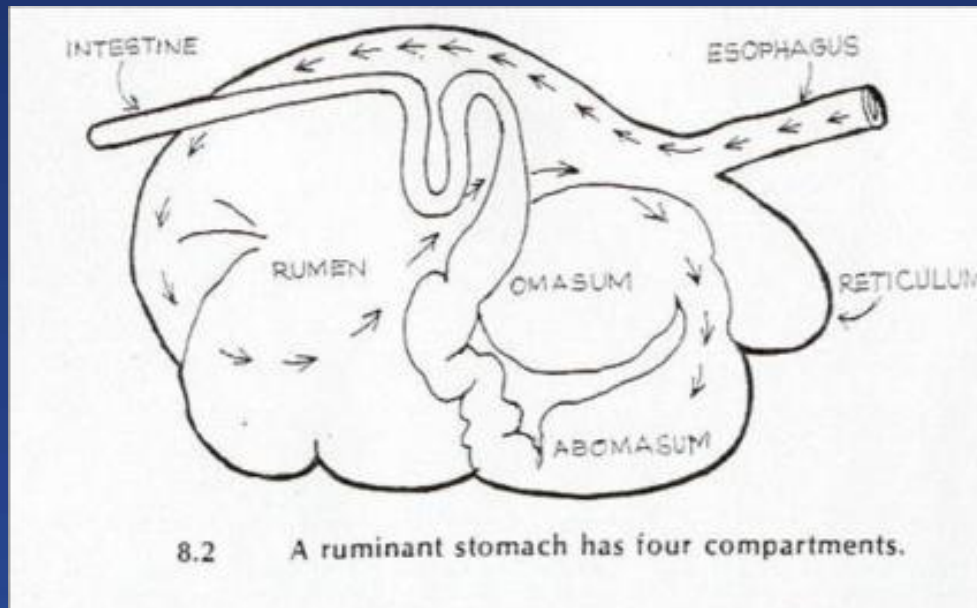
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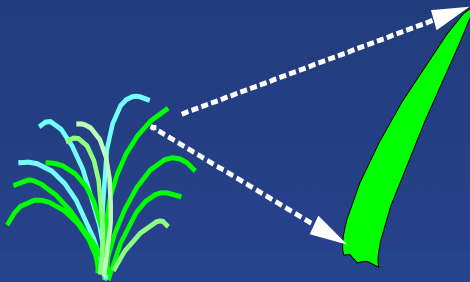
The Rumen Bug's Perspective

We feed the bugs
They feed the cow...

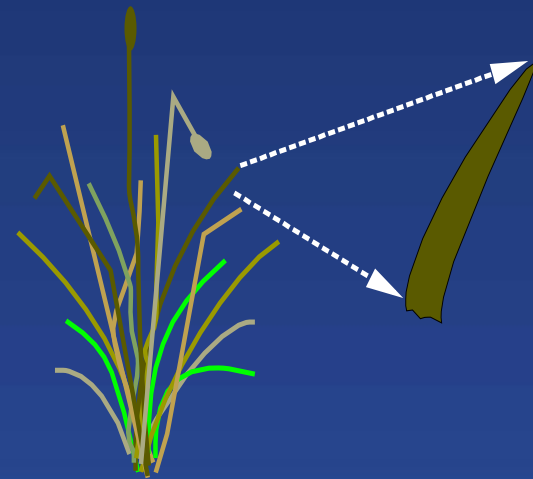


FORAGE QUALITY AND PLANT MATURITY

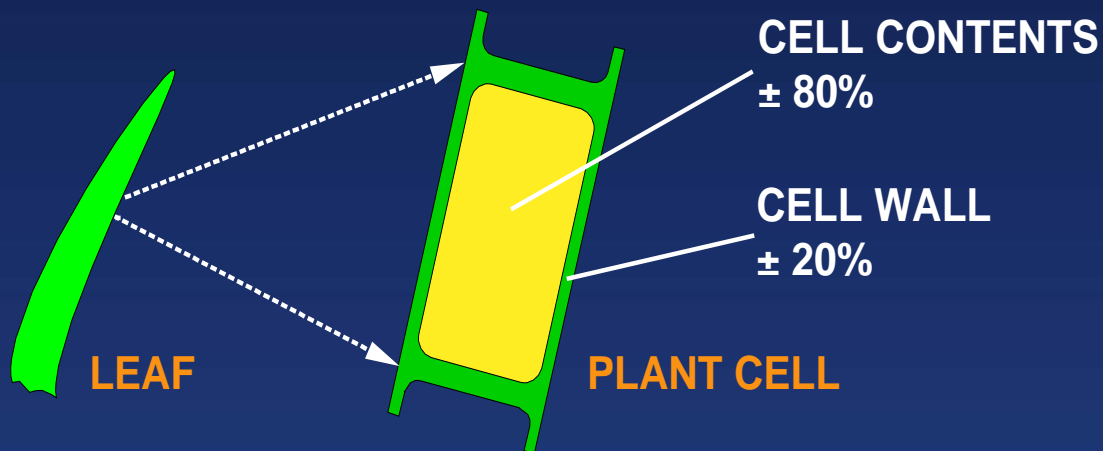
YOUNG
VEGETATIVE
PLANT



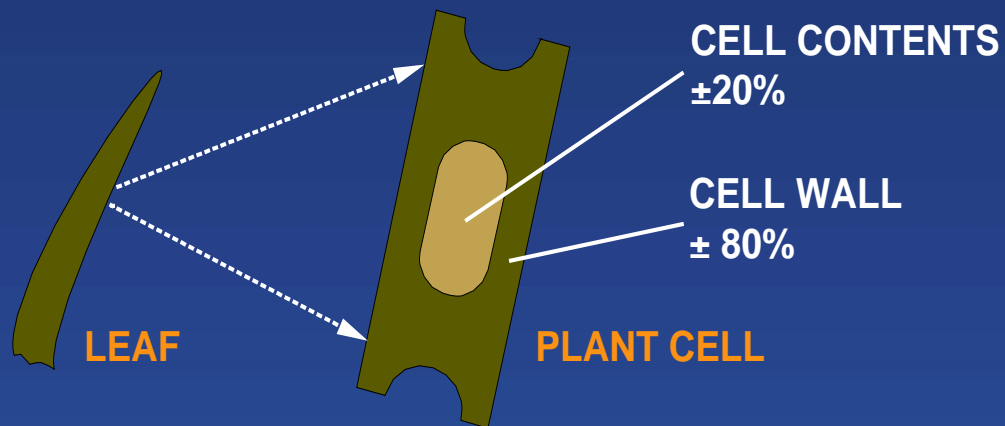
OLD
OVER-MATURE
PLANT



YOUNG VEGETATIVE PLANT

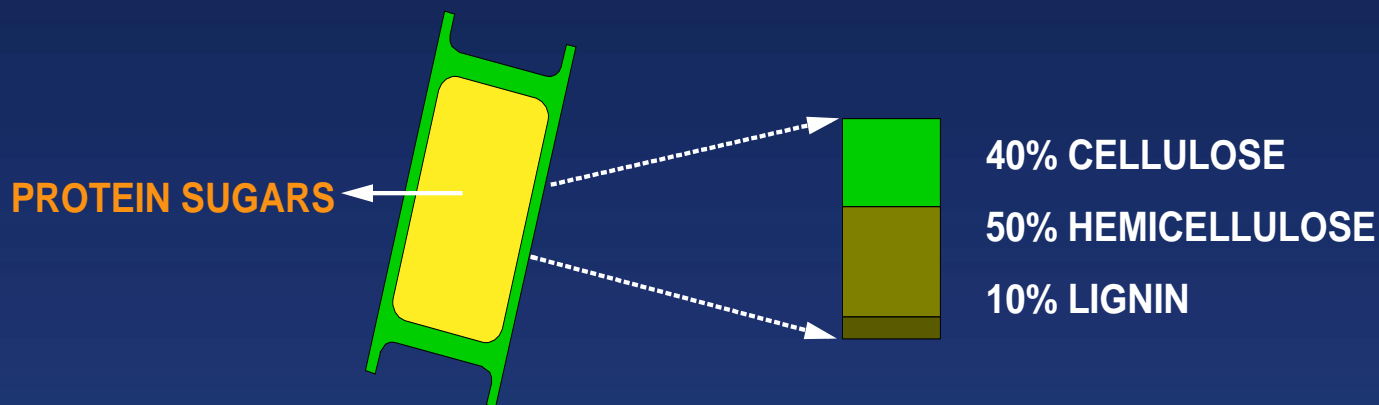


OLD OVER-MATURE PLANT

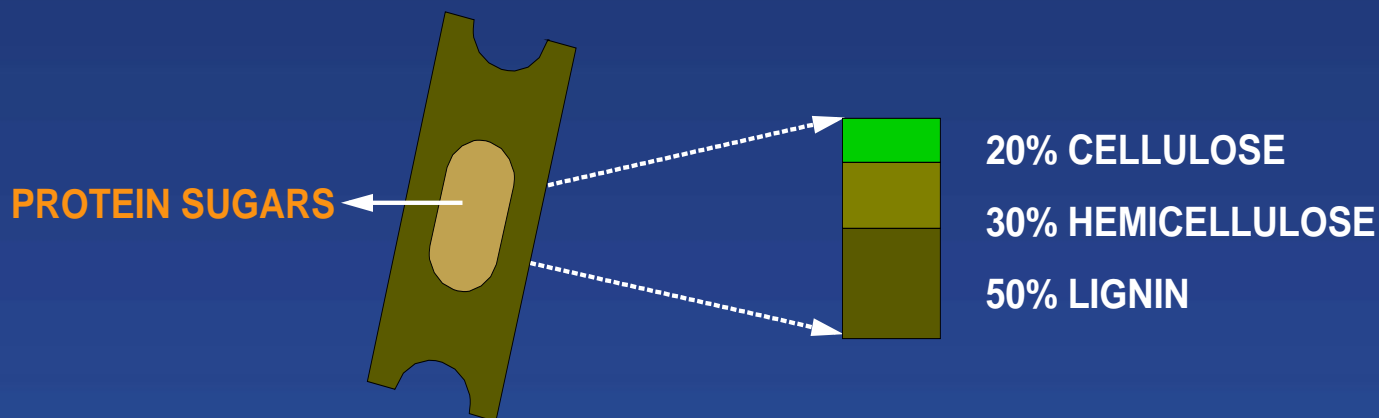


RELATIVE PROPORTION OF FIBER COMPONENTS

YOUNG VEGETATIVE PLANT



OLD OVER-MATURE PLANT



Typical forage quality

<u>NUTRIENT</u>	<u>PASTURE</u>	<u>HAY</u>	<u>HAYLAGE</u>
Dry Matter %	20-25	88-92	35-40
Crude Protein %	20-30	8-14	14-20
Net Energy _G , Mcal/lb	.50-.60	.40-.50	.45-.55
ADF% [*]	20-30	30-40	30-40
NDF% ^{**}	40-50	55-65	45-55

* Acid Detergent Fiber – cellulose + lignin

**Neutral Detergent Fiber – hemicellulose + cellulose + lignin

Pasture Samples

- Must represent what animals eat
 - No “random samples”
 - Livestock graze selectively!
- Sample paddock being grazed
 - “But they’ll eat it before the results are back!”
 - Are the results reliable?
 - YES! If all paddocks managed same, quality will be similar

Pasture Samples

- Watch what animals eat
- Pretend you are an animal
- Sample multiple locations in paddock
- Mix samples, pack in plastic bag, freeze



How Often Should You Sample?

- First 3 Years Most Critical
 - New management
 - Fertility or forage species changes
 - Weather
 - Builds your “database”
- After Database Established
 - Based on milk production or ADG changes, weather and growth

NDF and Intake

- Lower NDF = higher intake
- NDF from forage
 - Low Quality Stored
 - 0.8-1.0% of body weight
 - High Quality Stored
 - 1.0-1.2% of body weight

NDF and Intake

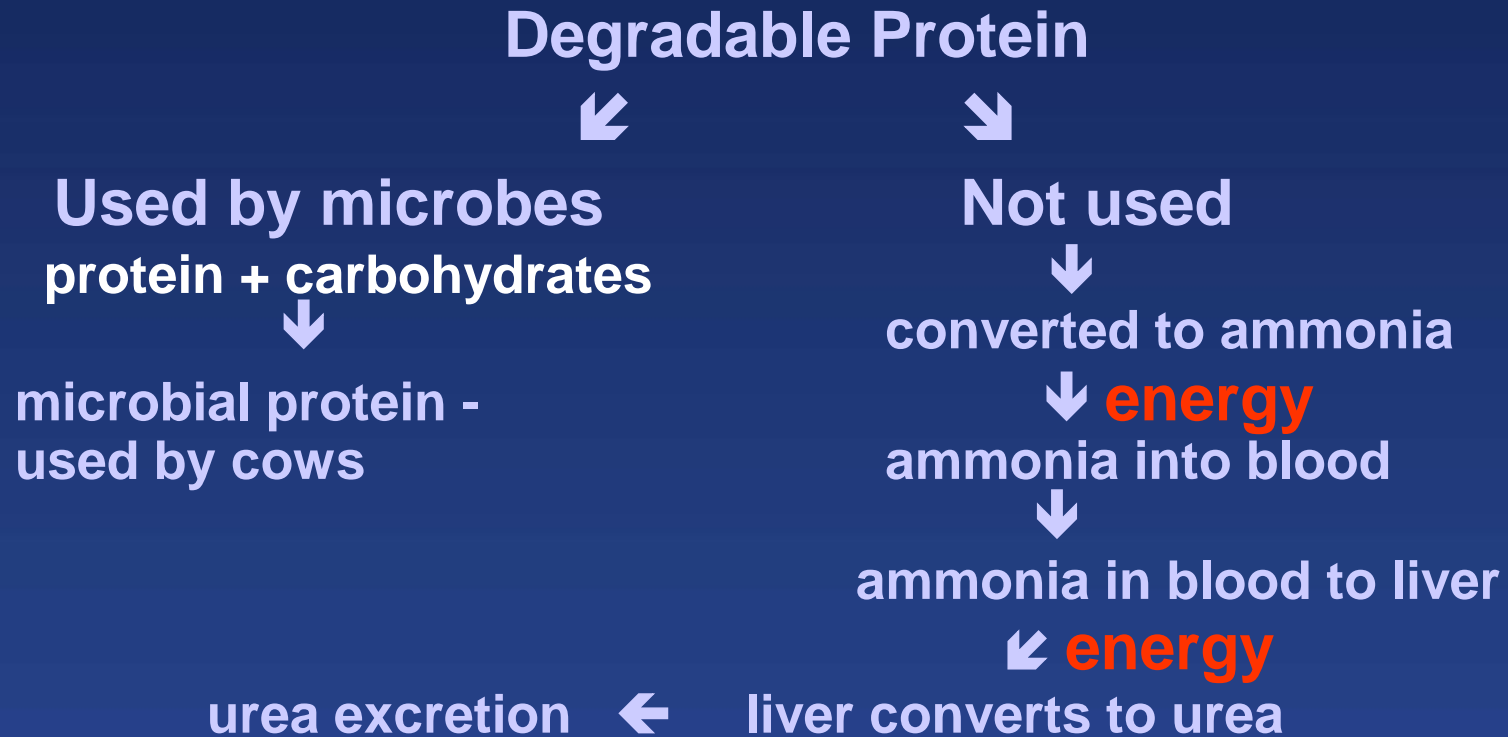
- Forage NDF Intake
 - Pasture + Grain
 - Up to 1.4% of body weight
 - Total DMI up to 4% BW
 - Pasture Only
 - Total DMI up to 3.25% BW
 - Milk production limit

Pasture is the most digestible forage and
has highest intake potential

Protein and Energy

- Rumen bugs
 - Protein = peptides, amino acids
 - Combine carbs with protein
 - More rumen bugs
- No carbs
 - Ammonia production
 - Converted to urea
 - High MUN

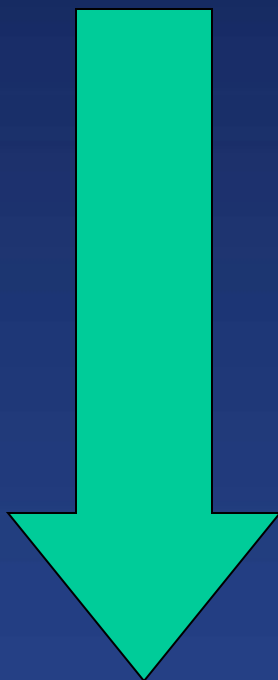
How Excess Degradable Protein Wastes Energy



NFC Digestion Rates



FASTEST



SLOWEST

Molasses

Ground Oats, Barley

Finely Ground Corn

High Moisture Corn

Coarse Ground Corn

Ear Corn

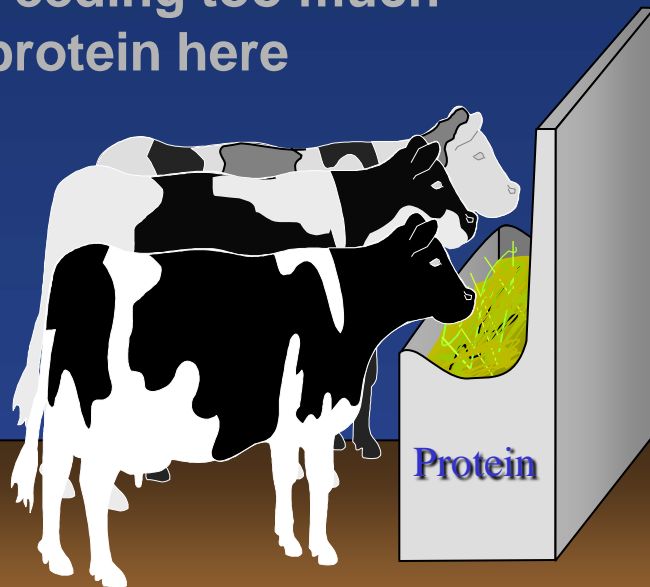
Corn Silage

Whole Dry Corn

Post-ingestive feedback is a very rapid process, and it can change what an animal prefers to eat in a matter of minutes.

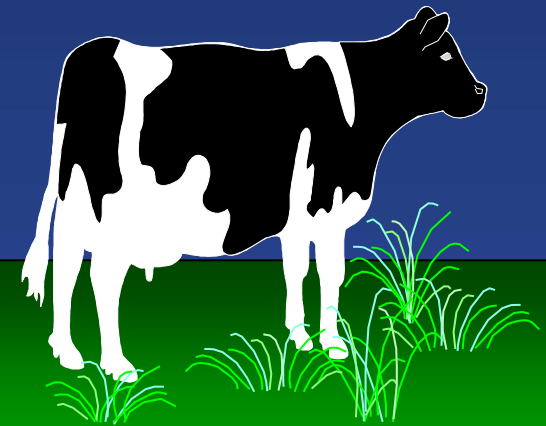
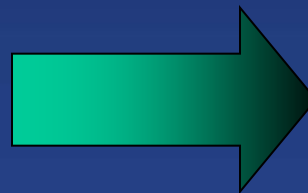
So be careful what you feed in the barn!

Feeding too much protein here



=

A decrease in dry matter intake here



Supplementation In The Barn

- Substitution effects
 - Too much stored forage
 - pound for pound
 - Too much TMR
 - > pound for pound
 - Too much protein
 - Post-ingestive feedback

Typical Dairy Rations

<u>FEED</u>	<u>CONFINEMENT</u>	<u>PASTURE</u>
Haylage	30	10
Corn Silage	30	15
Pasture	0	100
Corn Grain	16	24
Soybean Meal	10	2

Price of soybean meal is high – big savings
with pasture!

Beef requirements vs. Forage quality

<u>NUTRIENT</u>	<u>COW/CALF</u>	<u>STEER*</u>	<u>PASTURE</u>	<u>HAY</u>
CP%	8–12	10-11	20.0	12
NE _G , Mcal/lb		0.48	0.50	0.32
NE _M , Mcal/lb	0.55	0.76	0.70	0.58
TDN%	58	70	68	60

* 800 lb – 2.5 lb/day ADG, finish weight 1000-1200 lbs

Economics

- Growing animals will use some energy to eliminate protein
 - Costs less to grow protein
 - No need to purchase
 - May need to purchase energy
- One reason why grass-finishing takes longer than grain-finishing

Other Livestock

- Does any of this apply?

Yes!

- Some energy used to eliminate protein
- Cow-calf, ewe-lamb pairs
 - Protein-energy issues not as pronounced



Take home messages

- Dairy
 - High value pasture
 - Energy supplementation
- Grass-finishing beef
 - Manage pastures like dairy
- Other kinds and classes
 - Pasture can be lower value and meet nutritional needs

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