

Improving Forage Quality

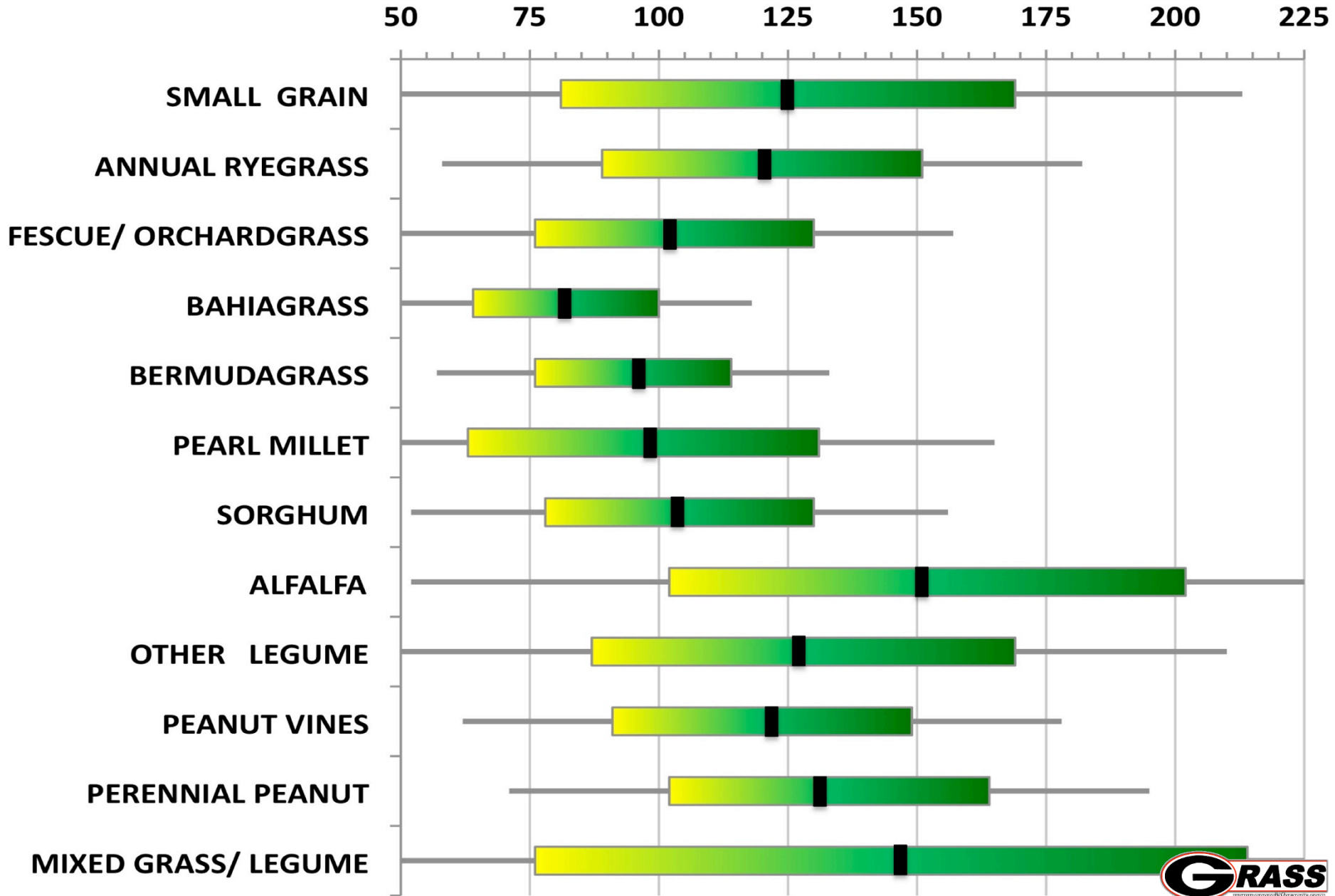
Seven management factors to consider when trying to improve the quality of stored forage



Dr. Lisa Baxter
University of Georgia-Tifton

Hay and Baleage Short Courses
Spring 2018

Relative Forage Quality (RFQ)

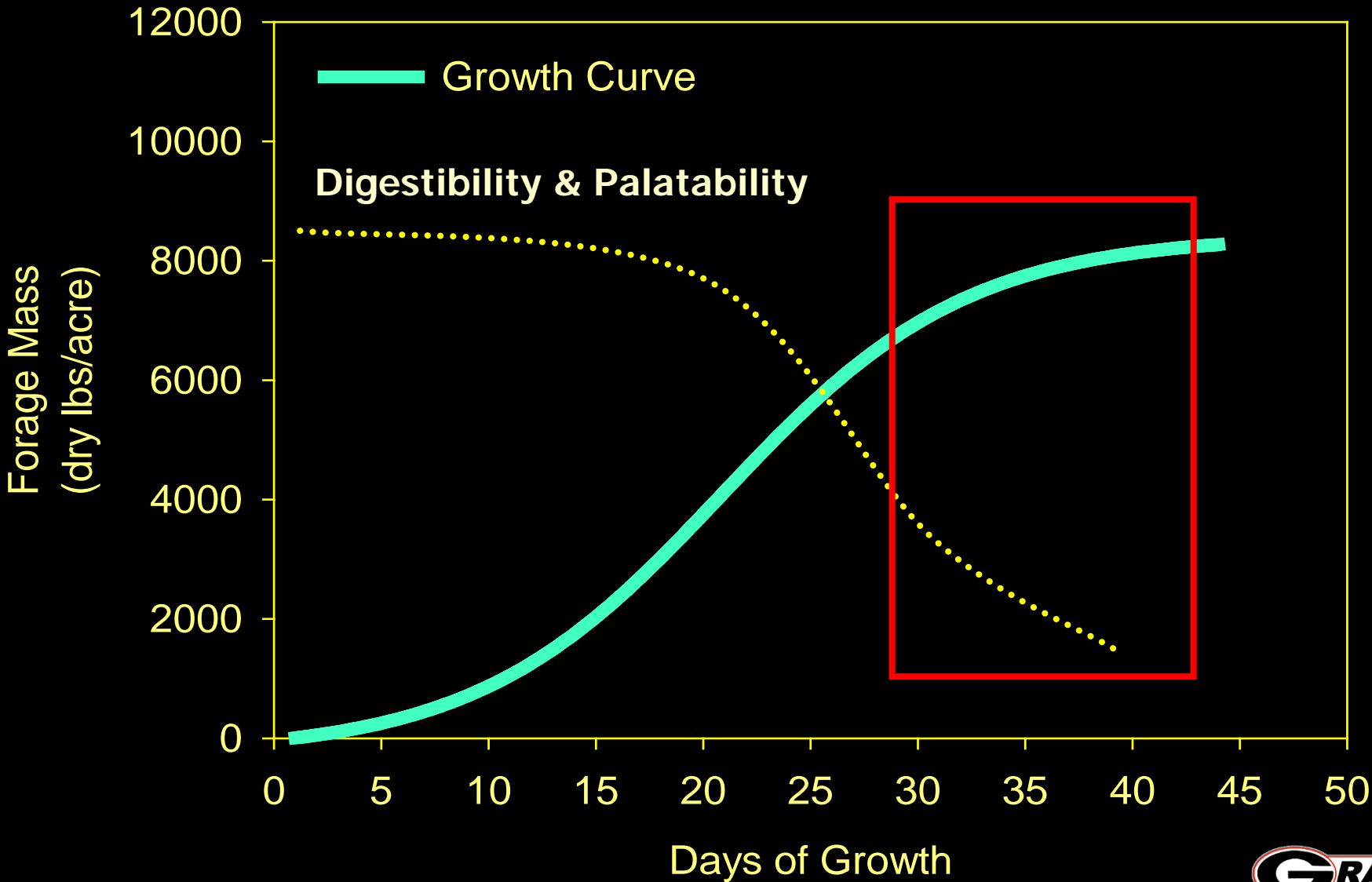


Primary factors affecting forage quality

Factor	Recommendation
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Plant Maturity	Cut bermudagrass every 4-5 wks; cut tall fescue in the boot or early head stage.
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Forage quality vs. quantity





Bermudagrass maturity → digestibility

■ Digested DM/Ac ■ Undigested DM/Ac



Harvest timing recommendations

- **Hybrid Bermudagrass**

- 1st cut at 12-16 inches
- Subsequent cuttings at 3.5-5 week intervals

- **Tall fescue, ryegrass, orchardgrass, etc.**

- Spring cut at early flower stage or mid to late boot stage for higher quality
- Subsequent cuttings at 10-12 inches (better quality)

- **Alfalfa**

- Spring cut at when 10-20% of plants are blooming
- Cut at late bud, ~ 10% bloom stage

Be Careful of Cutting Height...

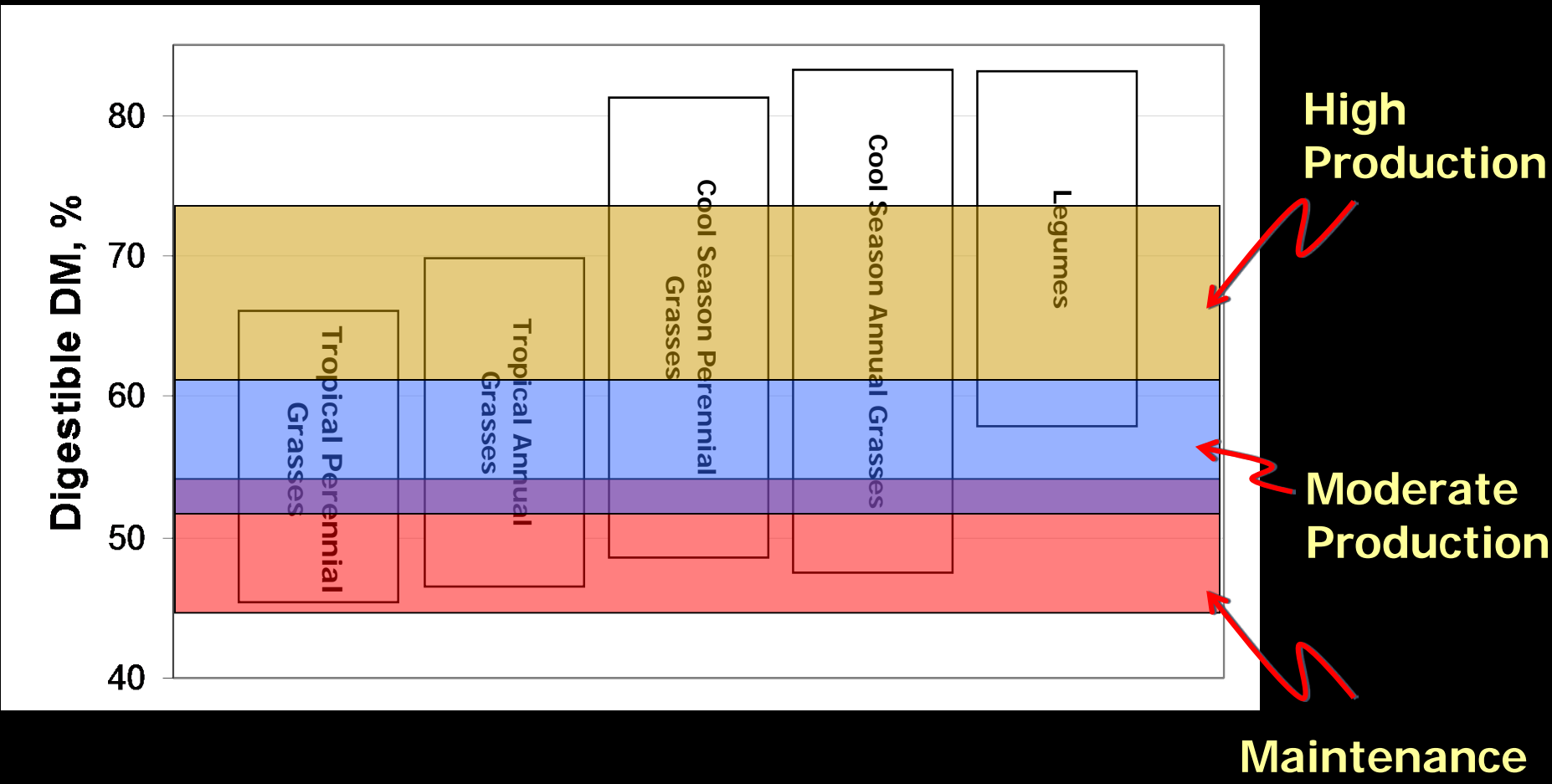
"GRASS GROWS GRASS."



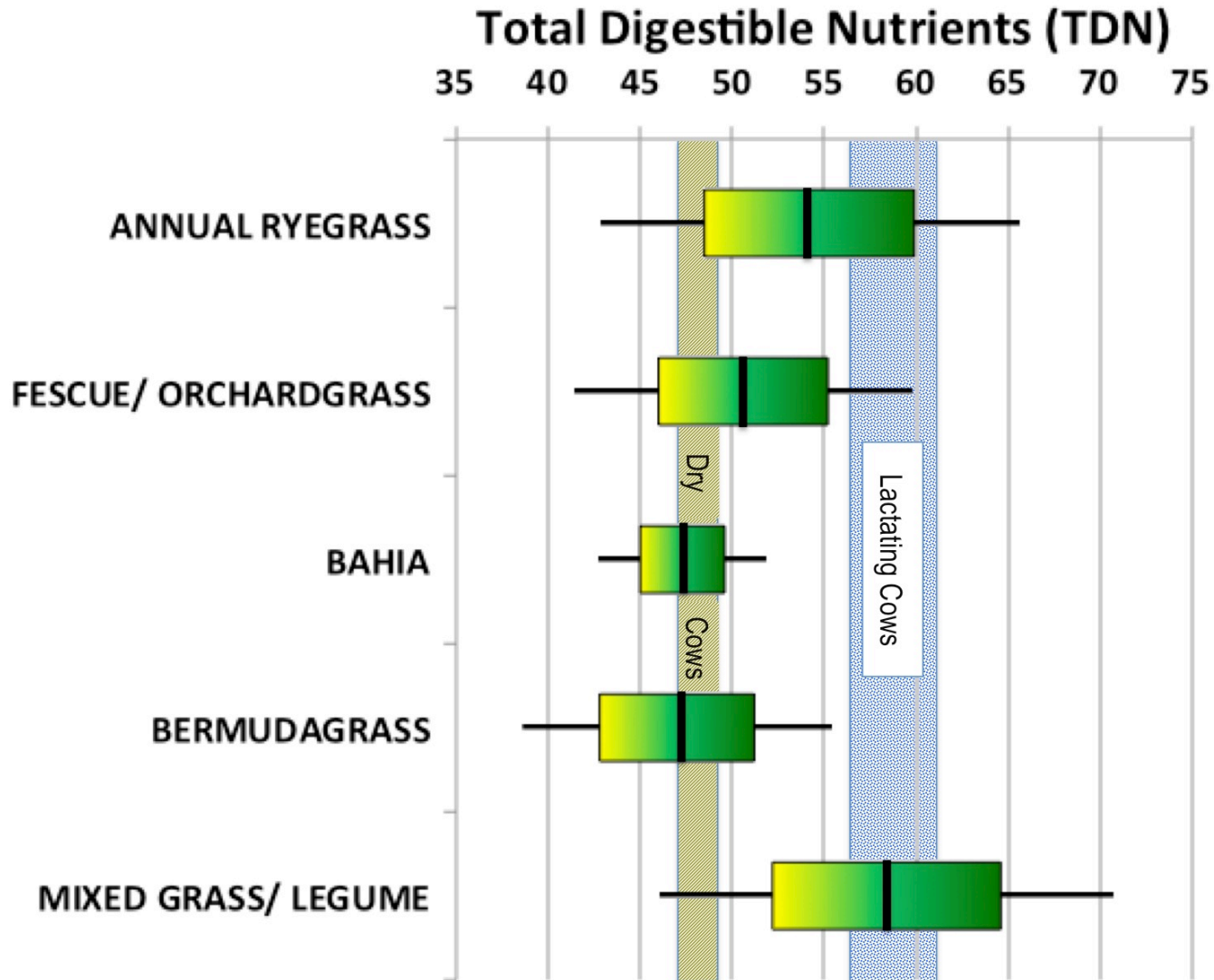
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Forage Species	Use the highest-quality species that will persist in your environment.

Quality differences in forage types



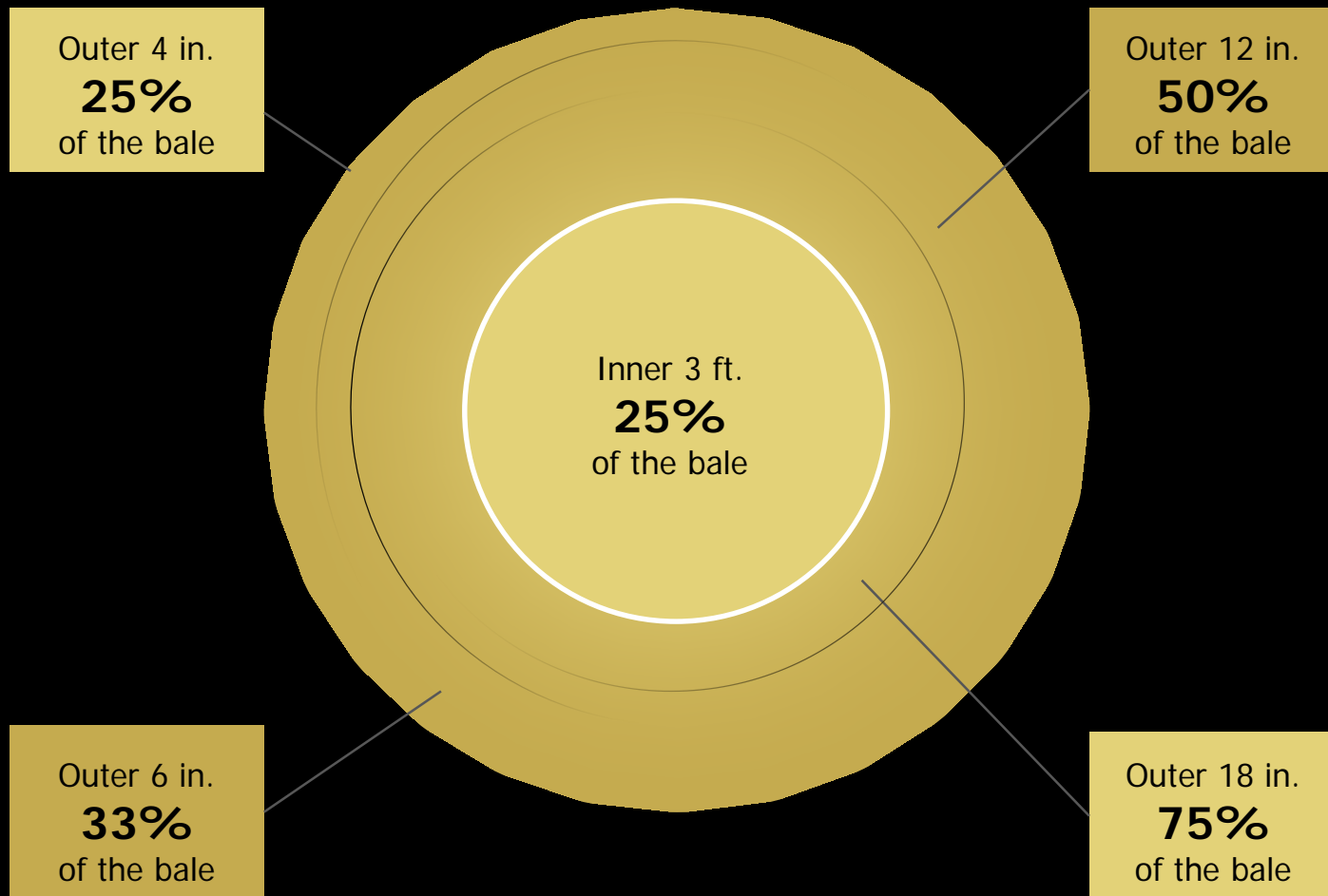
Quality differences in major forage species



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Bale Storage	Protect bales from rainfall and weathering during storage (i.e., barn, tarp, etc.).

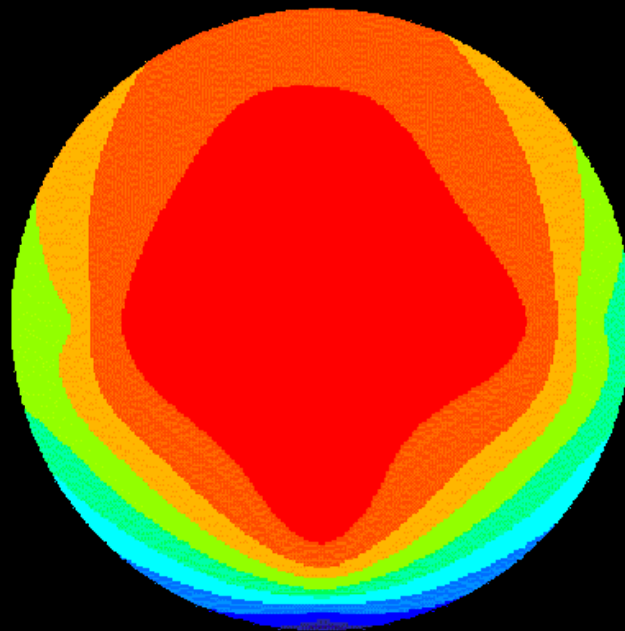
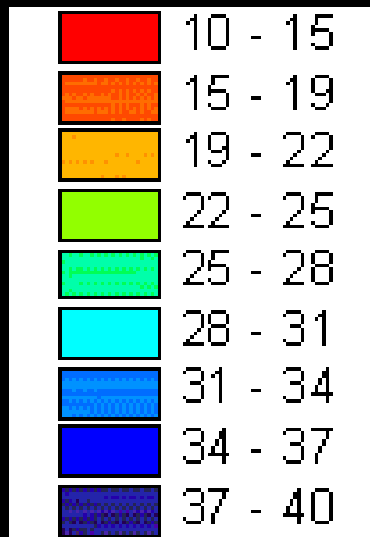
Approximate proportions of hay within the structure of a 6 ft. diameter bale



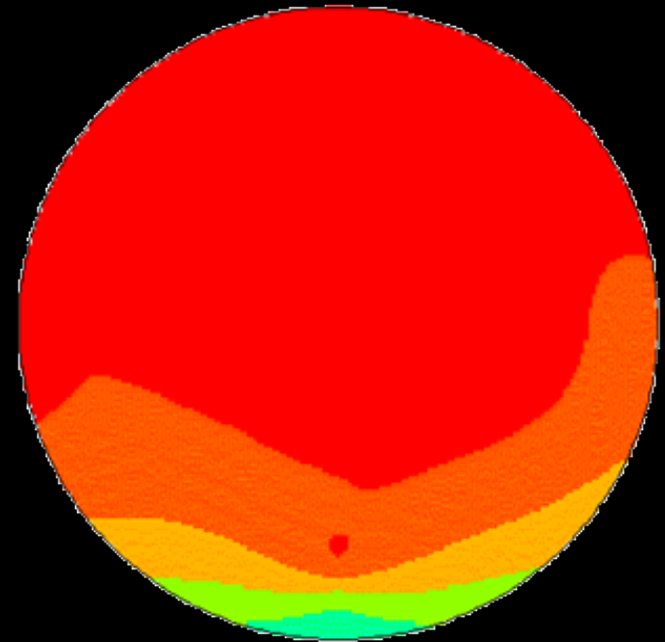


Moisture distribution of mixed grass-legume round bales stored on the ground

% Moisture



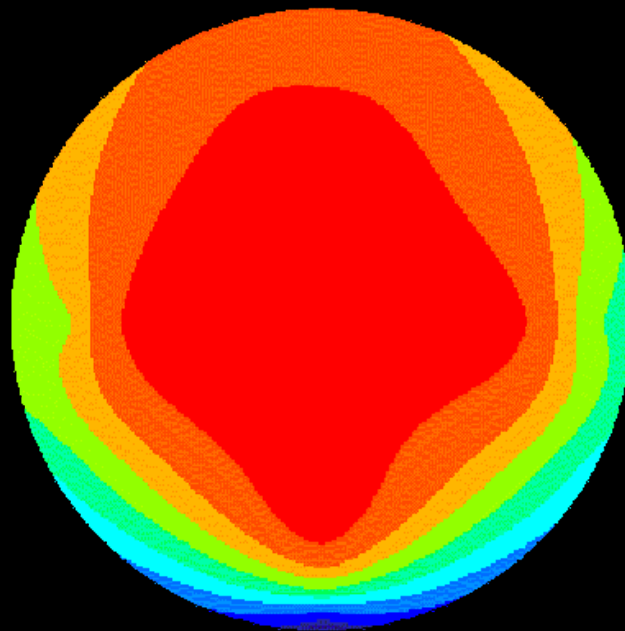
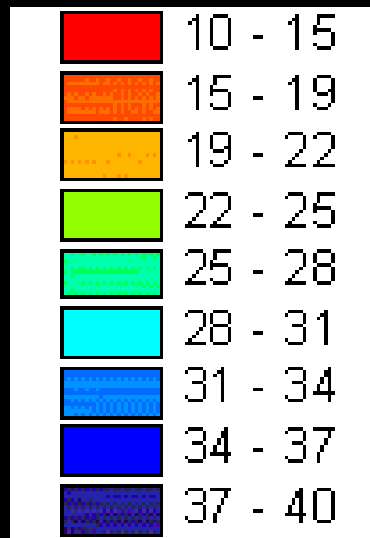
Twine Wrapped



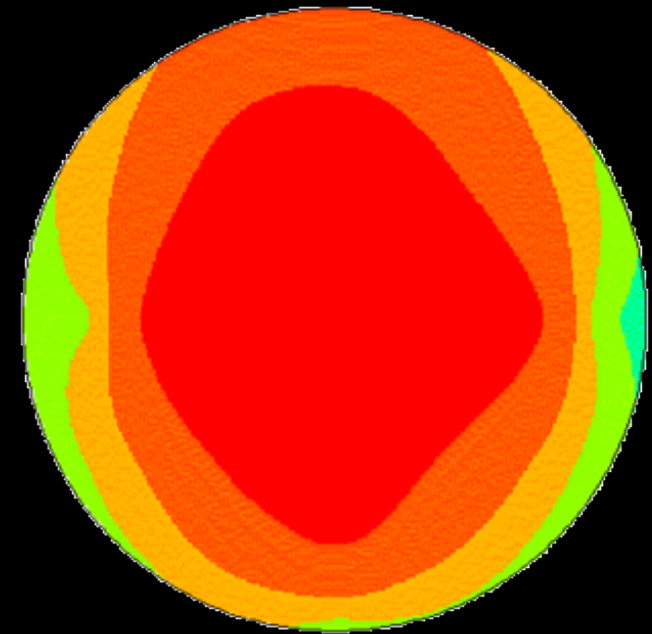
Net Wrapped

Moisture distribution of mixed grass-legume round bales stored on the ground vs. elevated

% Moisture



Twine Wrapped

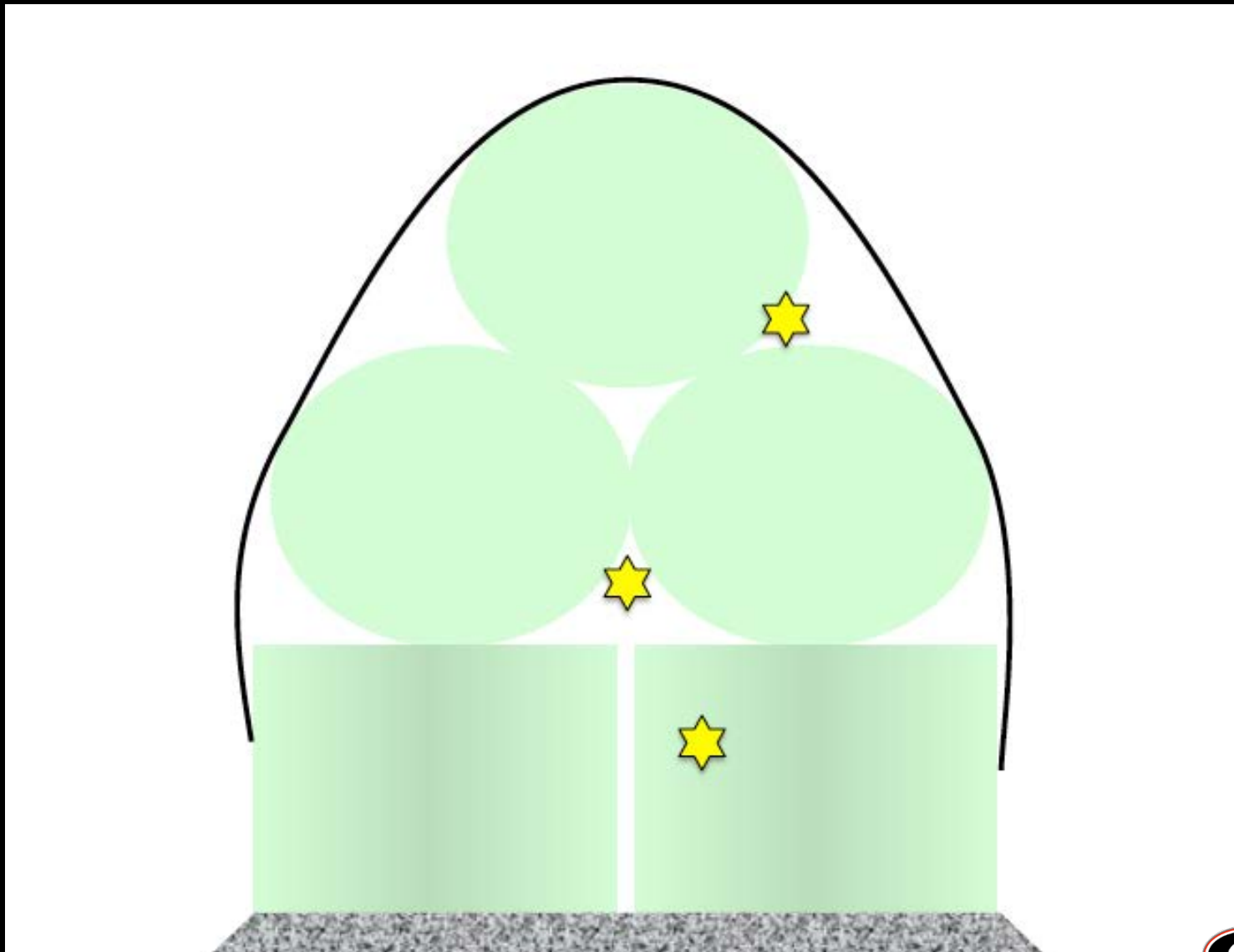


On a Pallet

Consider air flow in stacked hay

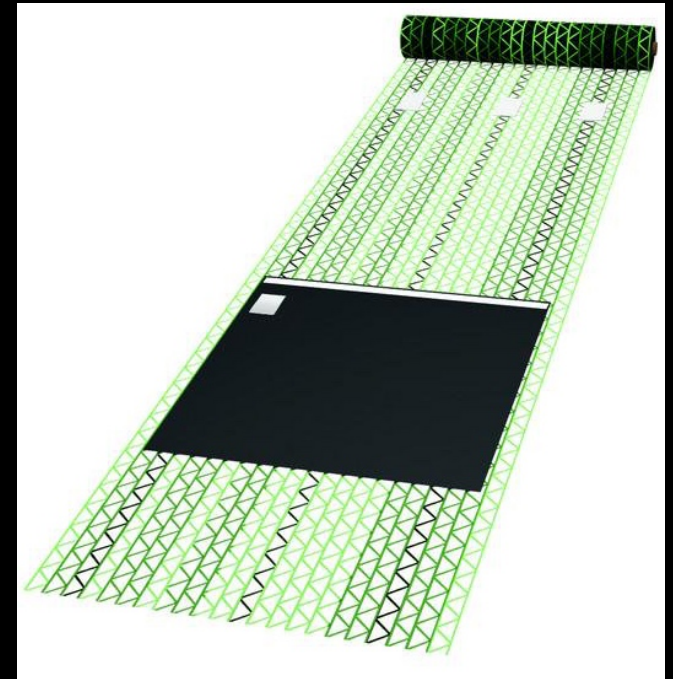


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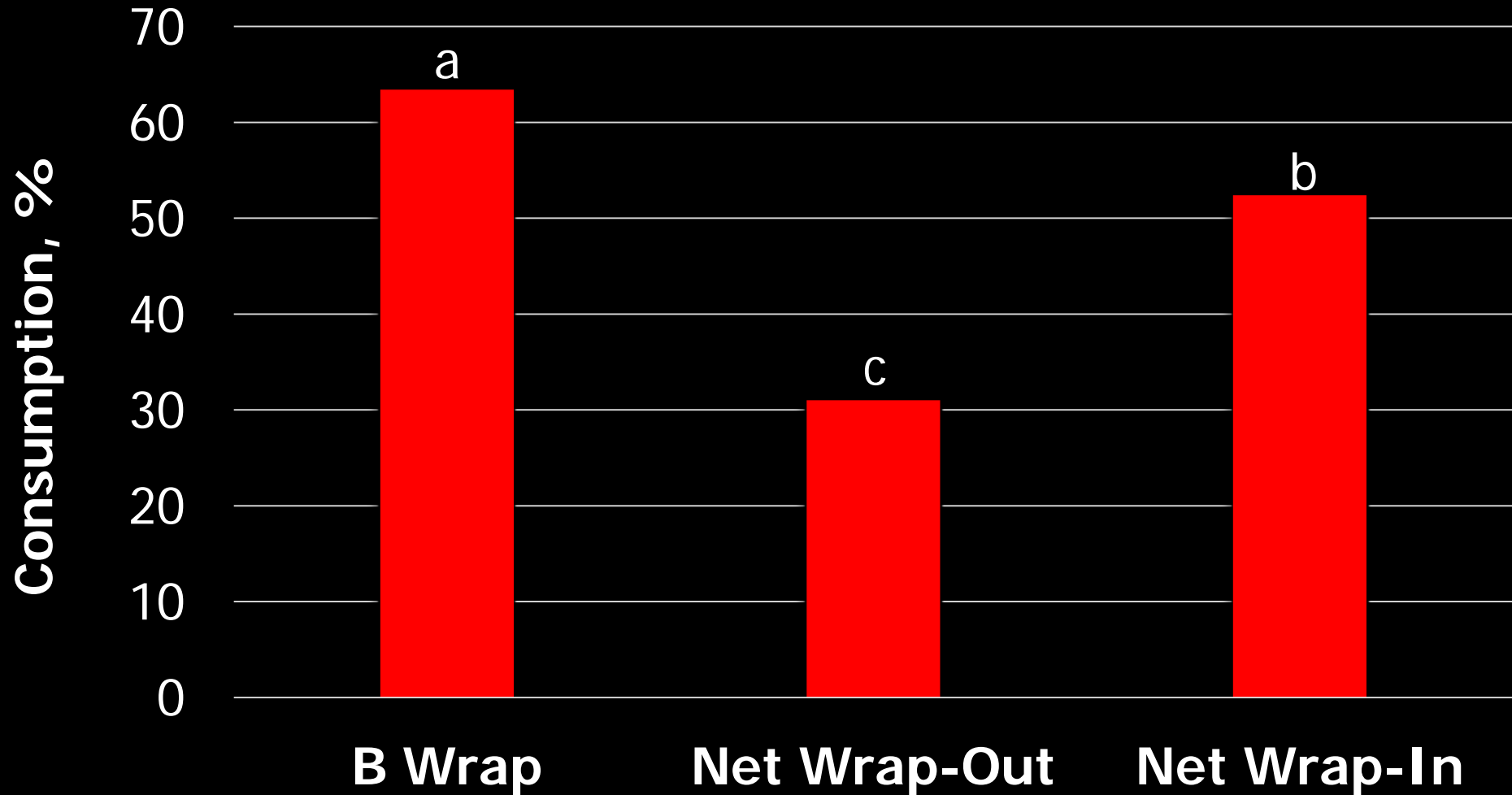


Breathable Net Wrap ("B-Wrap")

- Sheds rain, snow, and ice
- Permeable to water vapor
- On Deere's 6' balers in the 7, 8, 9, and 0 series
 - Requires application kit
- More expensive than barn storage
 - ~\$7-8/roll



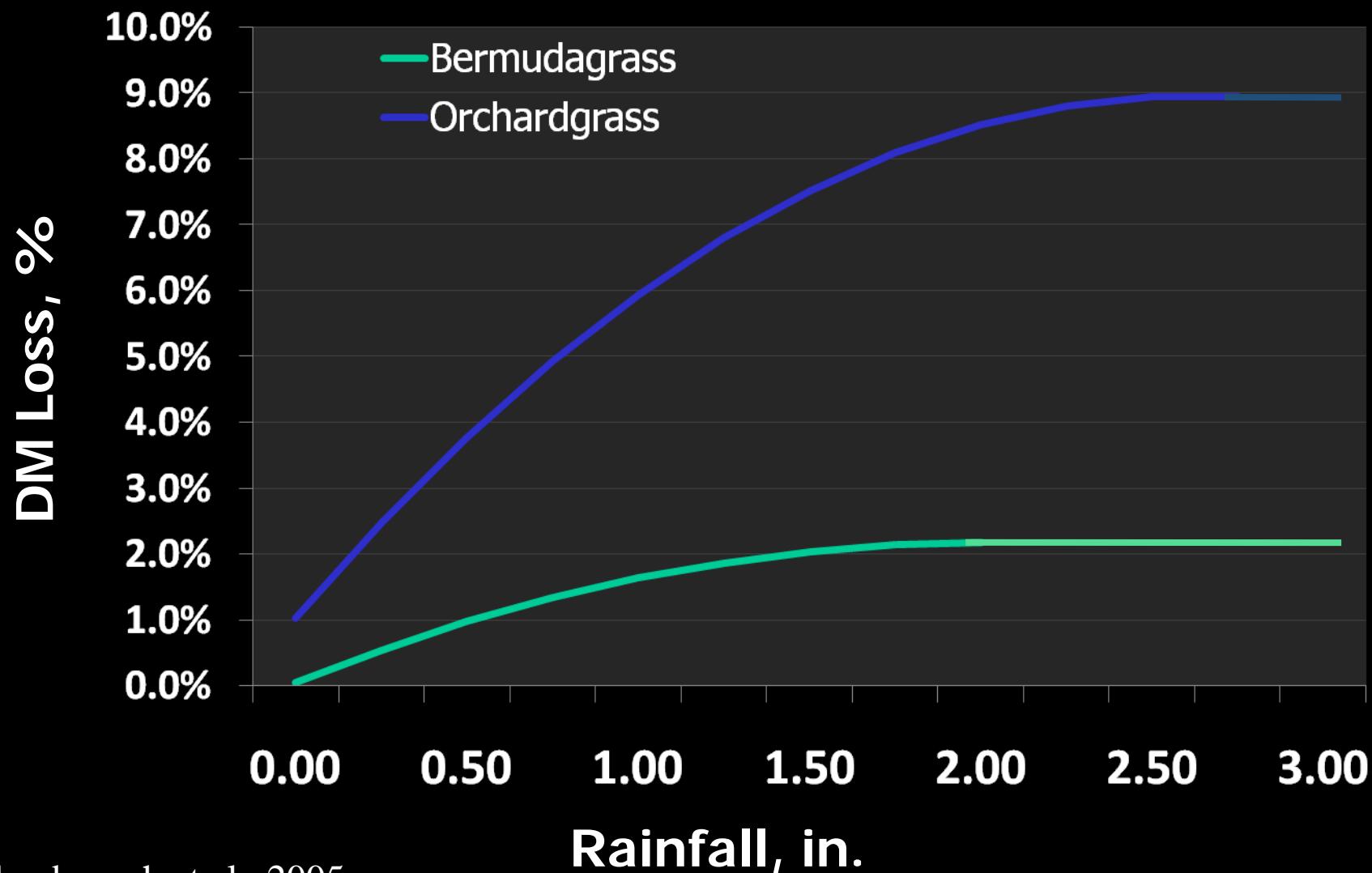
Consumption of hay made on offer – Avg. over 5 trials



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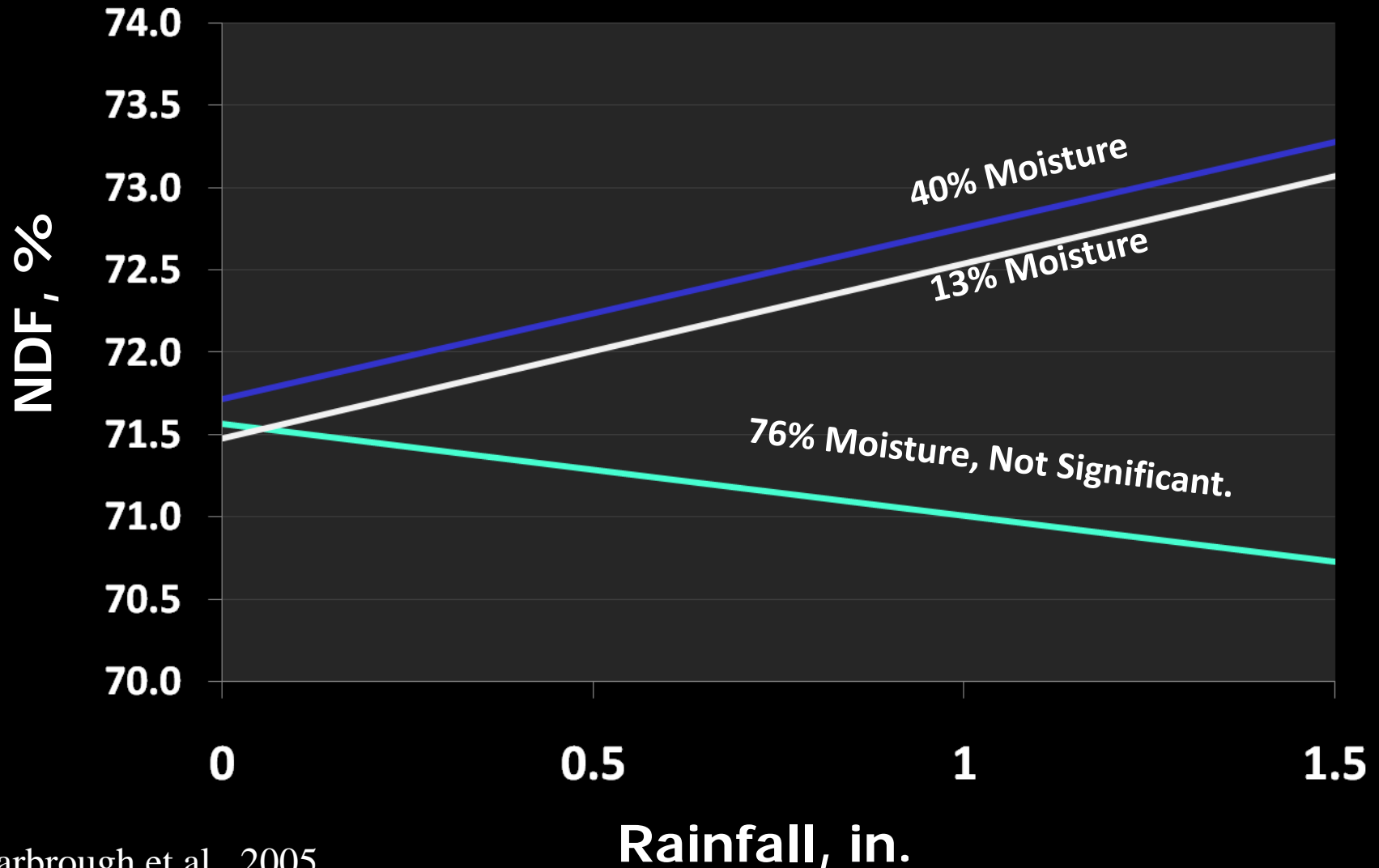
The effect of rainfall on DM loss



The effect of rainfall on tall fescue hay

	No Rain	Rain Damage
➔ Intake, % of b.w.	2.10	1.92
NDF, %	68.1	76.0
➔ Digestibility, %	63.2	59.7

Crop moisture lessens rain damage on bermudagrass



Primary factors affecting forage quality

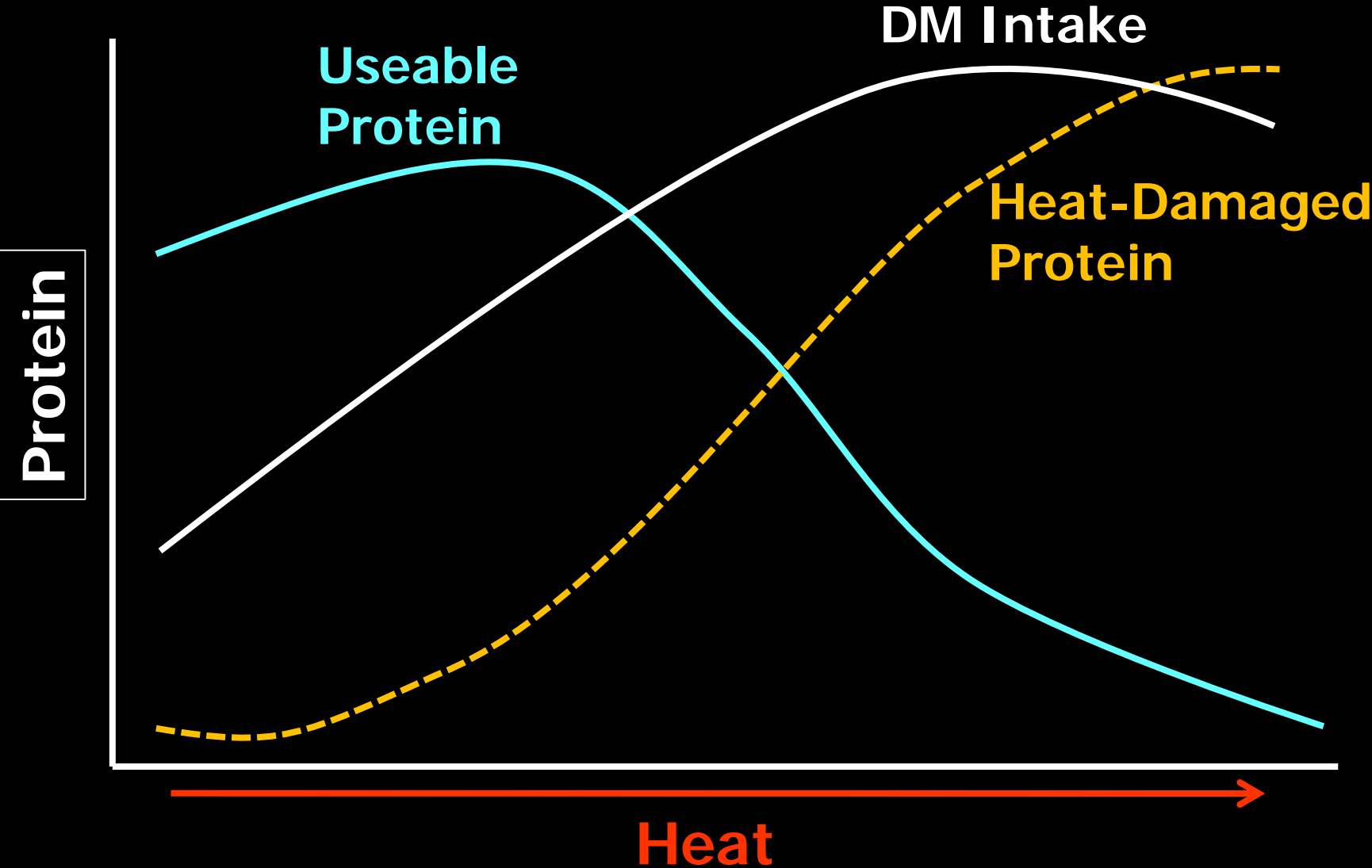
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Moisture at baling	Allow forage to dry to the appropriate moisture (Round: 15%; Square: 18%)

Spontaneous combustion of hay



Picture Credit: G.J. Charlet III, Clinton, LA Vol. Fire Dept. via flickr.com

Heat damage to crude protein

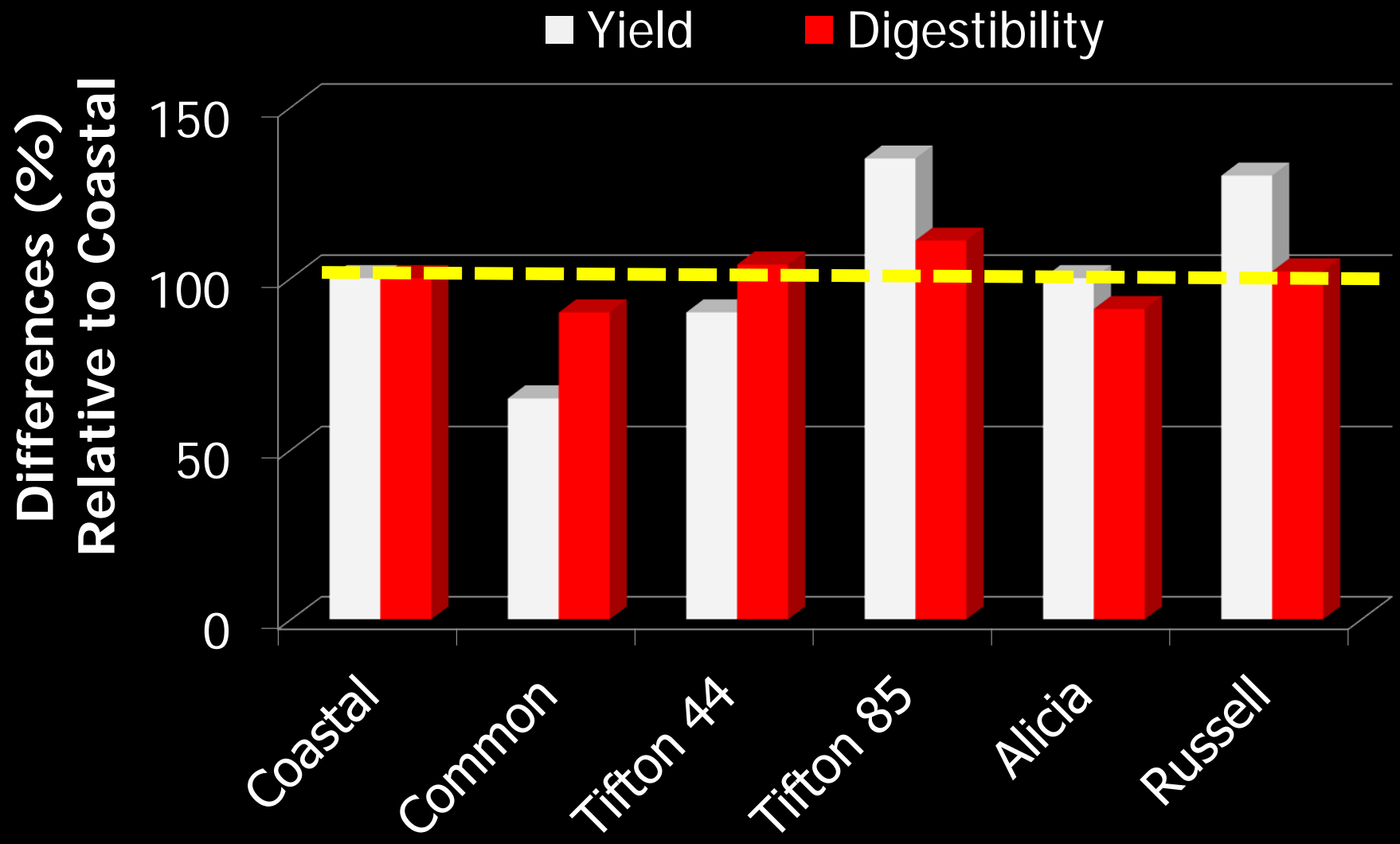


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Variety	Use varieties that have proven to be higher in quality.



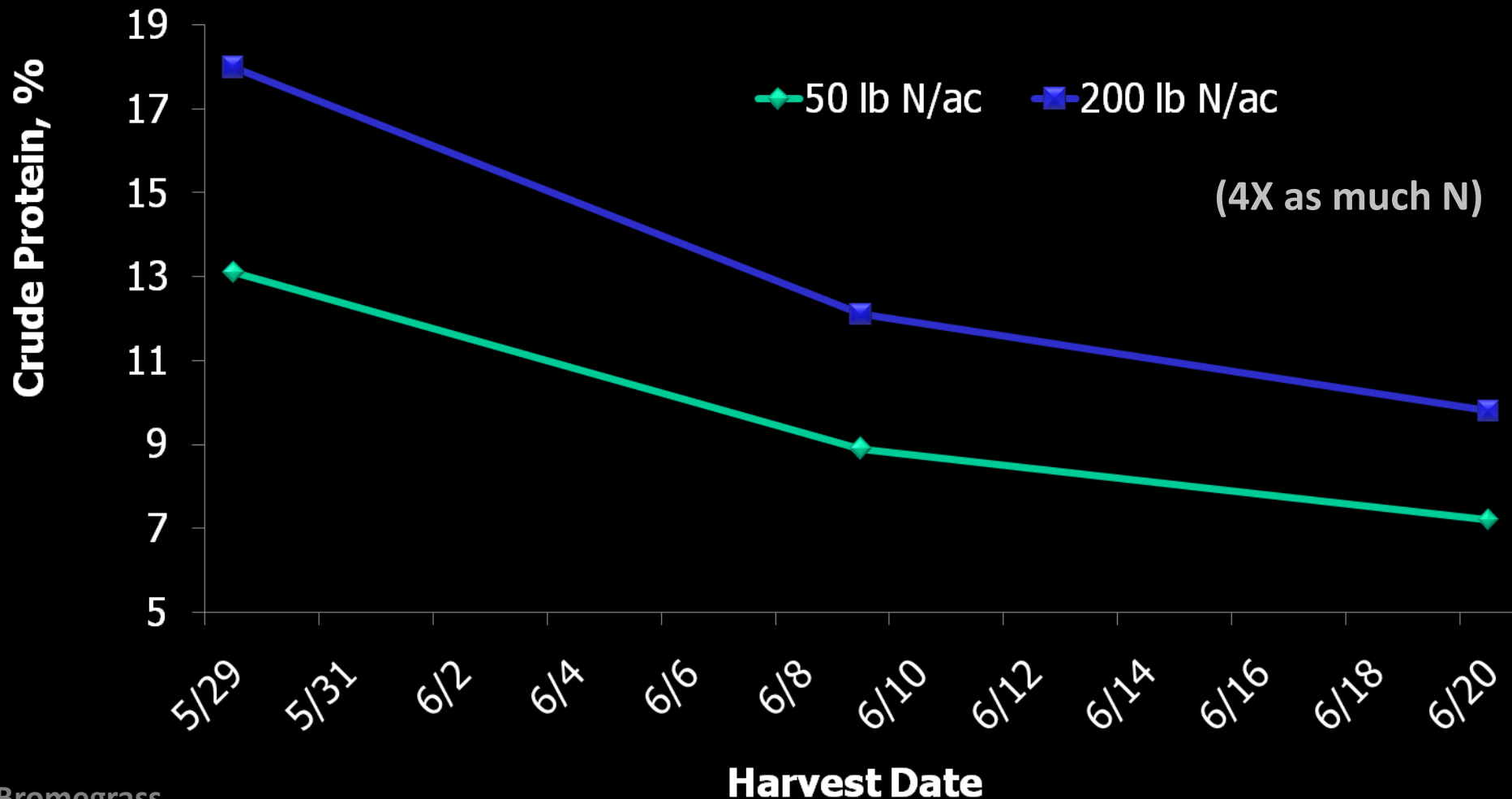
Yield and digestibility of bermudagrass hybrids



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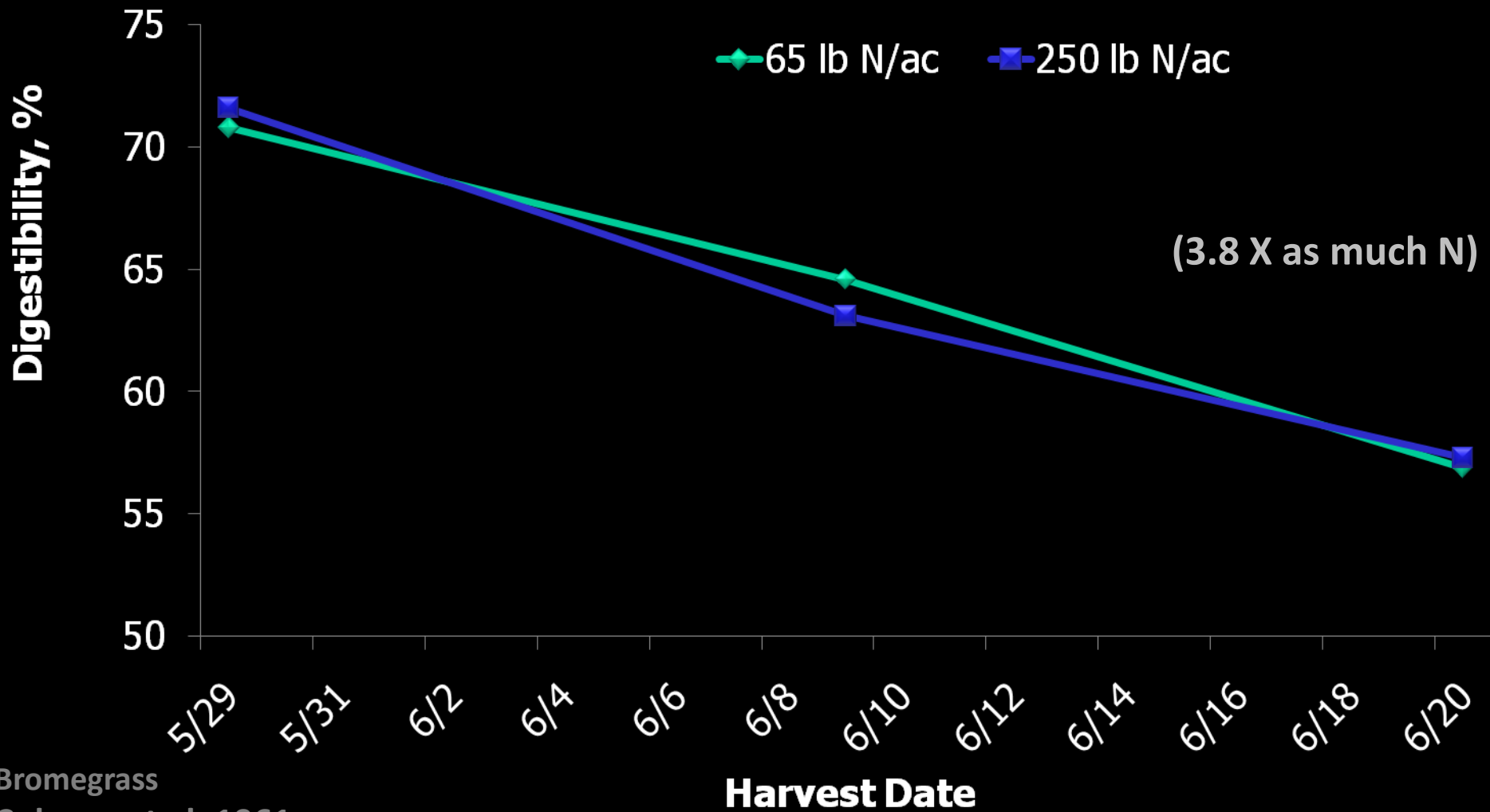
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Variety	Use varieties that have proven to be higher in quality.
Fertilization	Provide fertilizer based on soil test recommendations.

Does fertility or harvest timing affect quality more? → Crude Protein



Bromegrass
Colovos et al. 1961

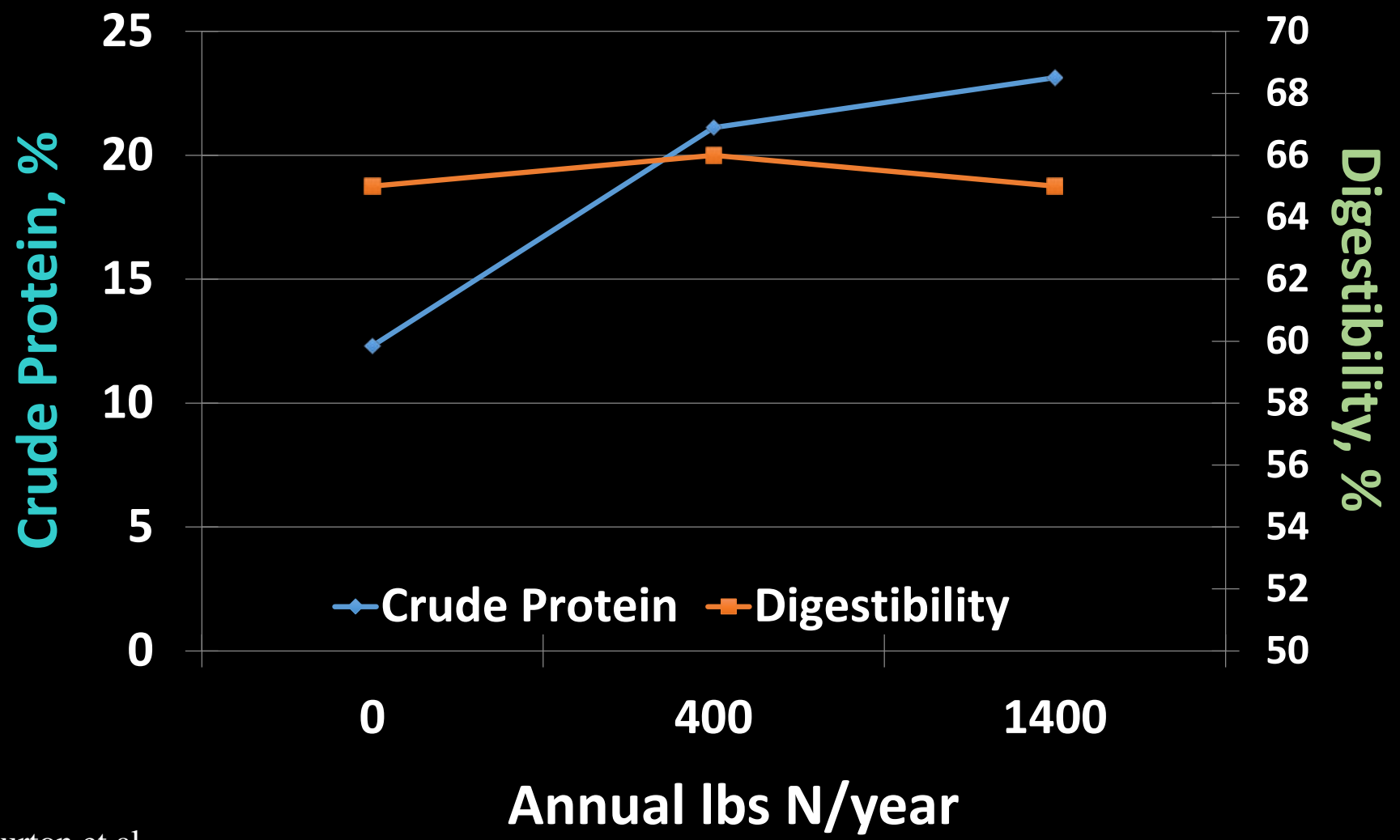
Does fertility or harvest timing affect quality more? → Digestibility



Brome grass
Colvos et al. 1961



Effect of N rates on bermudagrass crude protein and digestibility



QUESTIONS?



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