SMALL RUMINANT NUTRITION

SUSAN SCHOENIAN
Sheep & Goat Specialist
Western Maryland Research & Education Center
sschoen@umd.edu – www.sheepandgoat.com

UNIVERSITY OF MARYLAND EXTENSION
SMALL RUMINANT PROGRAM

Why is nutrition so important?

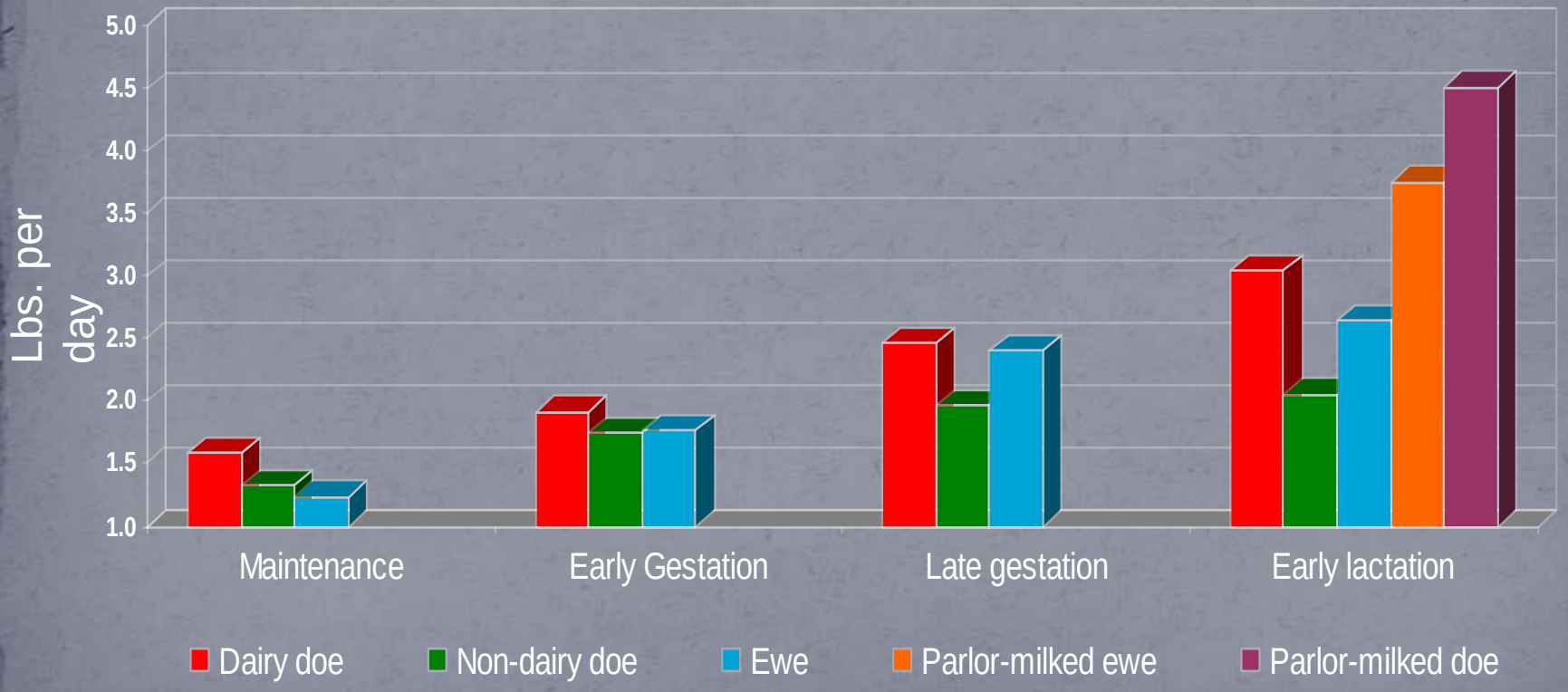
- Nutrition is the foundation of good production.
- Production levels vary by nutrition levels.
- Feed is the largest cost of production.
- Poor nutrition and nutritional imbalances can cause many health problems.
- Poorly-fed animals are more susceptible to diseases.

Nutrient requirements depend on …

- Species and genetics
- Size (weight)
- Age
- Stage and level of production
- Climate, environment, a nd activity.
- Body condition

Species and genetics

Energy (TDN) requirements of 132-lb. mature females (twin bearing)



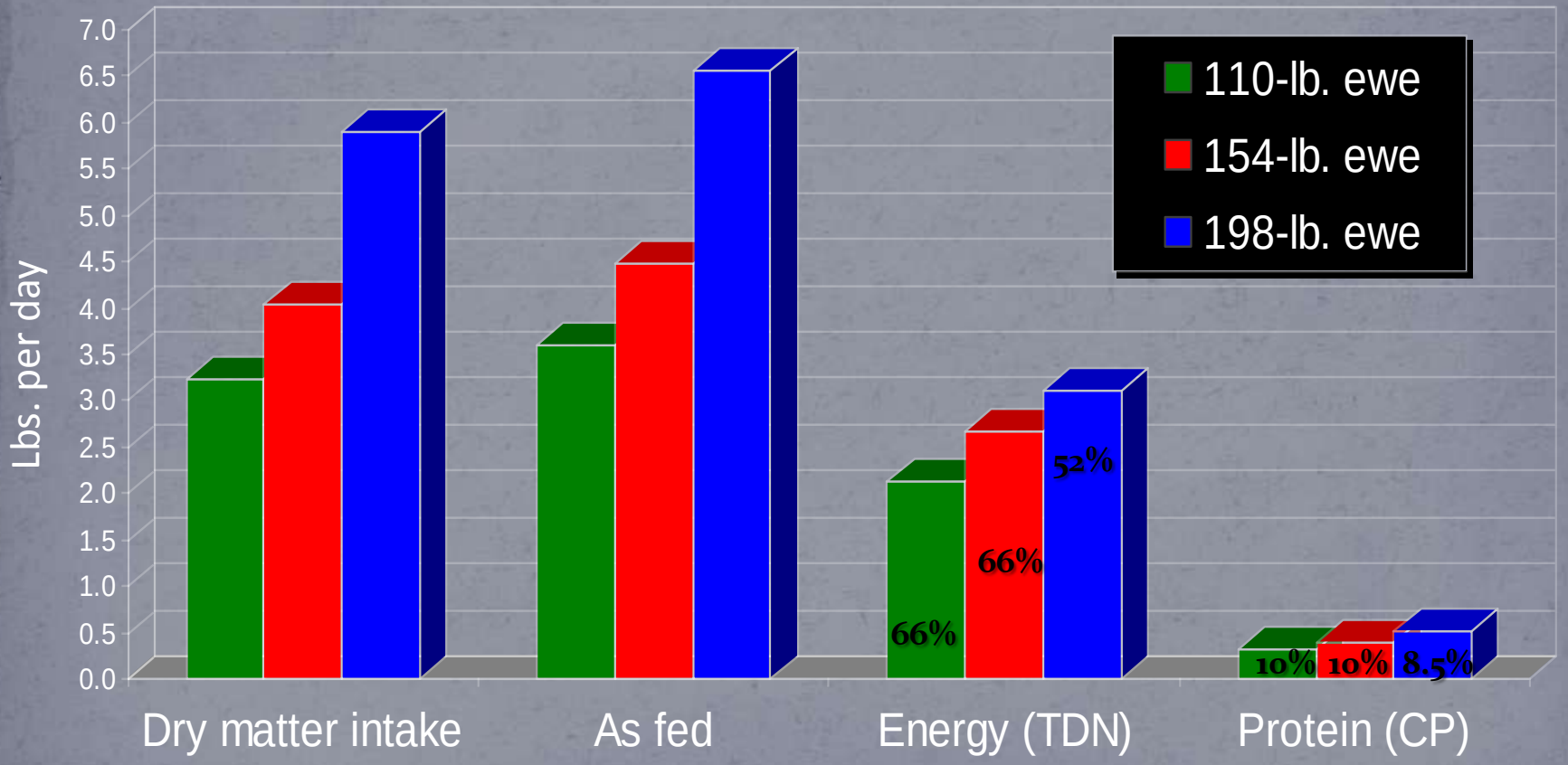
NRC 2007

What you need to know:

- Sheep have lower maintenance requirements than goats.
- Dairy goats have higher maintenance requirements than meat and fiber goats.
- Females with a higher genetic potential for milk production have higher nutritional requirements.

Size (weight)

Nutrient requirements of ewes in late gestation (twin fetuses)



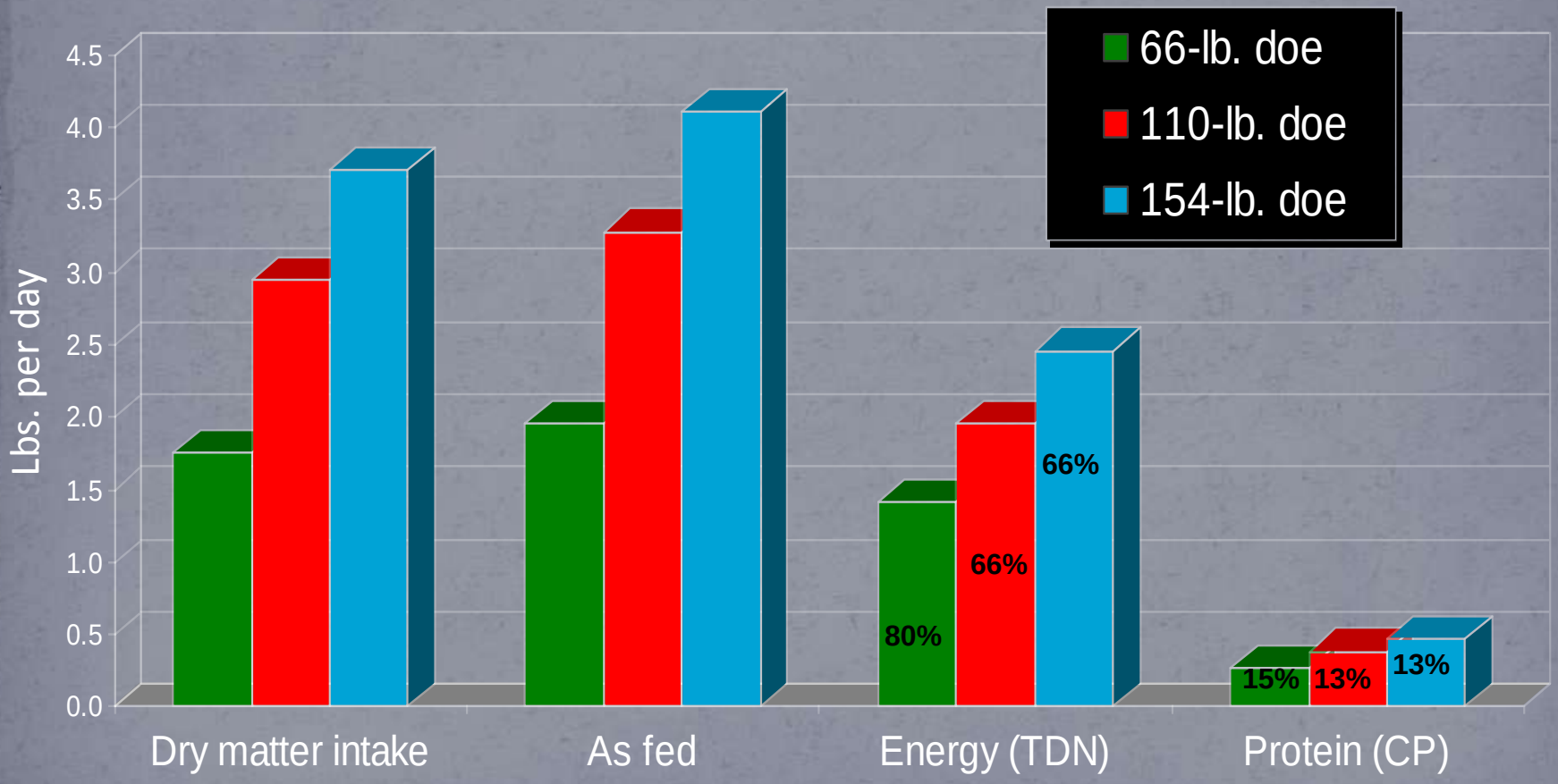
NRC, 2007

What you need to know:

- Bigger sheep have lower maintenance requirements than smaller sheep.
- Bigger sheep need to eat more and consume larger quantities of nutrients.
- However, smaller sheep need to consume a more nutrient-dense diet.

Size (weight)

Nutrient requirements of non-dairy does in late gestation (twin fetuses)



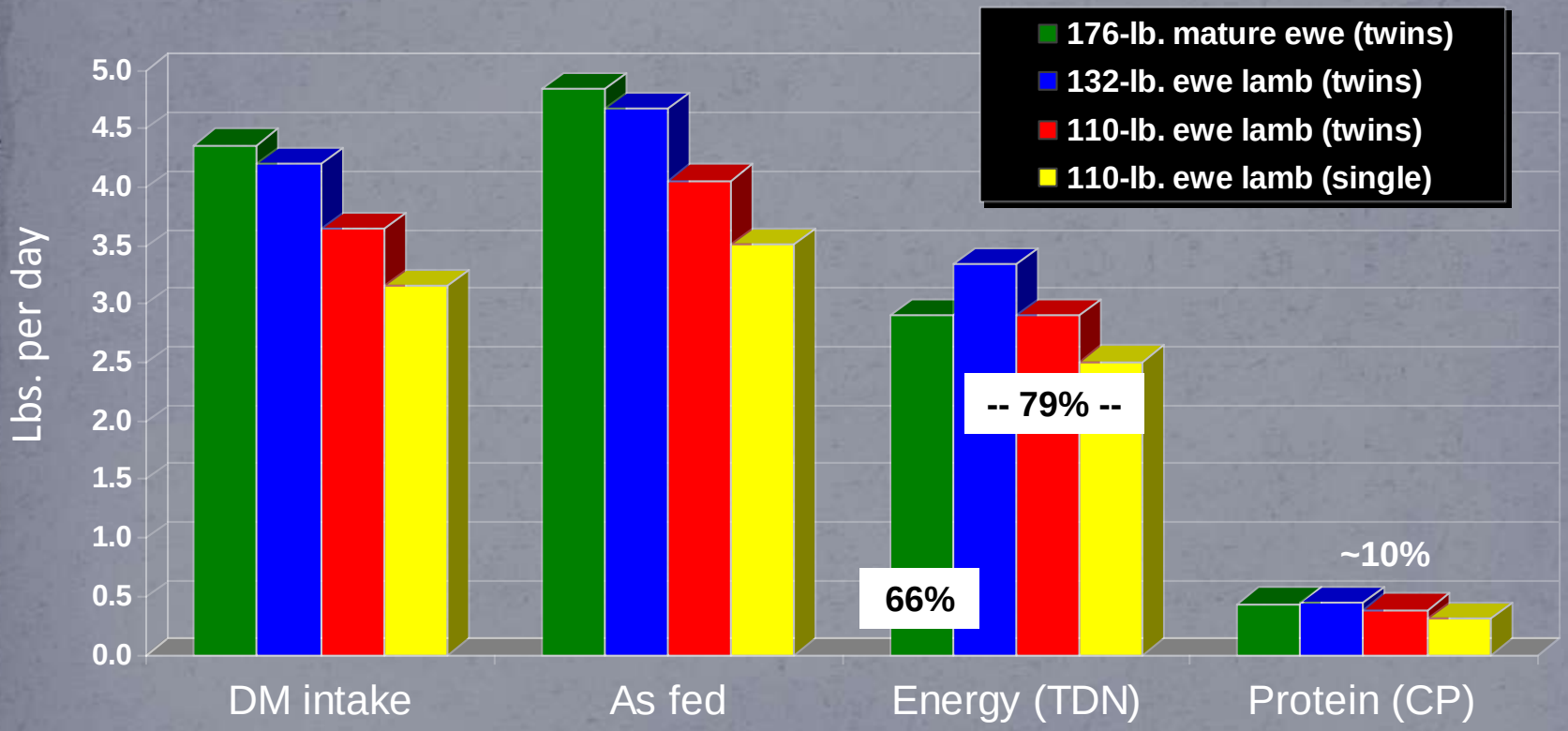
NRC, 2007, Errata

What you need to know:

- Bigger goats need to eat more.
  - More lbs. of dry matter
  - More lbs. of energy
  - More lbs. of protein
  - More grams of Ca and P
- Smaller goats need a more nutrient-dense diet.
  - Higher % of energy
  - Higher % of protein
  - Higher % of Ca and P

Age

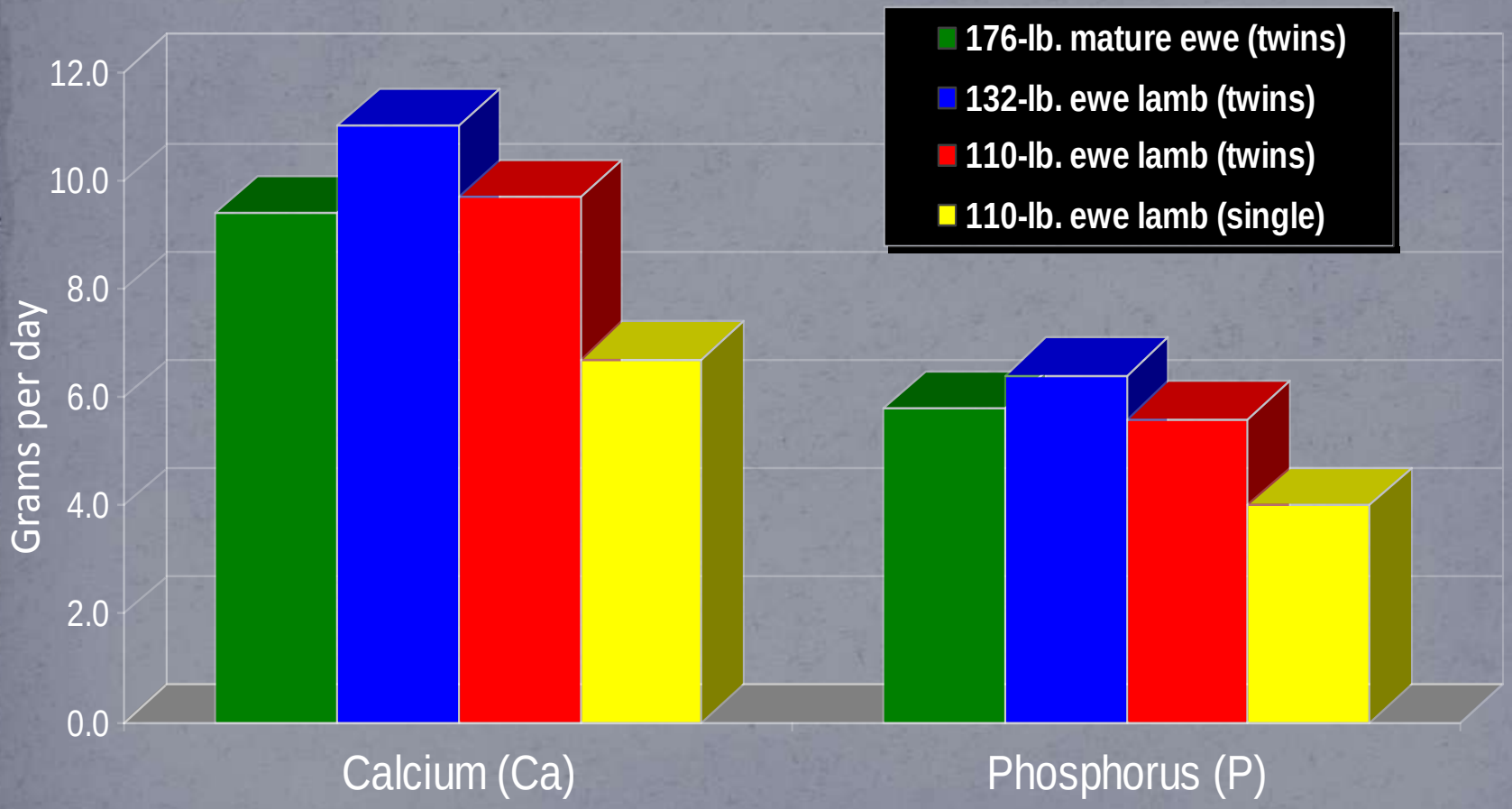
Nutrient requirements of mature ewes vs. ewe lambs during late gestation



NRC, 2007

Age

Mineral requirements of mature ewes vs. ewe lambs during late pregnancy



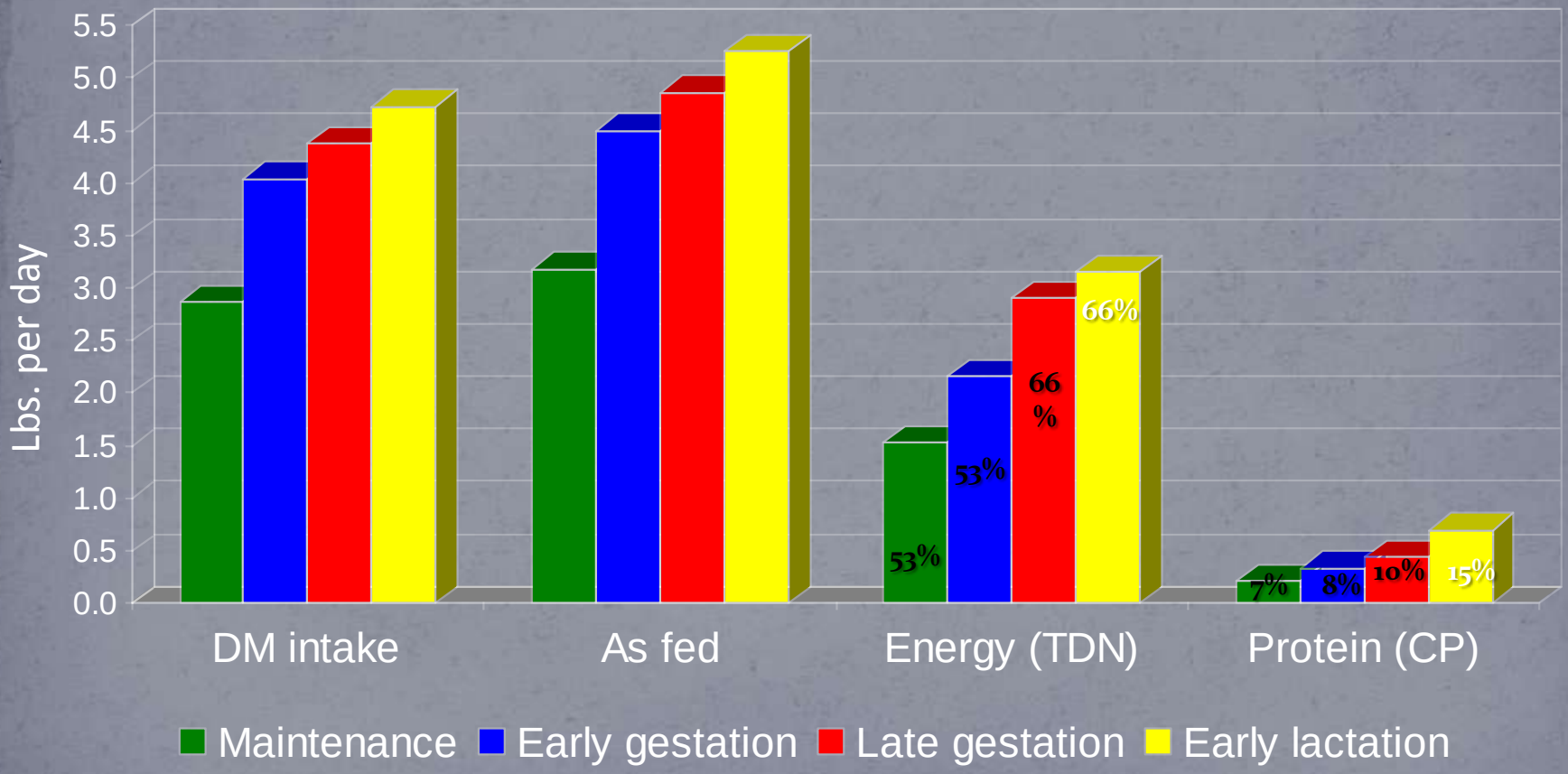
NRC, 2007

What you need to know:

- Mature females are usually bigger and need to eat more.
  - More lbs. of dry matter
  - More lbs. of energy
  - More lbs. of protein
  - More grams of Ca and P
- However, young females need a more nutrient-dense diet.
  - Higher % of energy
  - Higher % of Ca and P
  - But NOT protein!

Stage of production

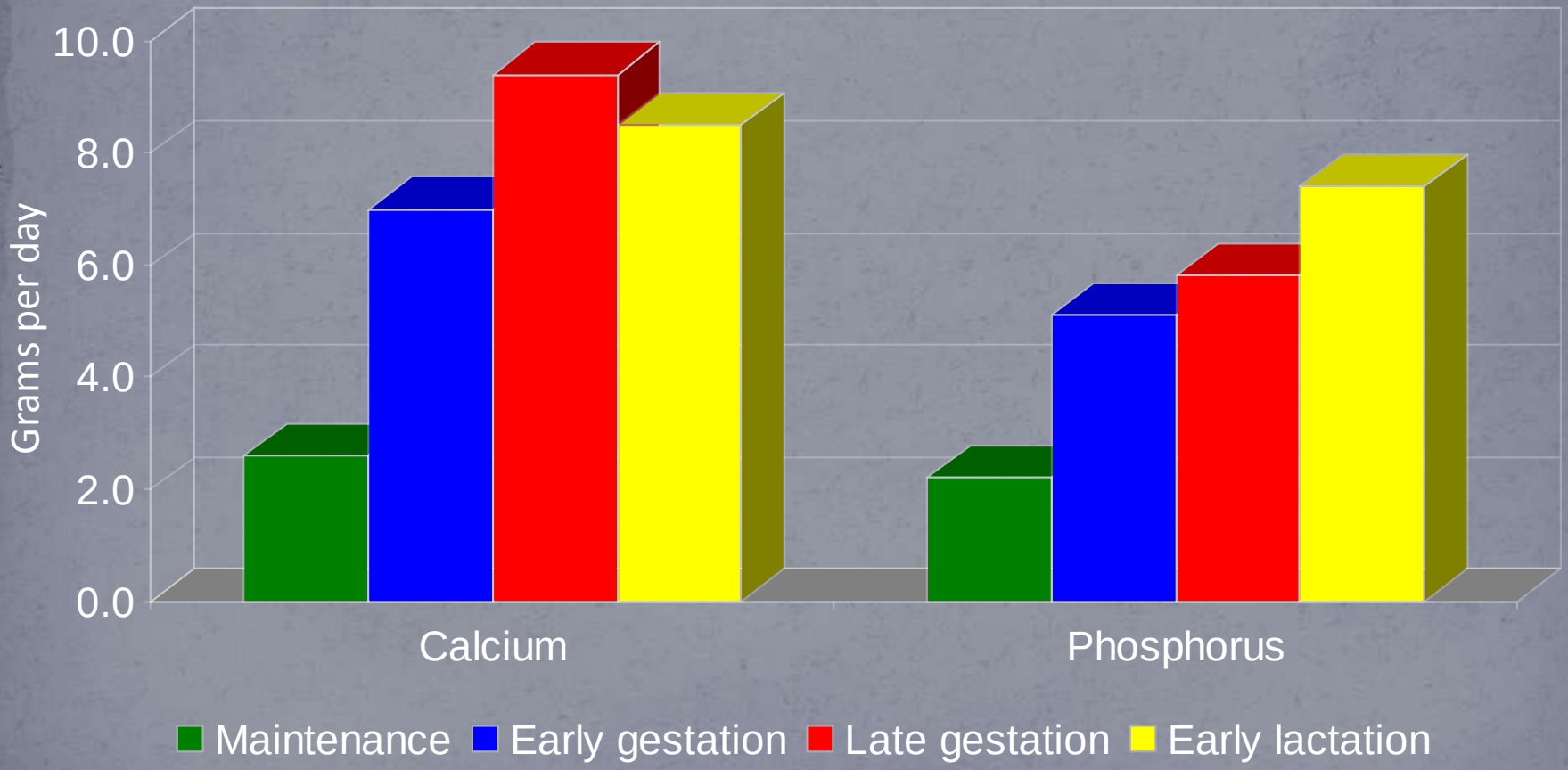
Nutrient requirements of a 176-lb. mature ewe (twin bearing)



NRC 2007

Stage of production

Mineral requirements of a 176-lb. ewe (twins)



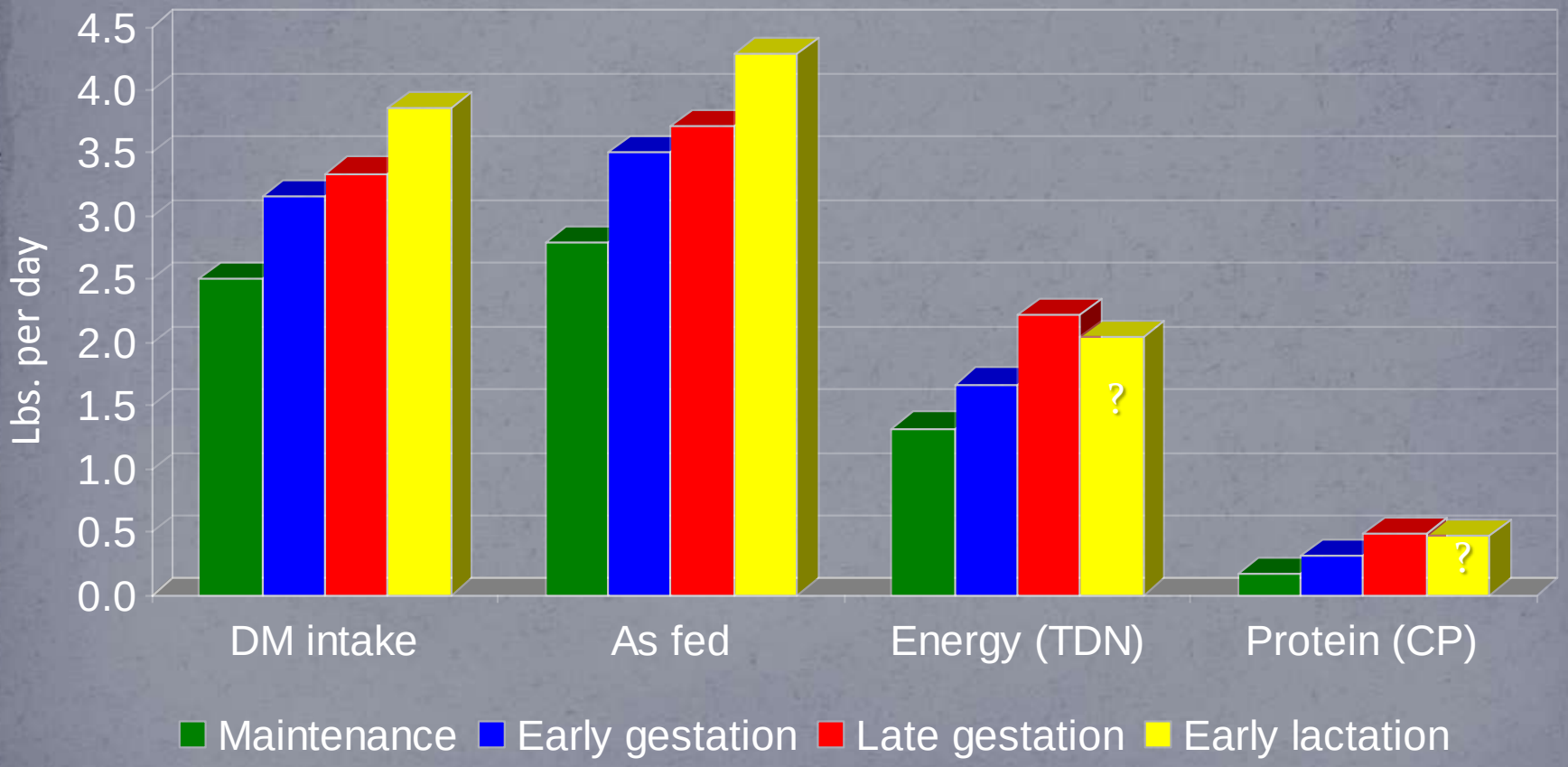
NRC, 2007

What you need to know:

- Energy requirements during late gestation are more than 50 percent higher than for maintenance.
- Ewes require a more nutrient-dense diet during late gestation and lactation.
- Protein requirements don’t increase until lactation.
- Calcium requirements are highest during late gestation.
- Phosphorus requirements are highest during lactation.

Stage of production

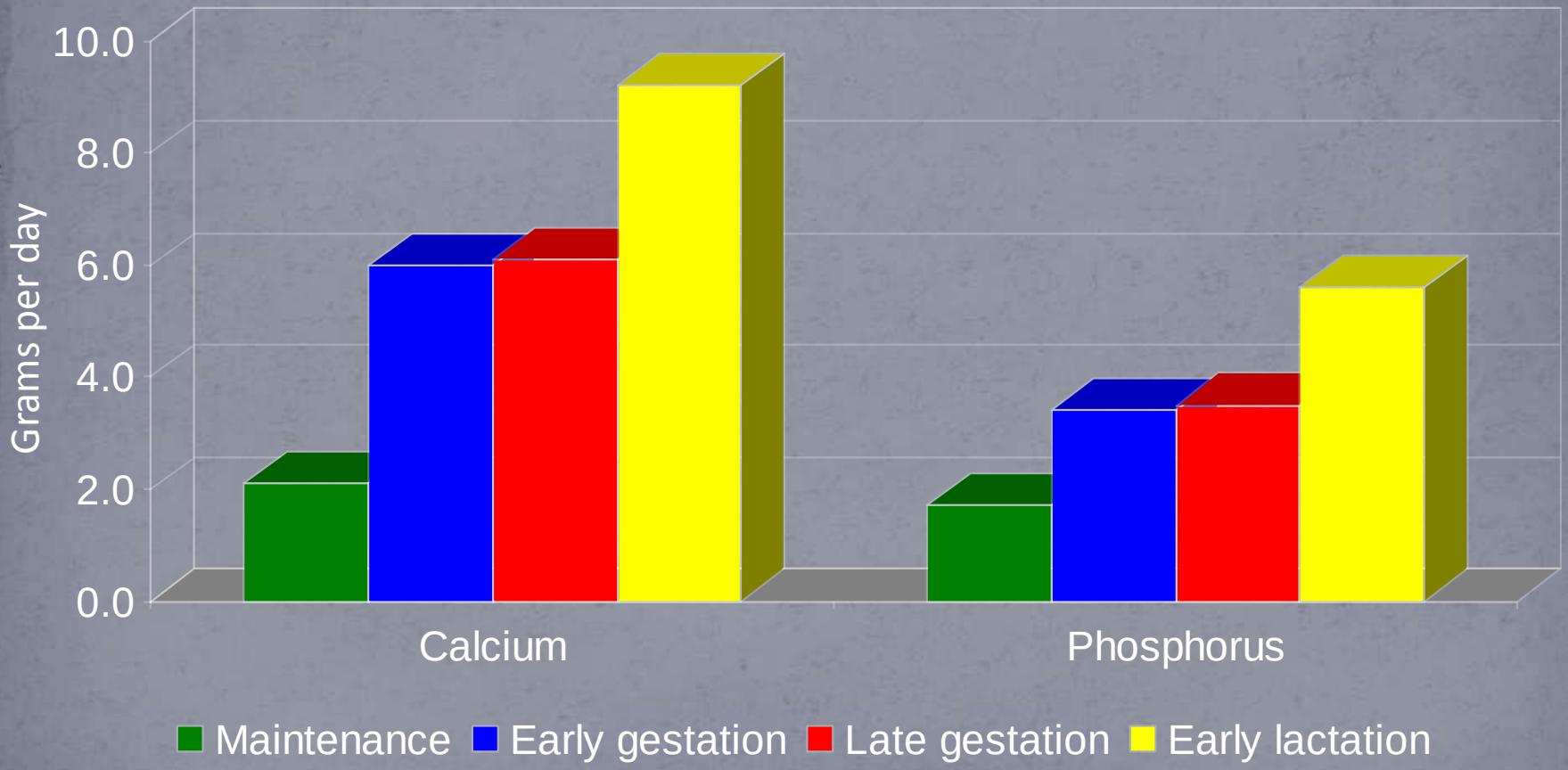
Nutrient requirements of a 132-lb. non-dairy doe (twins)



NRC 2007, Errata

Stage of production

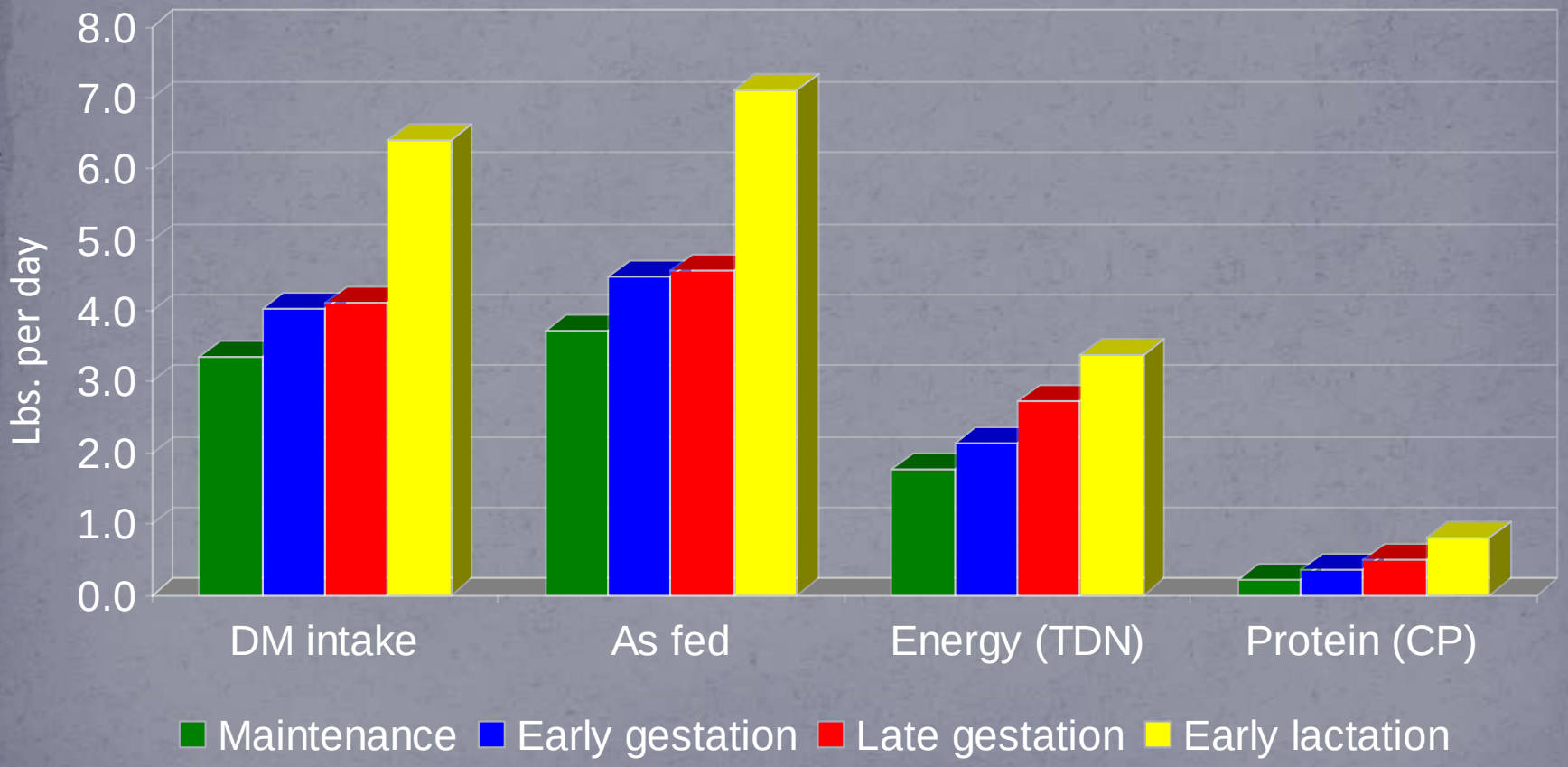
Mineral requirements of a 132-lb. doe (twins)



NRC, 2007

Stage of production

Nutrient requirements of a 154-lb. dairy doe (twin bearing)



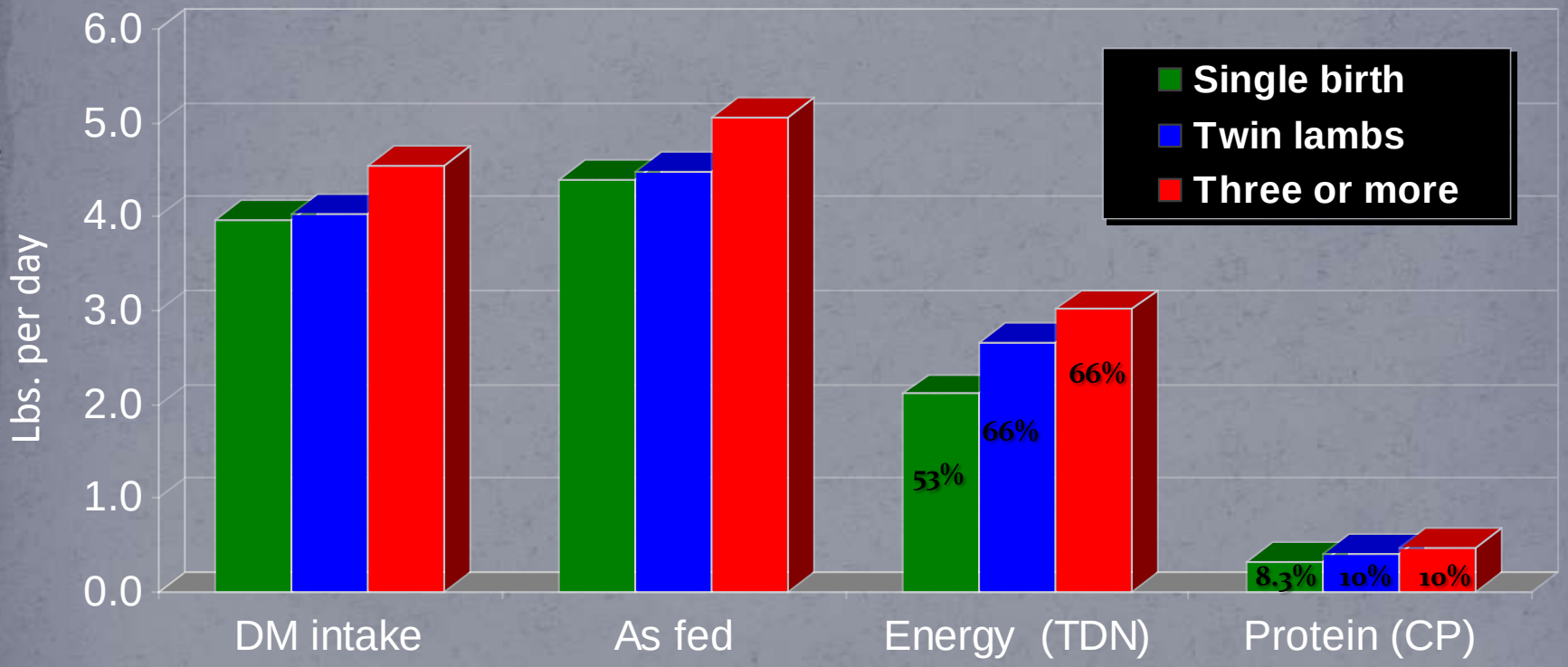
NRC 2007 Errata

What you need to know:

- Energy requirements during late gestation are more than 50 percent higher than for maintenance.
- Calcium and Phosphorus requirements are highest during lactation.
- Females with a higher genetic potential for milk production have much higher nutritional requirements during lactation.

Level of production (# fetuses)

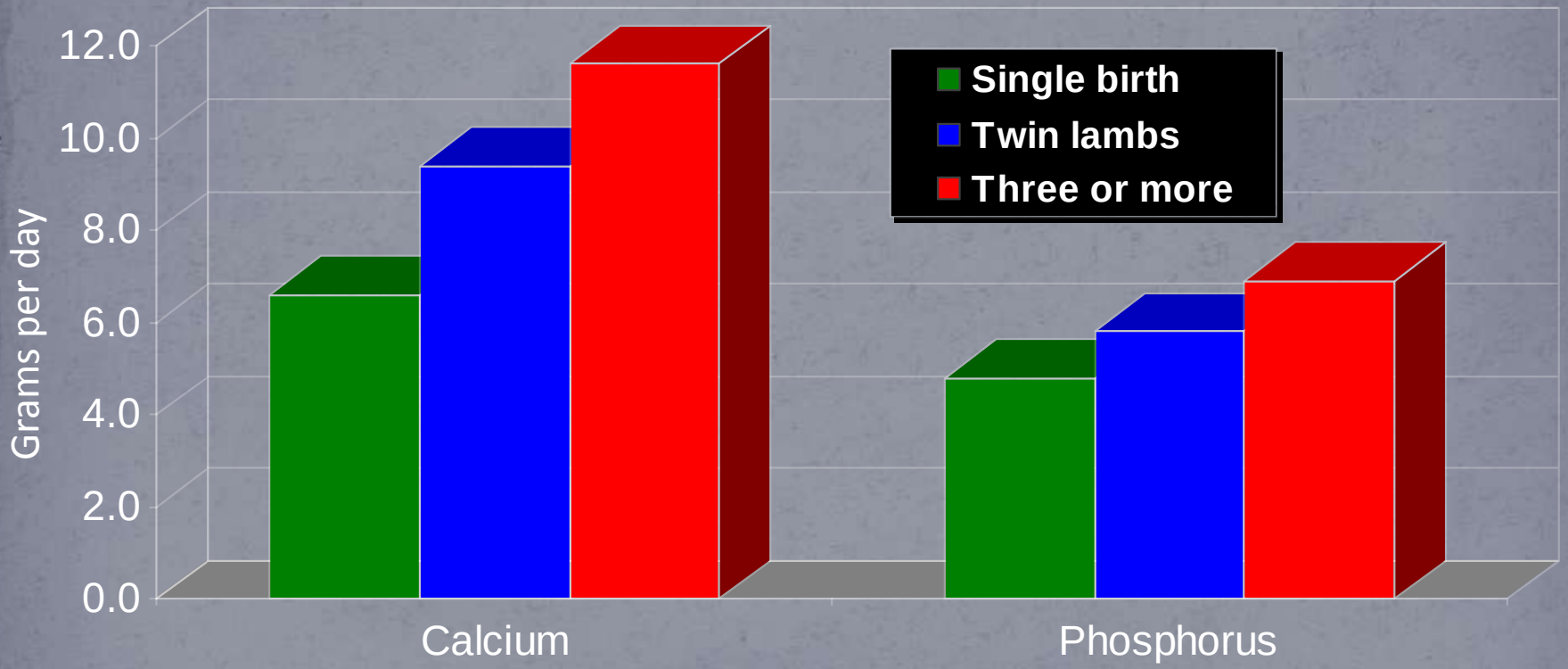
Nutrient requirements of 154-lb. ewe in late gestation



NRC, 2007

Level of production (# fetuses)

Nutrient requirements of 176-lb. ewe in late gestation



NRC, 2007

What you need to know:

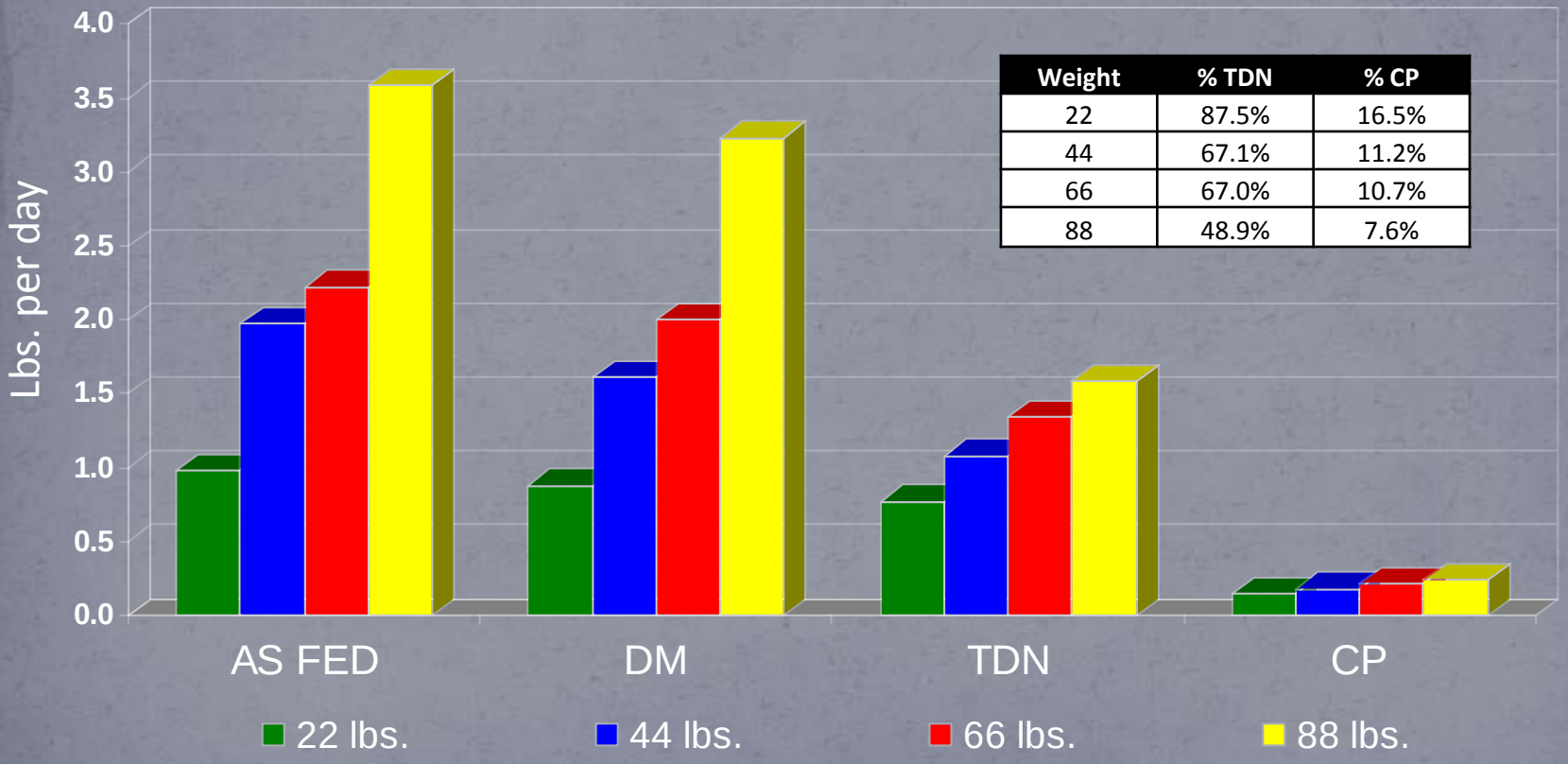
- Ewes carrying twins and triplets need to eat more.
  - Dry matter
  - Energy (TDN)
  - Protein (CP)
  - Calcium and phosphorus
- Ewes carrying twins and triplets need a more nutrient-dense diet.
- A ewe carrying triplets needs 43% more energy than a ewe carrying a single fetus.

What about growing lambs and kids?

- Their nutritional requirements are affected by many of the same factors.
  - Age
  - Species
  - Size
  - Genetic type and potential
  - Level of performance
  - Environment, activity

Growth - effect of size (weight)

Dairy kids (doelings and wethers) gaining 0.22 lbs/d (100 g/d)



Weight	% TDN	% CP
22	87.5%	16.5%
44	67.1%	11.2%
66	67.0%	10.7%
88	48.9%	7.6%

NRC, 2007

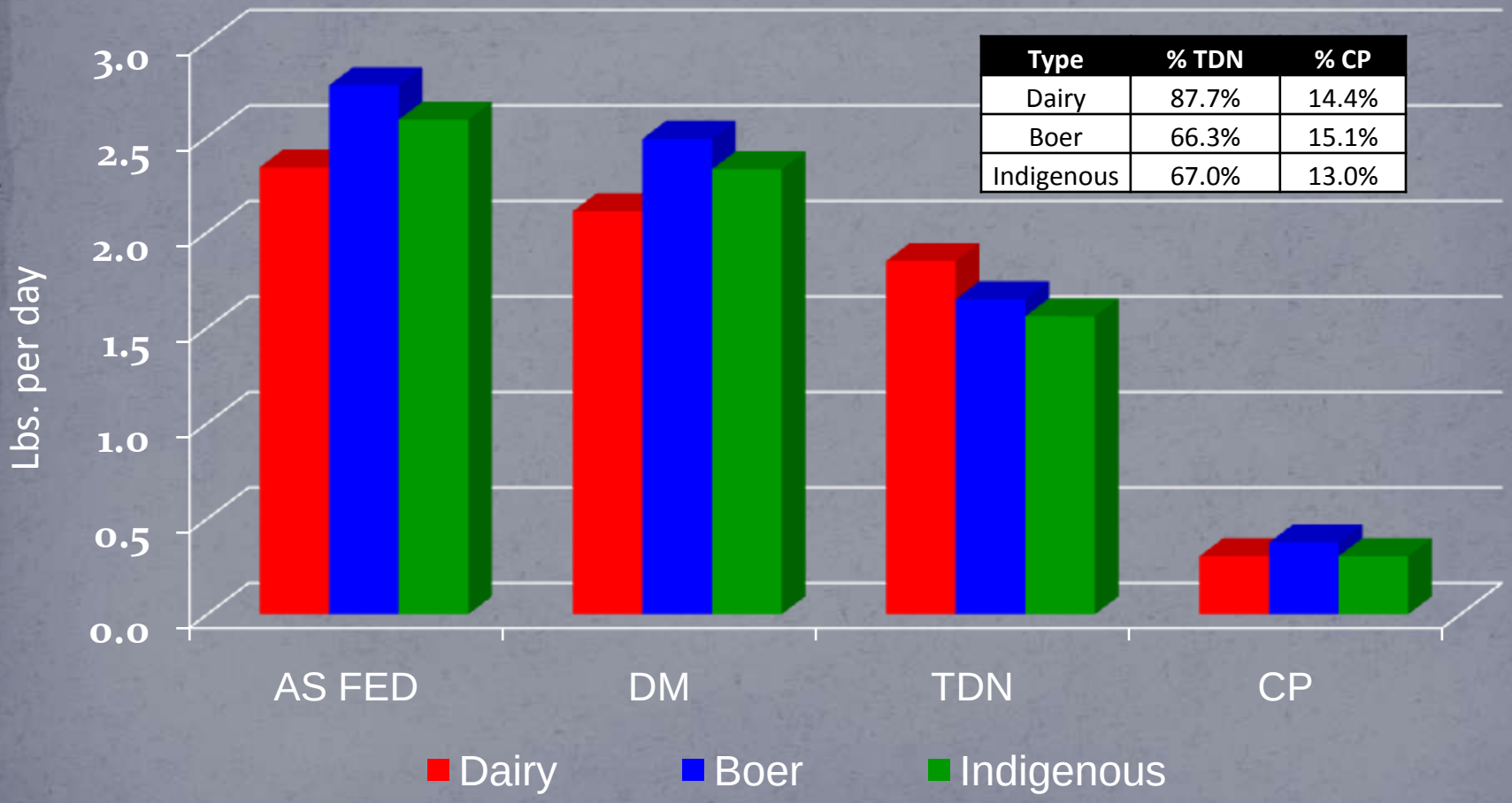
What you need to know:

- Assuming the same rate of gain (0.22 lbs/day):
  - Smaller kids (weight) need to consume a more nutrient-dense diet, both energy and protein.
  - Bigger kids need to consume more quantity of nutrients, but the diet does not need to be as high quality (% TDN, CP).

Weight	% TDN	% CP
22	87.5%	16.5%
44	67.1%	11.2%
66	67.0%	10.7%
88	48.9%	7.6%

Growth - effect of genetic type

66-lb. bucks gaining 0.44 lbs/d (200 g/day)



Type	% TDN	% CP
Dairy	87.7%	14.4%
Boer	66.3%	15.1%
Indigenous	67.0%	13.0%

What you need to know:

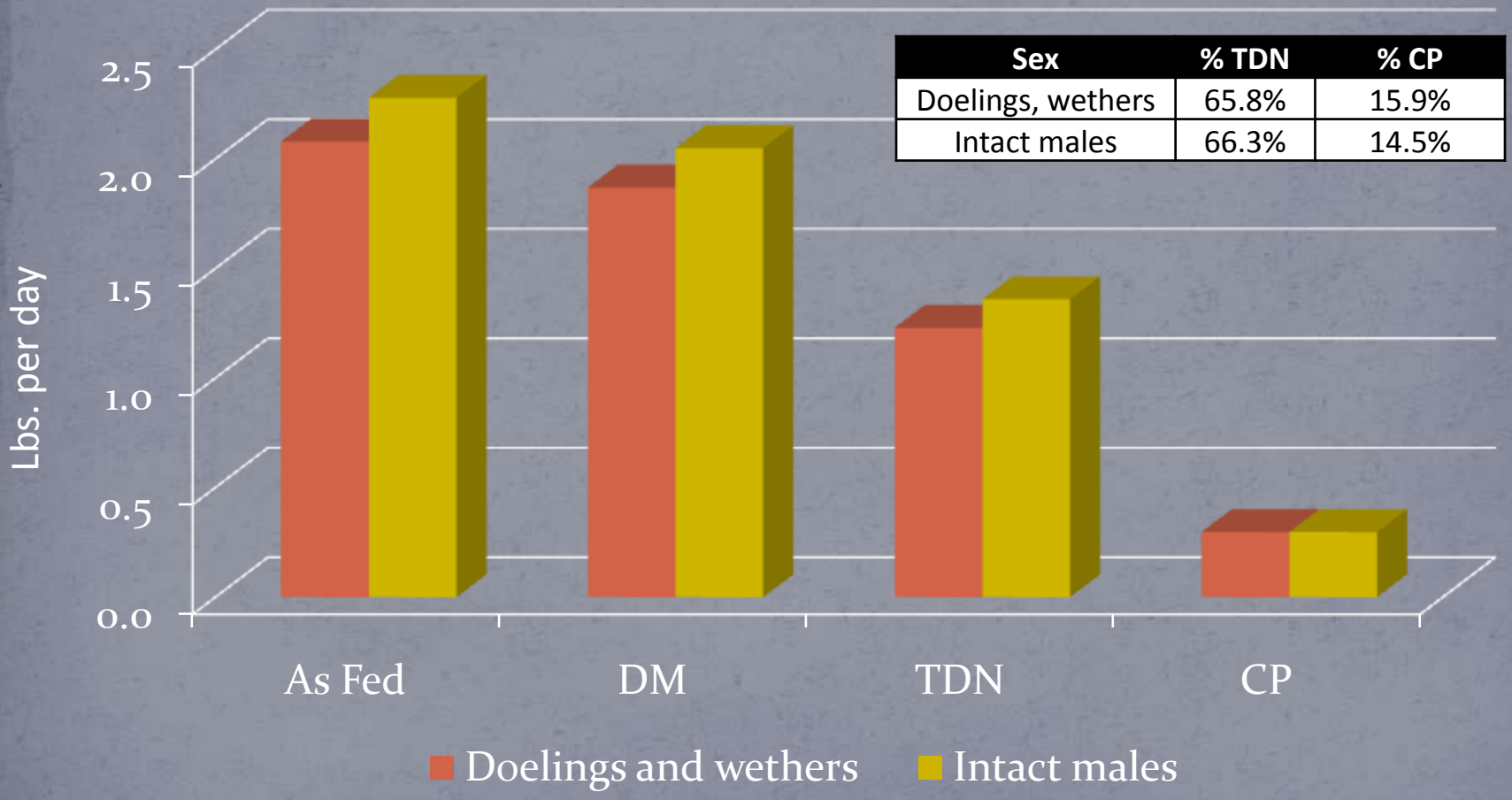
Type	% TDN	% CP
Dairy	87.7%	14.4%
Boer	66.3%	15.1%
Indigenous	67.0%	13.0%

- Assuming the same rate of gain (0.44 lbs/day).
  - Dairy goat bucks don't need to eat as much as Boer bucks, but their diet needs to be more energy-dense.
  - Boer bucks need to eat the most, but their diet doesn't need to be as energy-dense.
  - Boer bucks have the highest requirements for protein: lbs. and %.
  - Indigenous (local) breed goats have lower requirements for protein than improved breeds.

Growth - effect of sex

55 lb. Boer kids gaining 0.33 lbs/day

Sex	% TDN	% CP
Doelings, wethers	65.8%	15.9%
Intact males	66.3%	14.5%



What you need to know:

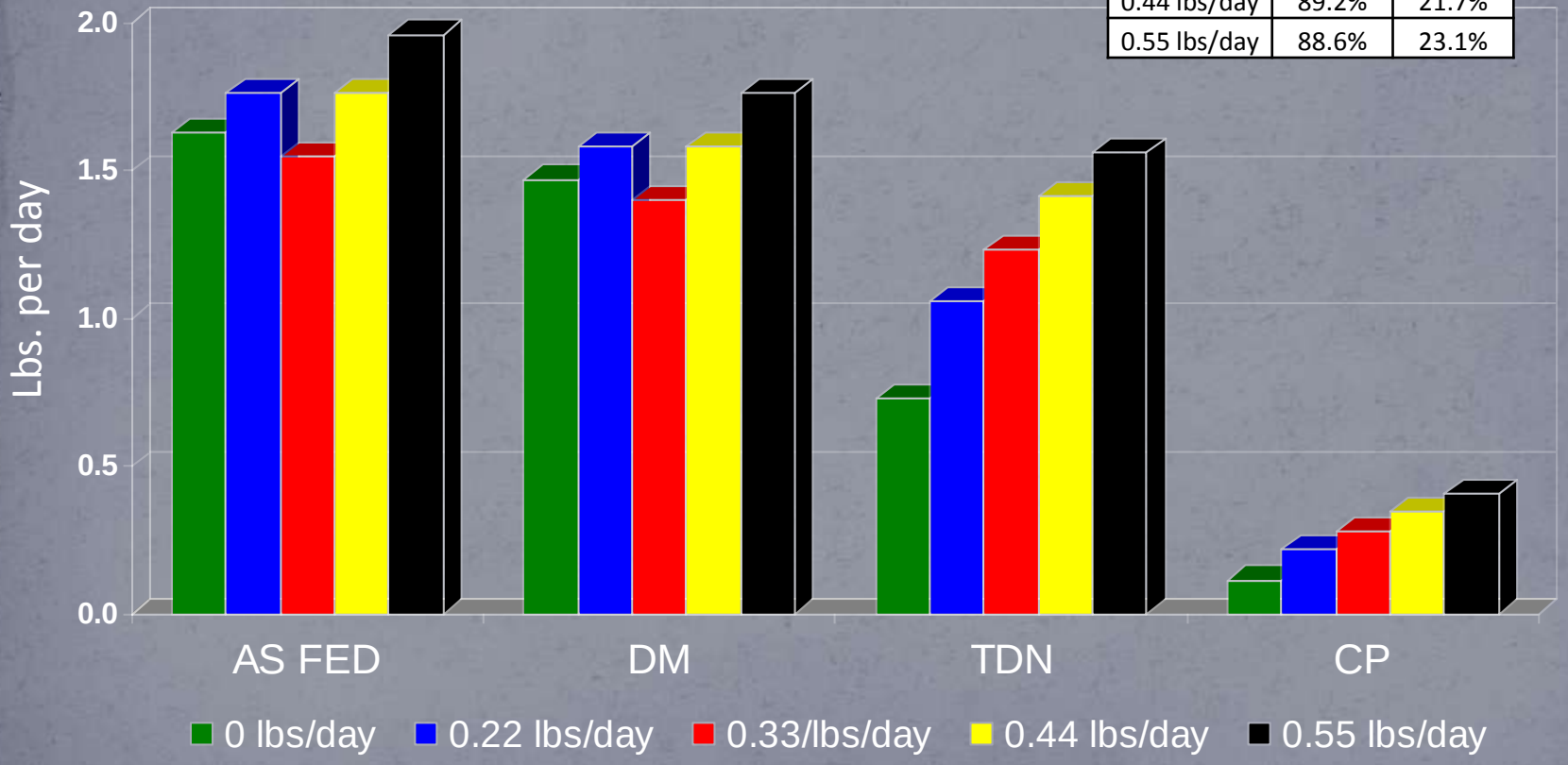
- Assuming the same rate of gain (0.44 lbs/day).
  - Bucks need to eat more dry matter and energy.
  - Bucks and does require the same amount of protein.
  - But since does eat less, they require a higher percentage of protein in their diet.
  - Realistically, the differences will be larger as bucks will gain faster and you don't want to feed does to gain as fast.

Sex	% TDN	% CP
Doelings, wethers	65.8%	15.9%
Intact males	66.3%	14.5%

Growth – rate-of-gain

44-lb Boer bucks

ADG	% TDN	% CP
0 lbs/day	49.7%	7.8%
0.22 lbs/day	67.1%	13.8%
0.33/lbs/day	87.9%	19.9%
0.44 lbs/day	89.2%	21.7%
0.55 lbs/day	88.6%	23.1%



NRC, 2007

What you need to know:

- Assuming the same genetic potential for growth:
  - The more you feed a goat the more it will gain.
  - Better performance requires both more feed and better quality feed.
    - Higher % TDN
    - Higher % CP
  - The bigger question is: is better performance economical?

ADG	% TDN	% CP
0 lbs/day	49.7%	7.8%
0.22 lbs/day	67.1%	13.8%
0.33/lbs/day	87.9%	19.9%
0.44 lbs/day	89.2%	21.7%
0.55 lbs/day	88.6%	23.1%

Thank you for your attention.

Are there any questions?

Susan Schoenian
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