EXPERIENCES WITH SORGHUM-BASED DDGS IN SWINE & POULTRY DIETS

NCGA/NGSPA
Southwest Co-Products Conference
October 30-31, 2002

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Why the renewed interest?

- It is good farm policy
- It is good energy policy
- It is good for ethanol producers

Why my interest?

- A general lack of info
- Info based on limited data
- Info based on DDGS from corn only

Nutrient Content of DDGS from Corn and Sorghums

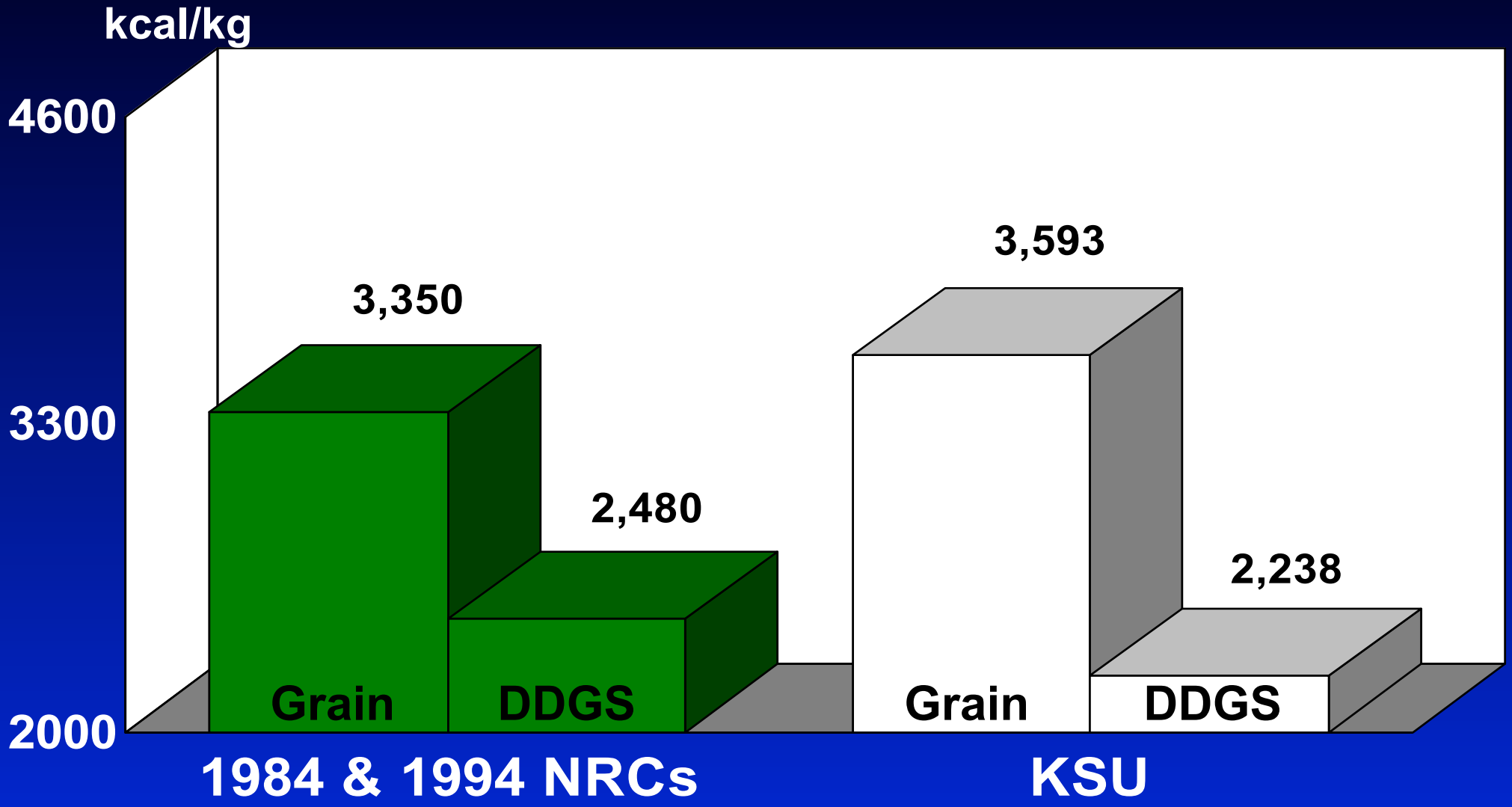
	Corn		Bronze		Yellow	
Item	Grain	DDGS	Grain	DDGS	Grain	DDGS
Dry matter, %	91.9	90.3	91.9	90.4	91.9	88.9
CP, %	8.0	23.9	9.8	26.6	9.3	25.6
Crude fat, %	3.9	8.1	3.0	8.1	3.0	8.0
Crude fiber, %	3.2	11.0	2.6	8.5	2.4	9.5
GE, Mcal/kg	4.00	4.55	4.20	4.53	3.98	4.33
Lysine, %	0.29	0.59	0.21	0.60	0.25	0.55
Threonine, %	0.28	0.77	0.24	0.87	0.29	0.79
Met + Cys, %	0.42	0.95	0.32	1.00	0.35	0.93

- 210 broiler chicks (6 d old) used in an 8-d metabolism experiment
- Cornstarch-based (50%) reference diet
- Main effects:
  - Cereal (corn, bronze & yellow sorghum)
  - Distillation trt (whole grain vs DDGS)
- Feed and water consumed ad libitum

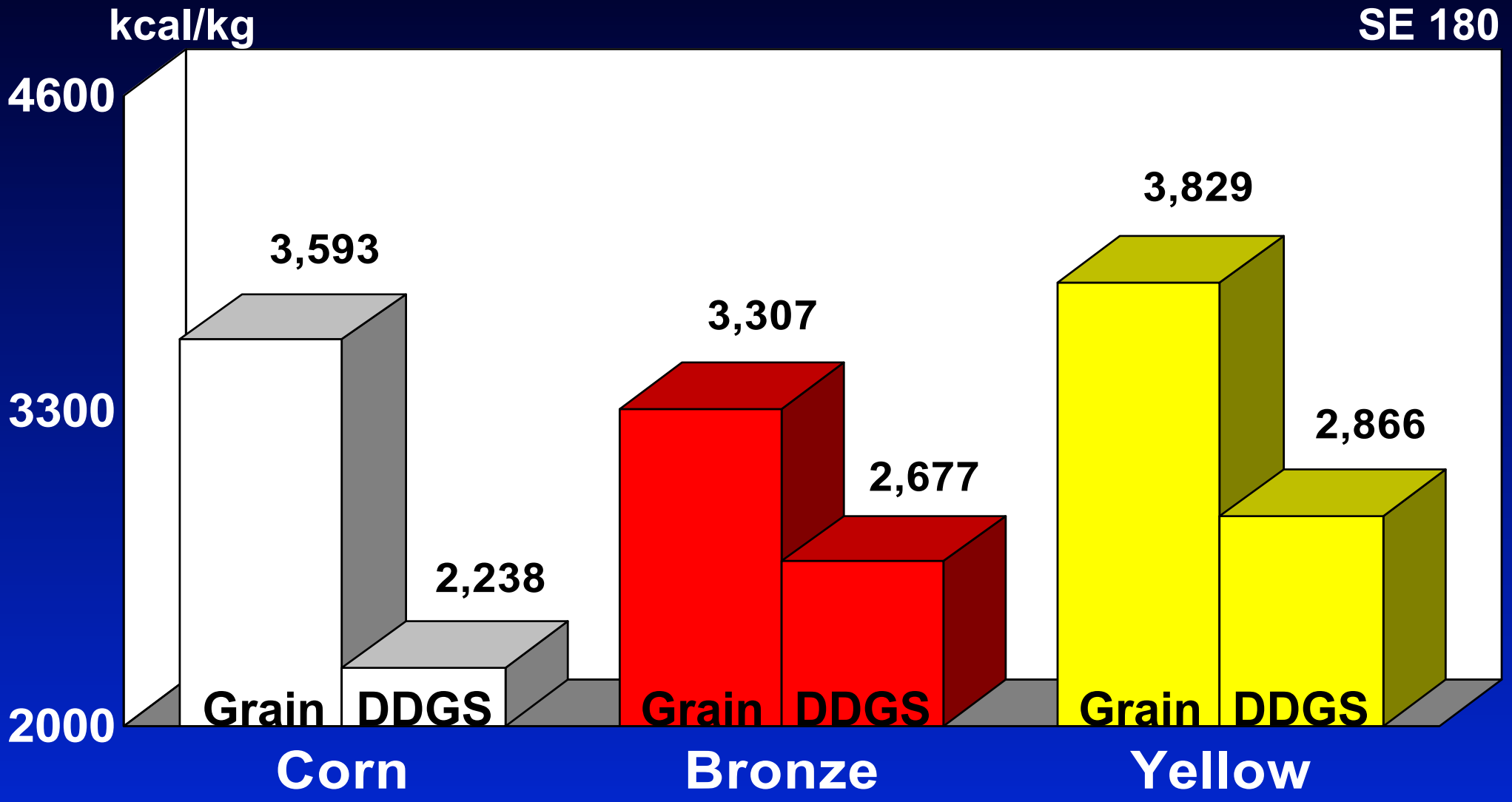
Basal Diet

Ingredient	Amount, %
Cornstarch	50.00
Corn gluten meal	36.34
Soy isolate	3.50
Soy oil	2.00
Amino acids	1.42
Vits/Mins/Ab	6.74

Comparisons to MEn of Corn and Corn-based DDGS in NRCs



MEn of Cereals and DDGS in Broiler Chicks

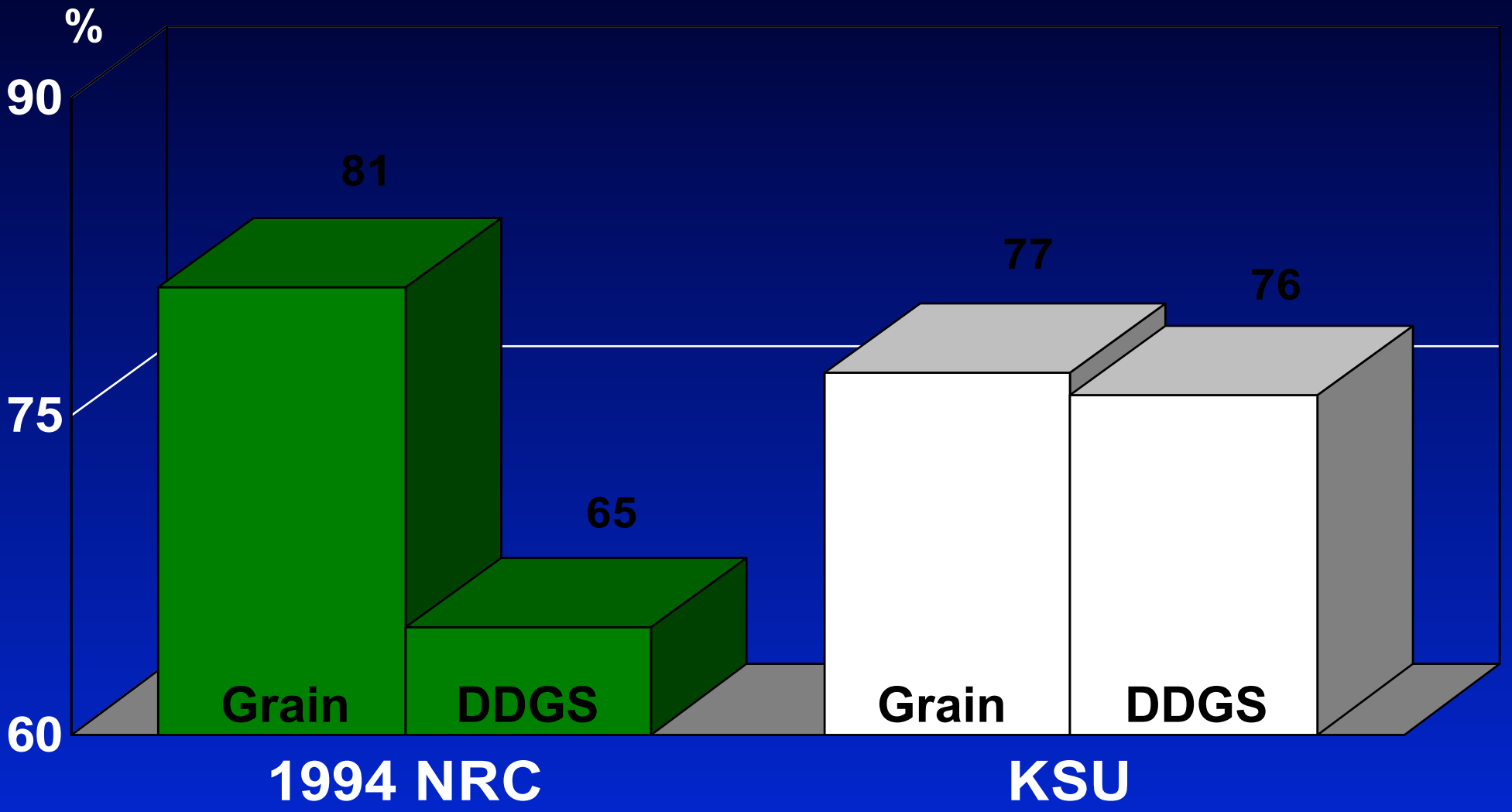


- 690 broiler chicks (8 d old) used in an 14-d slope ratio assay
- Cornstarch-based (50%) reference diet with 0.55% total lysine
- Lysine HCl added to bring totals to 0.60, 0.65, 0.70, and 0.75%
- Slope of response to lysine from test ingredients expressed as ratio to slope of response to lysine HCl

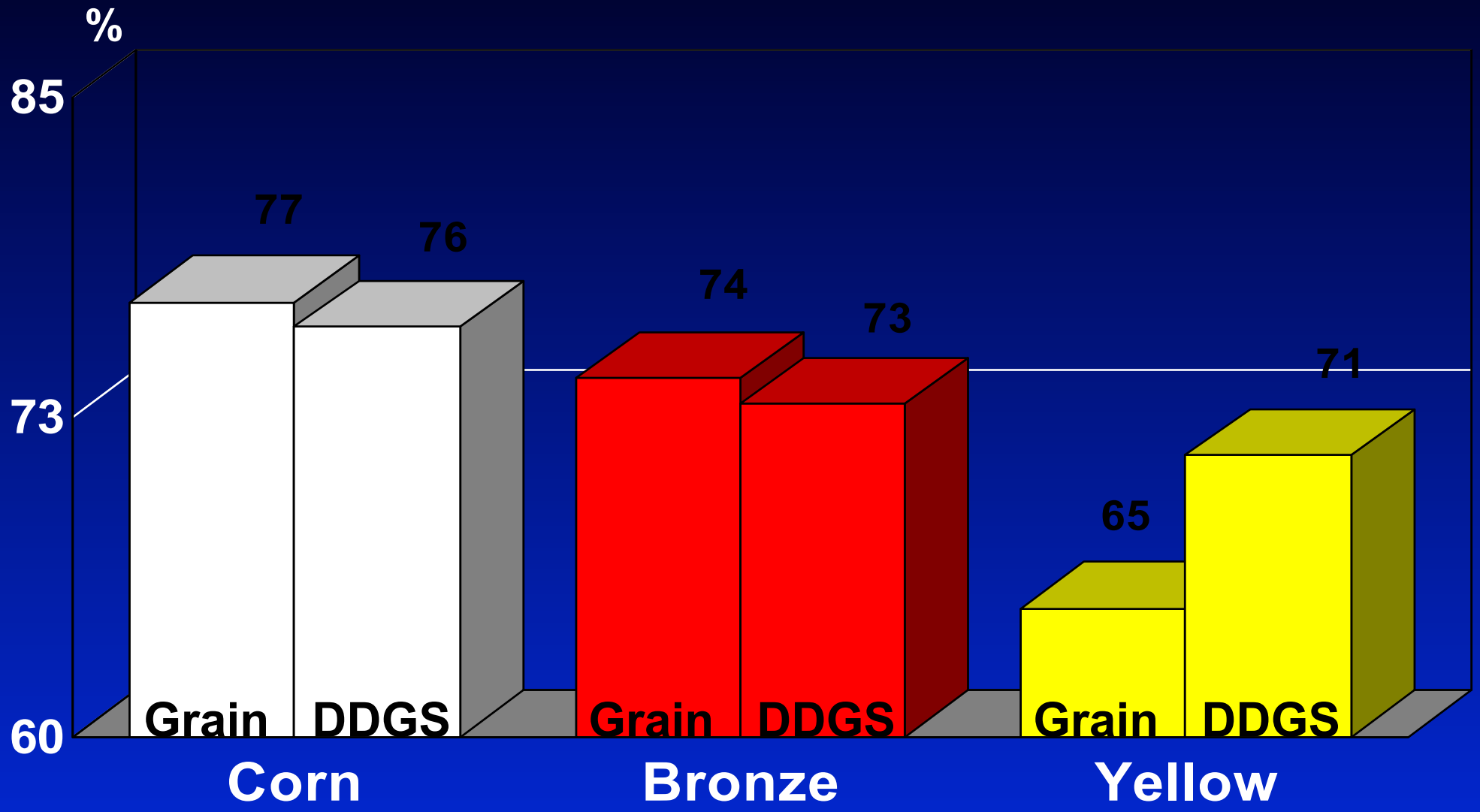
Basal Diet

Ingredient	Amount, %
Cornstarch	50.00
Corn gluten meal	37.91
Soy isolate	3.00
Soy oil	2.00
Amino acids	0.61
Vits/Mins/Ab	6.48

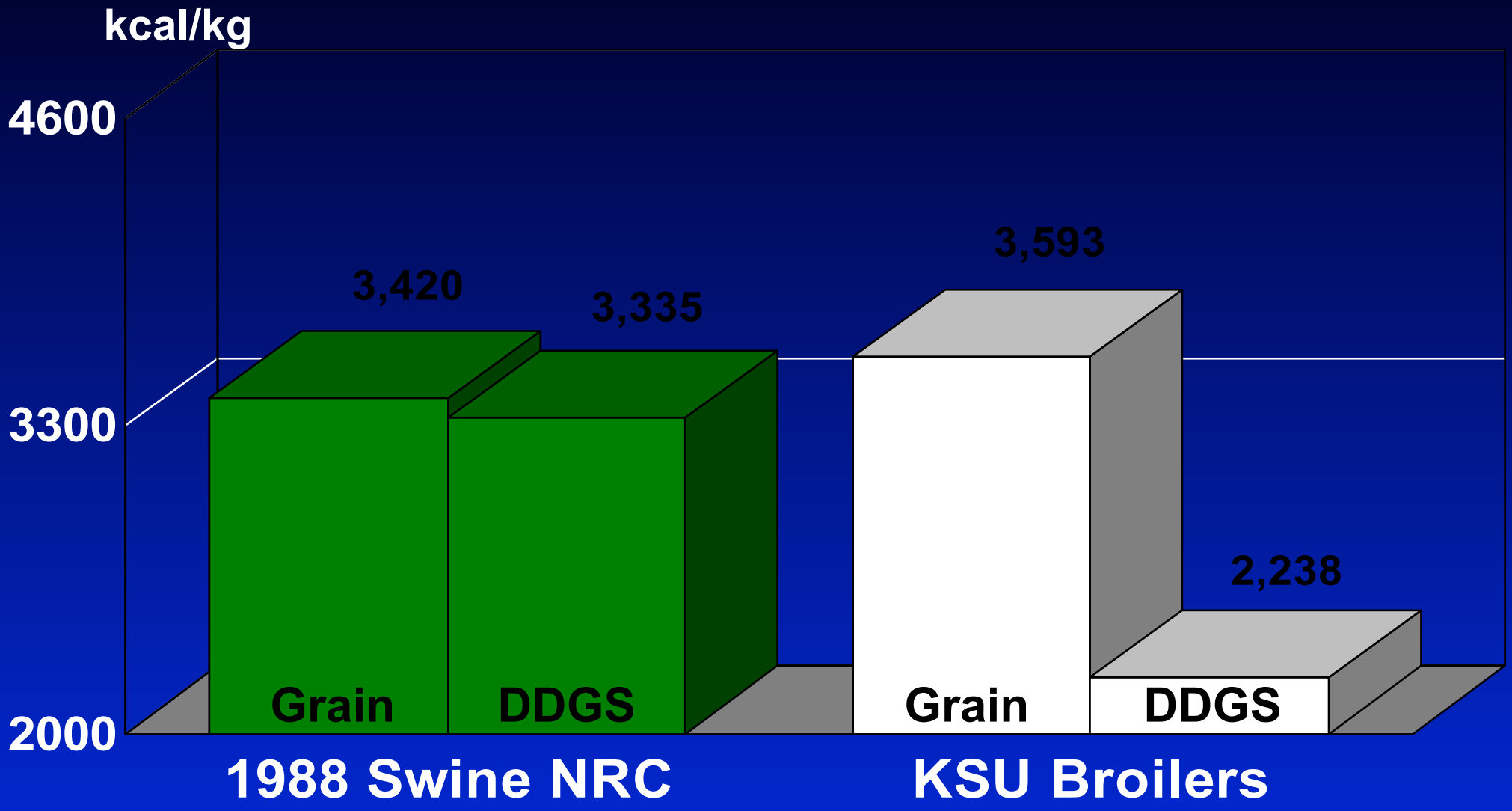
Comparisons to Lys Availability of Corn and Corn-based DDGS in NRC



Lysine Bioavailability in Cereals and DDGS in Broiler Chicks

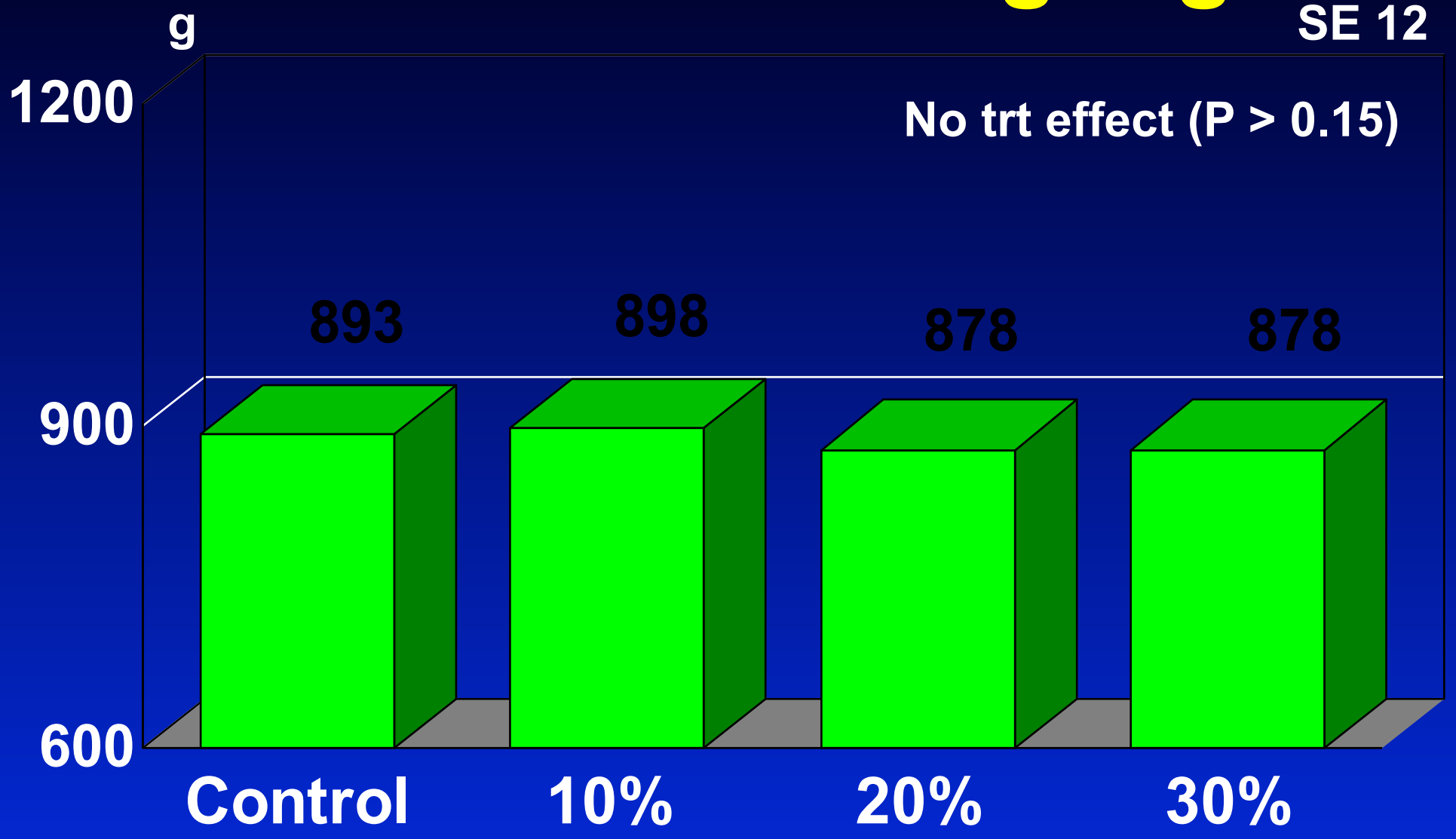


Comparisons to ME of Corn and Corn-based DDGS in Swine NRC

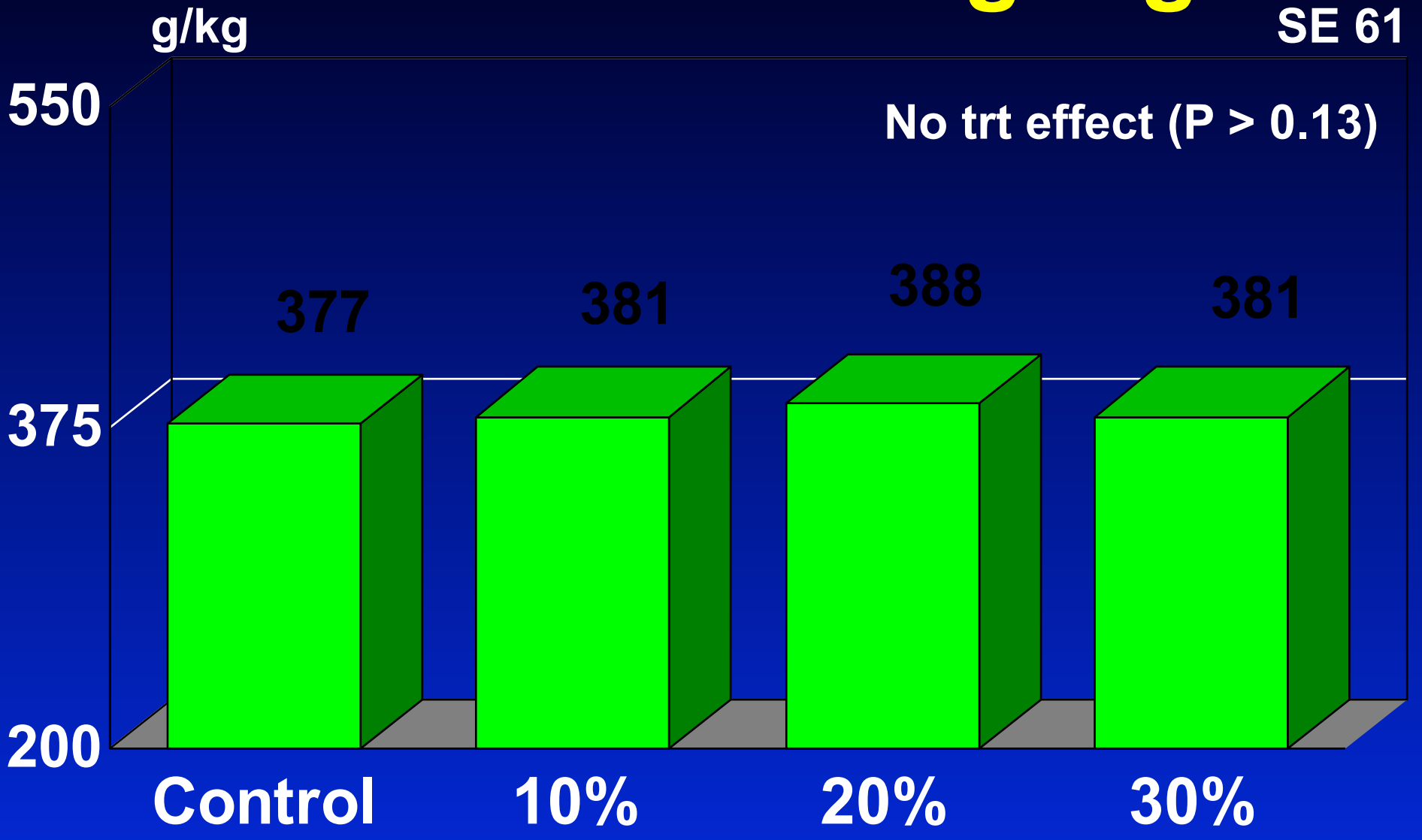


- 192 finishing pigs (avg BW of 43 kg) were used in a 49-d growth assay
- MOF building with 12 pigs/pen and 4 pens/trt
- Feed and water consumed ad libitum
- Diets in meal form
- TRTs: corn-soy-based control with 0, 10, 20, and 30% DDGS
- Soy oil to equalize ME of diets

Sorghum-based DDGS and ADG in Finishing Pigs

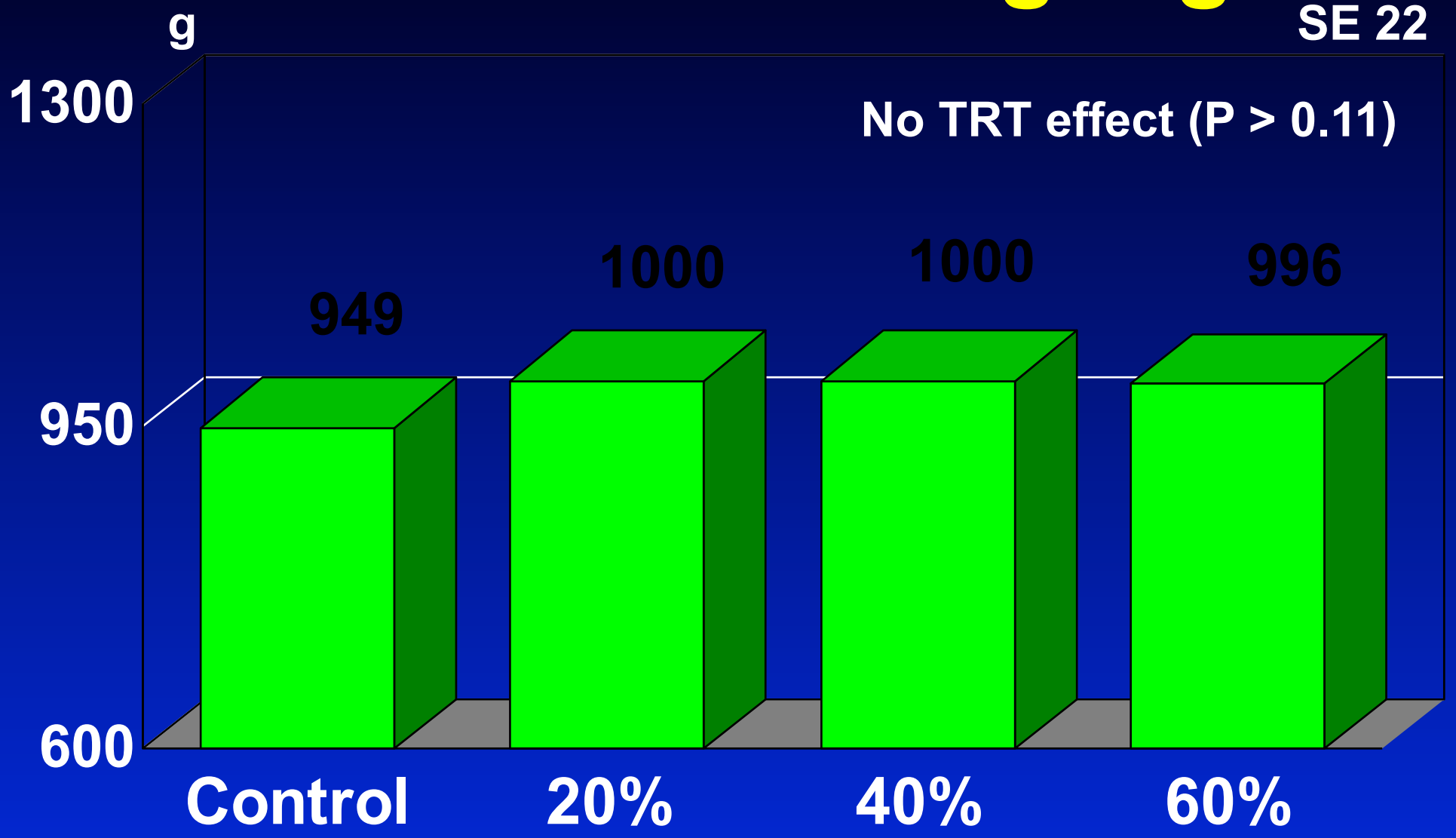


Sorghum-based DDGS and G/F in Finishing Pigs

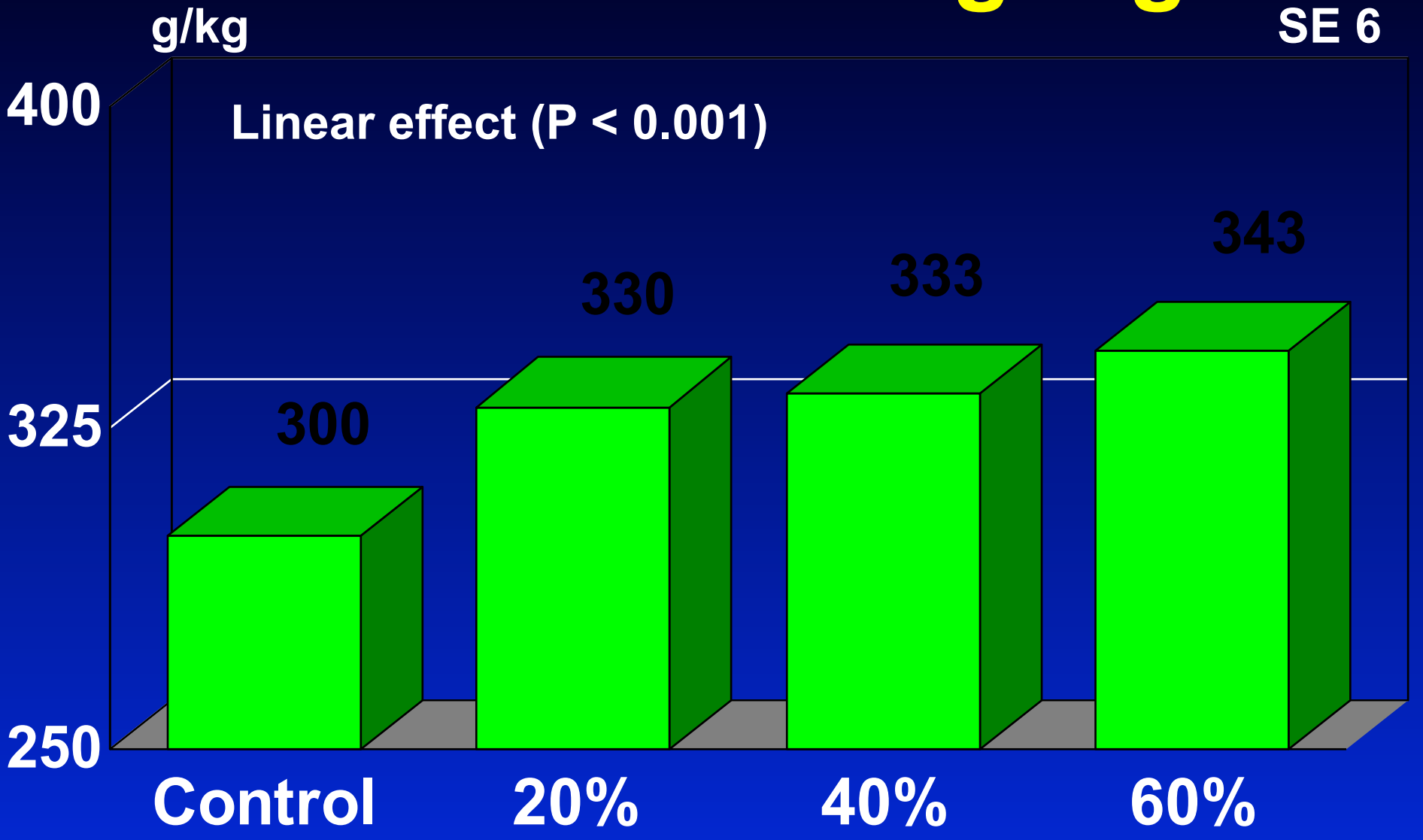


- 80 finishing pigs (avg BW of 55 kg) were used in a 56-d growth assay
- Feed and water consumed ad libitum
- Confinement facility with 2 pigs/pen and 10 pens/trt
- Diets in meal form
- TRTs: corn-soy-based control with 0, 20, 40, and 60% DDGS
- Tallow to equalize ME of the diets

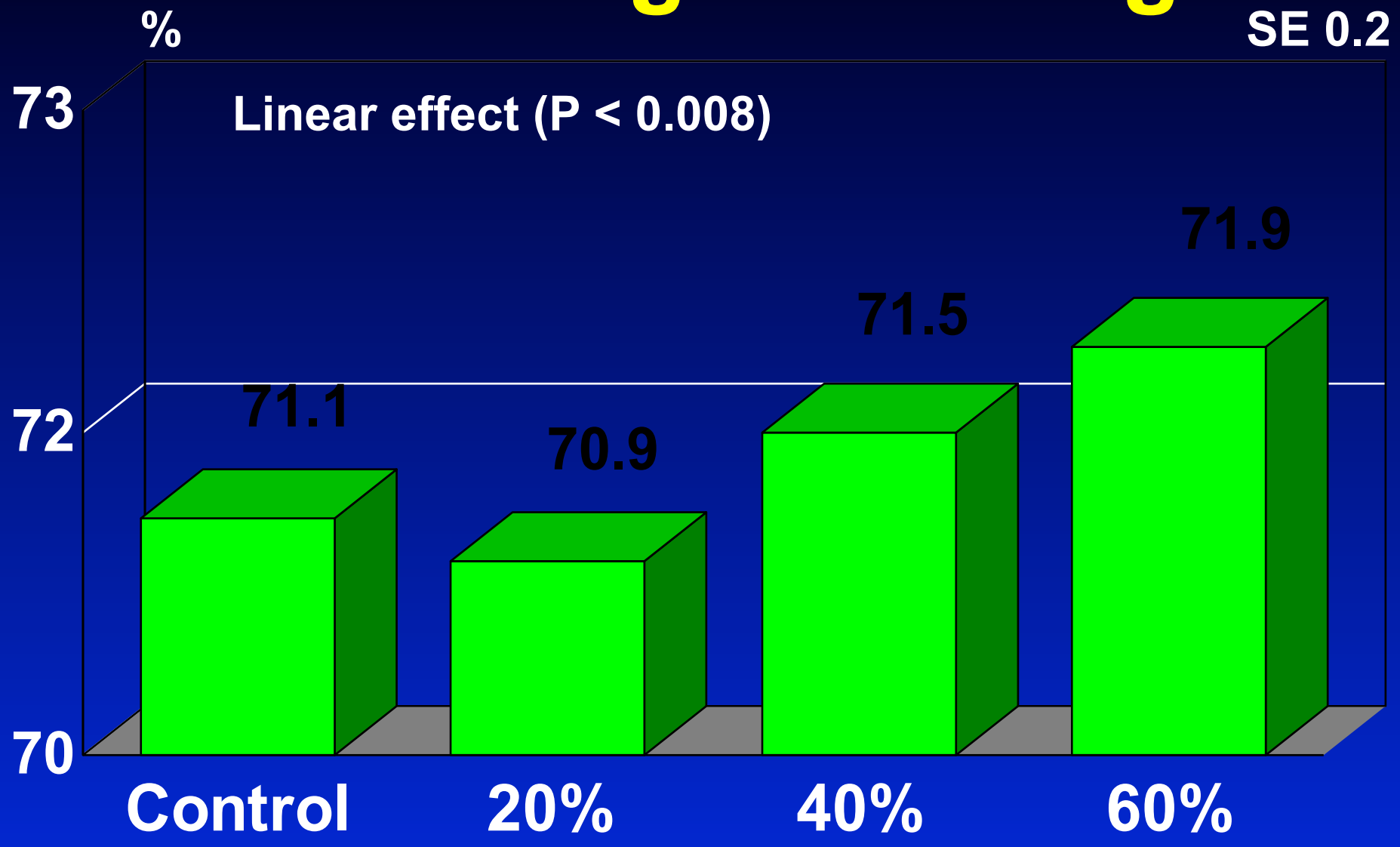
Sorghum-based DDGS and ADG in Finishing Pigs



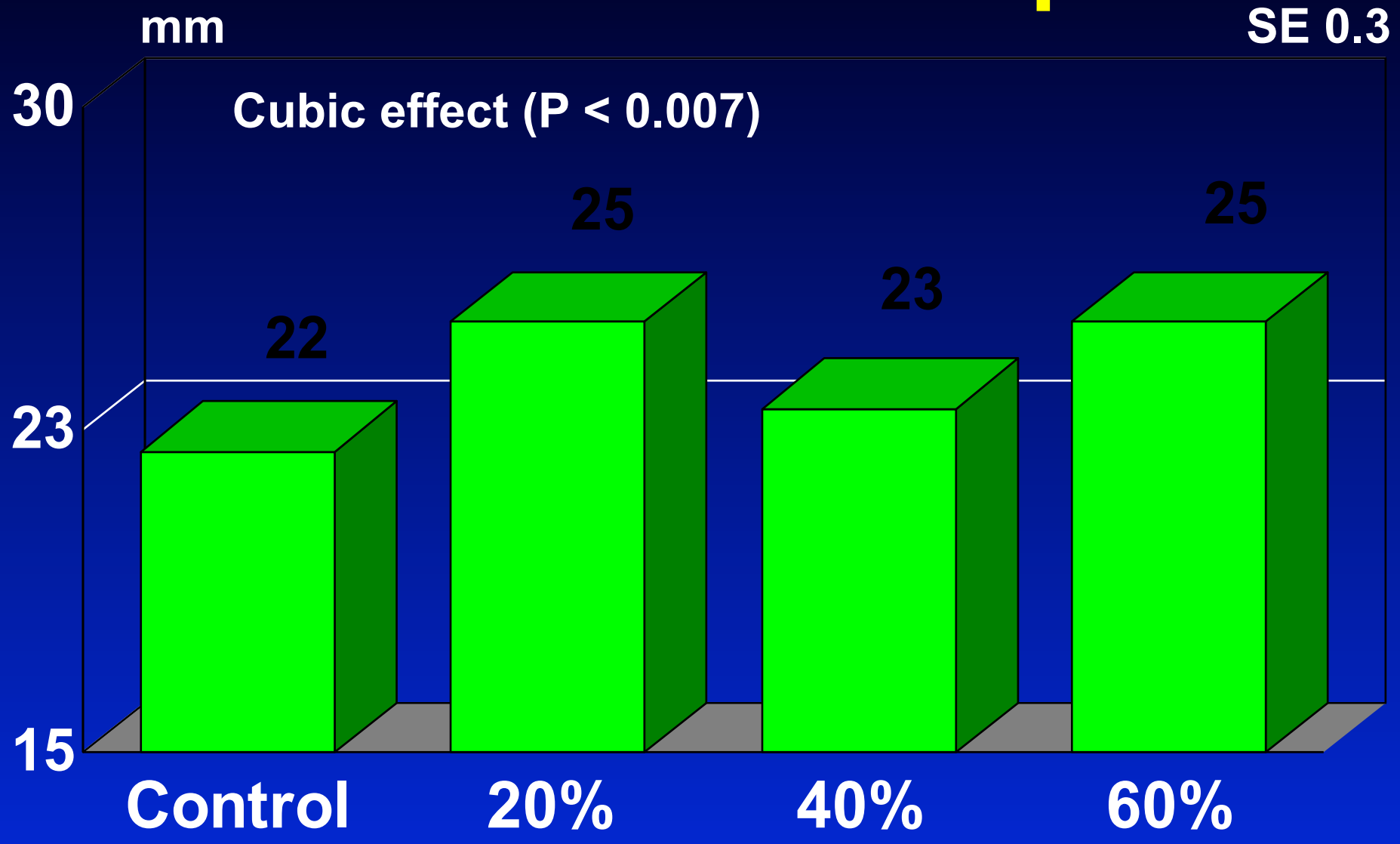
Sorghum-based DDGS and G/F in Finishing Pigs



Sorghum-based DDGS and Dressing Percentage

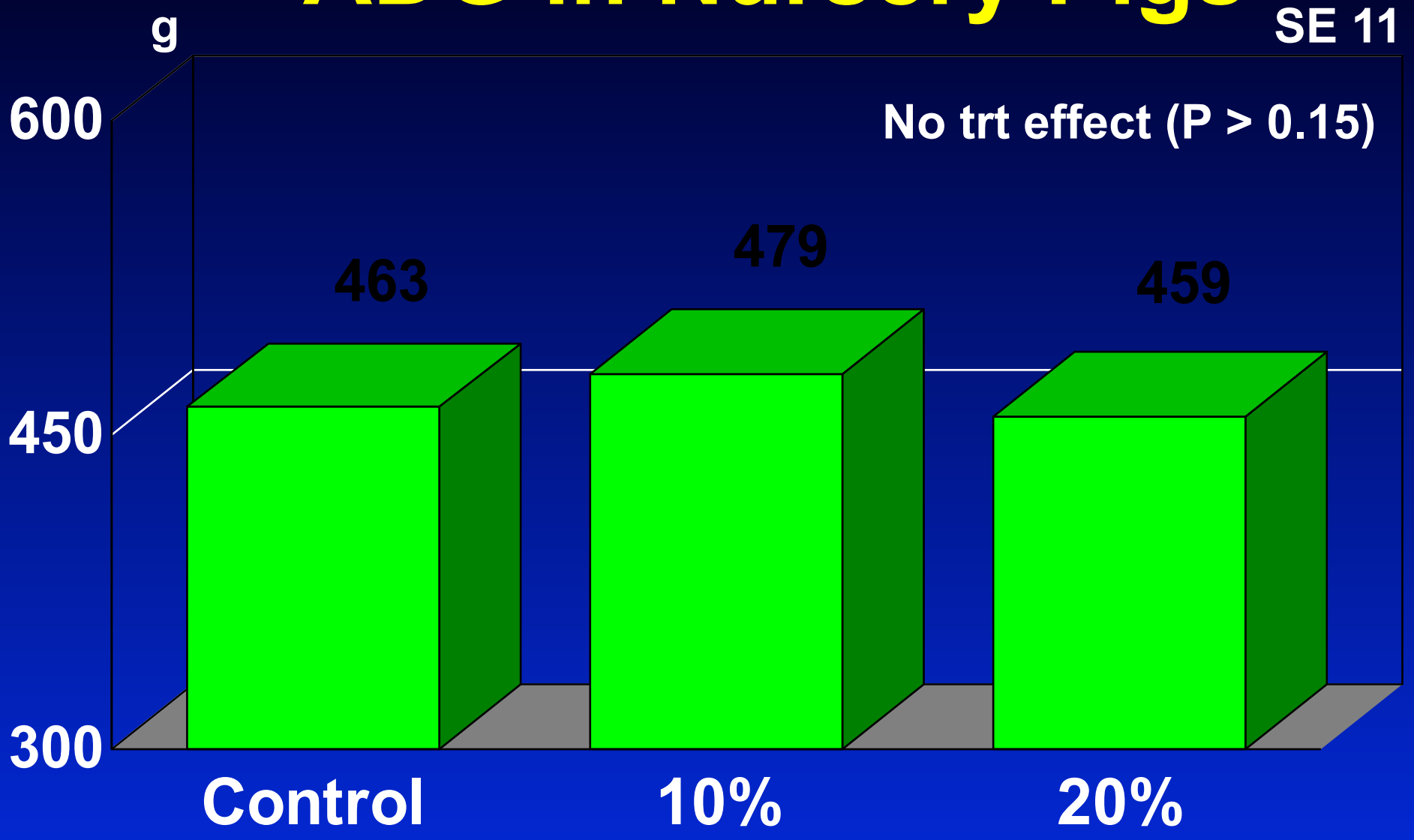


Sorghum-based DDGS and Last Rib Fat Depth

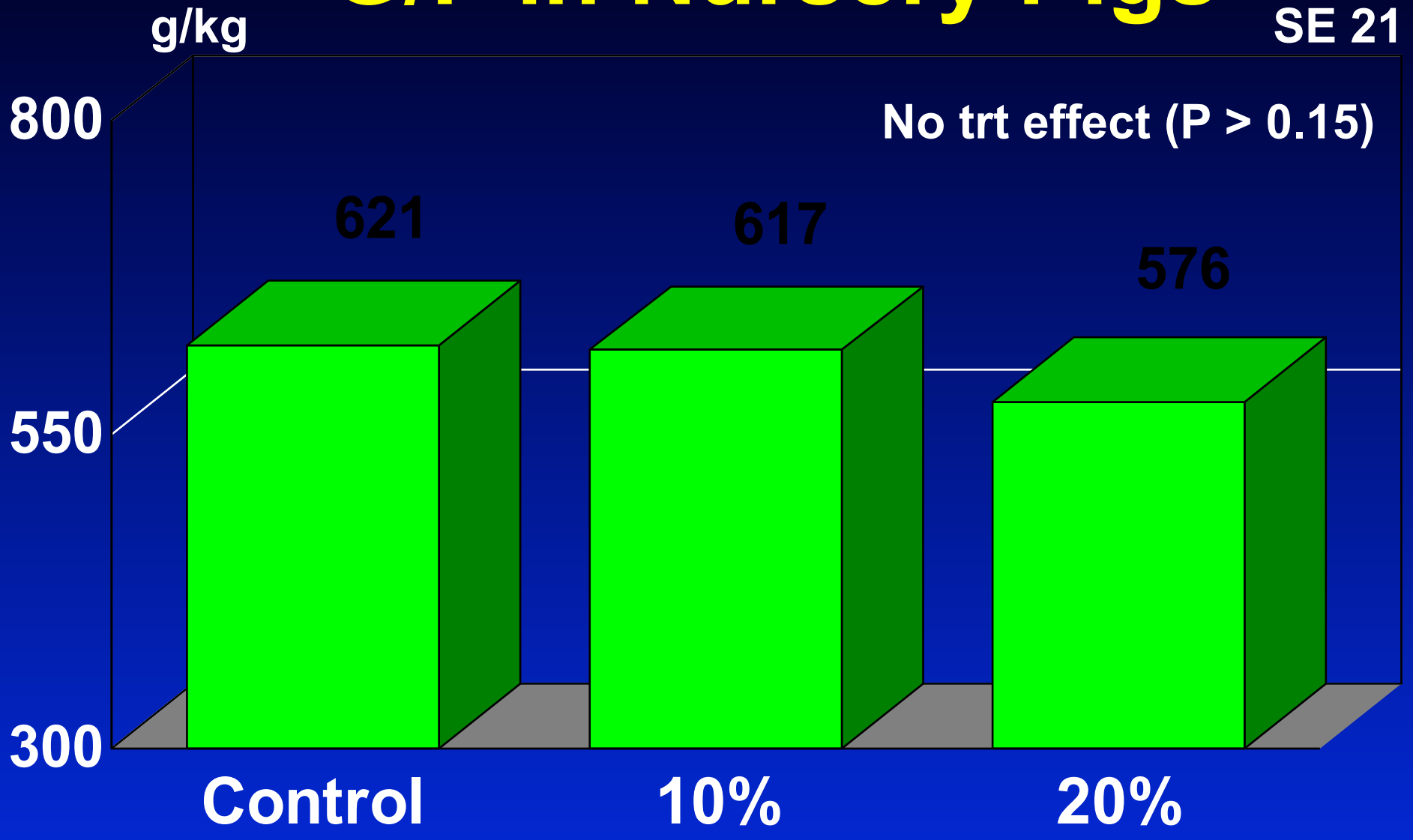


- 72 nursery pigs (avg BW of 6.8 kg) were used in a 22-d growth assay
- 6 pigs/pen and 4 pens/trt
- Fed same pelleted starter diet to d 7
- Experimental diets in meal form
- TRTs: corn-soy-based control with 0, 10, and 20% DDGS
- Soy oil to equalize ME of diets

Sorghum-based DDGS and ADG in Nursery Pigs

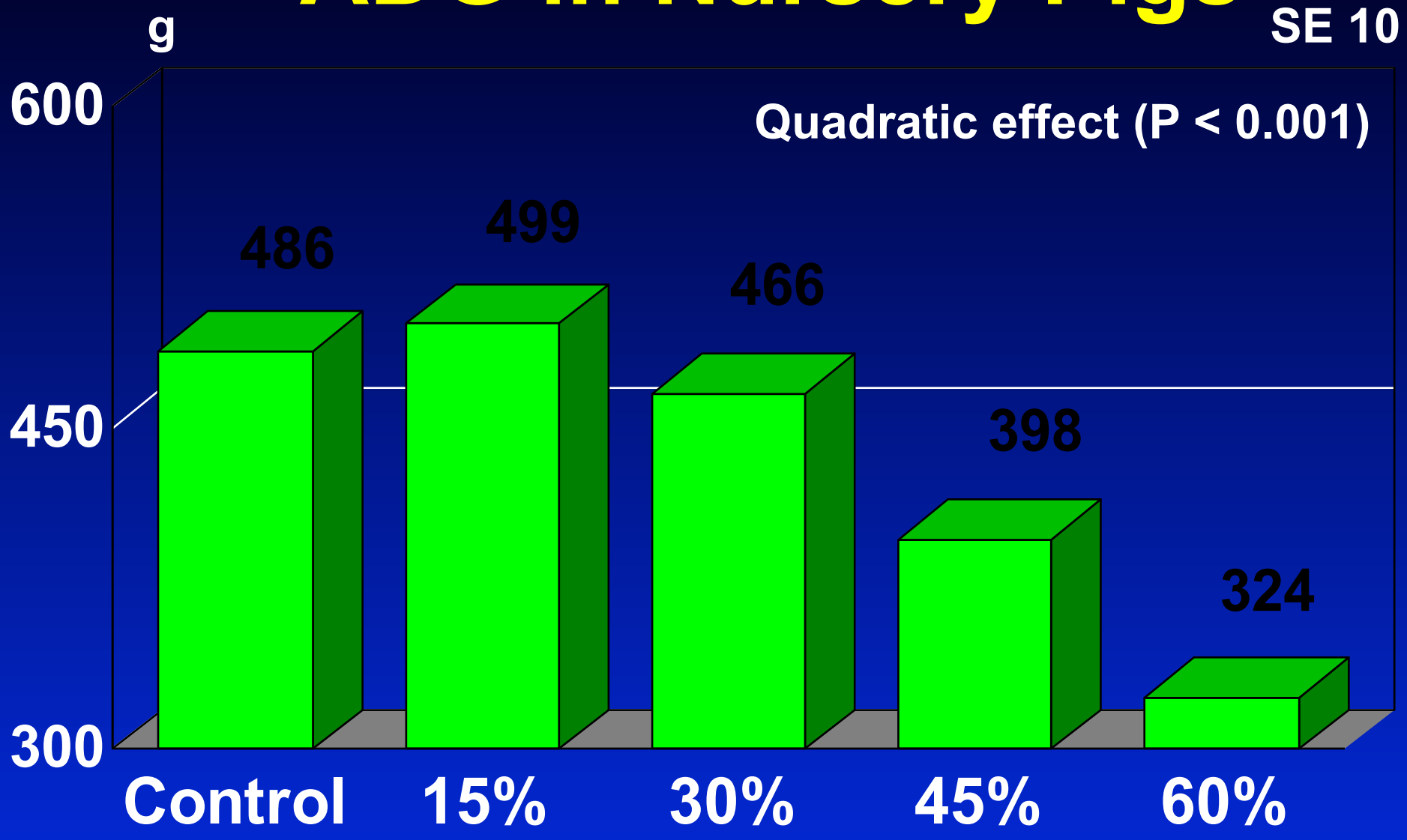


Sorghum-based DDGS and G/F in Nursery Pigs

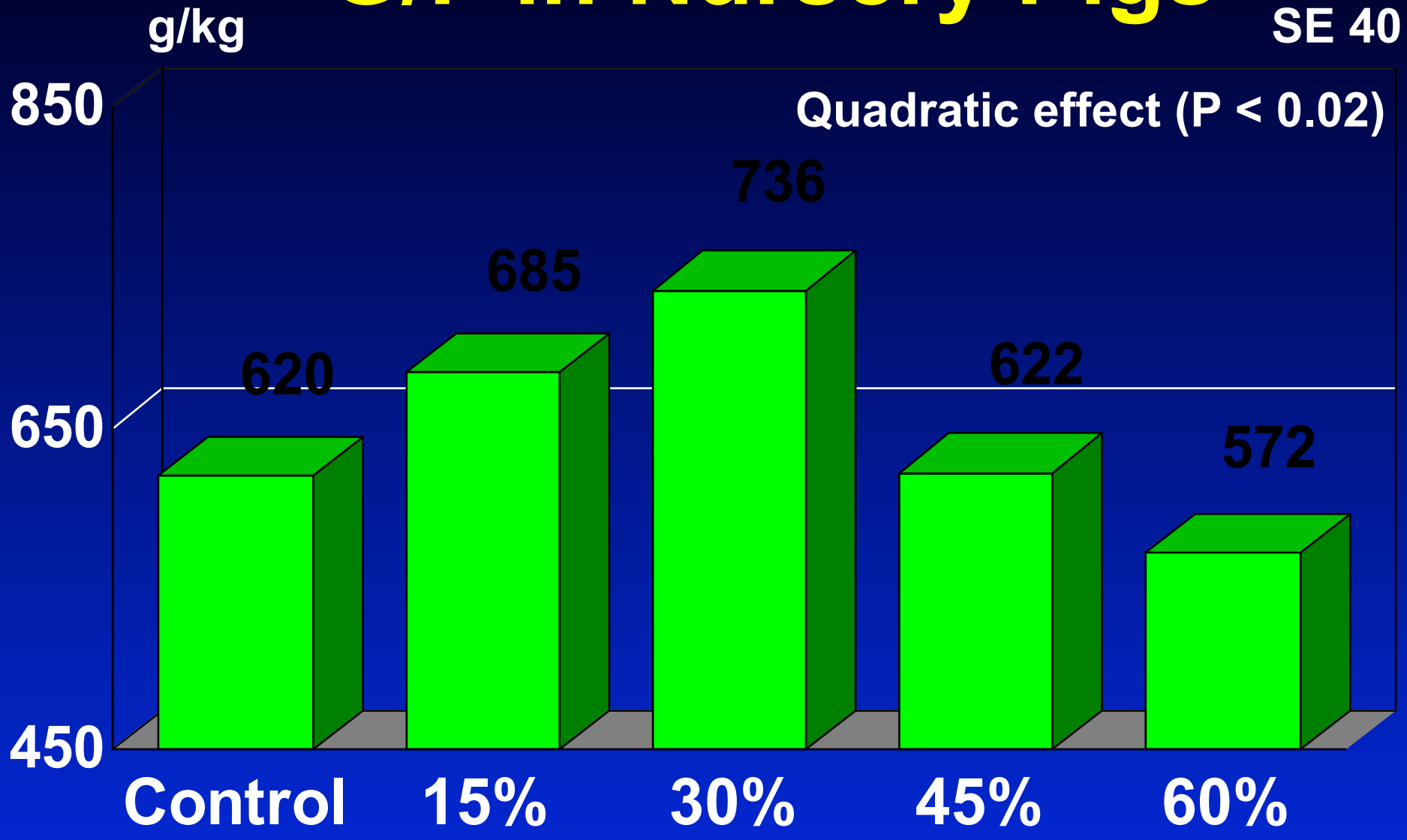


- 180 nursery pigs (avg BW of 5.7 kg) were used in a 20-d growth assay
- 6 pigs/pen and 6 pens/trt
- Fed same pelleted starter diet to d 7
- Experimental diets in meal form
- TRTs: corn-soy-based control with 0, 15, 30, 45, and 60% DDGS
- Tallow to equalize ME of diets

Sorghum-based DDGS and ADG in Nursery Pigs

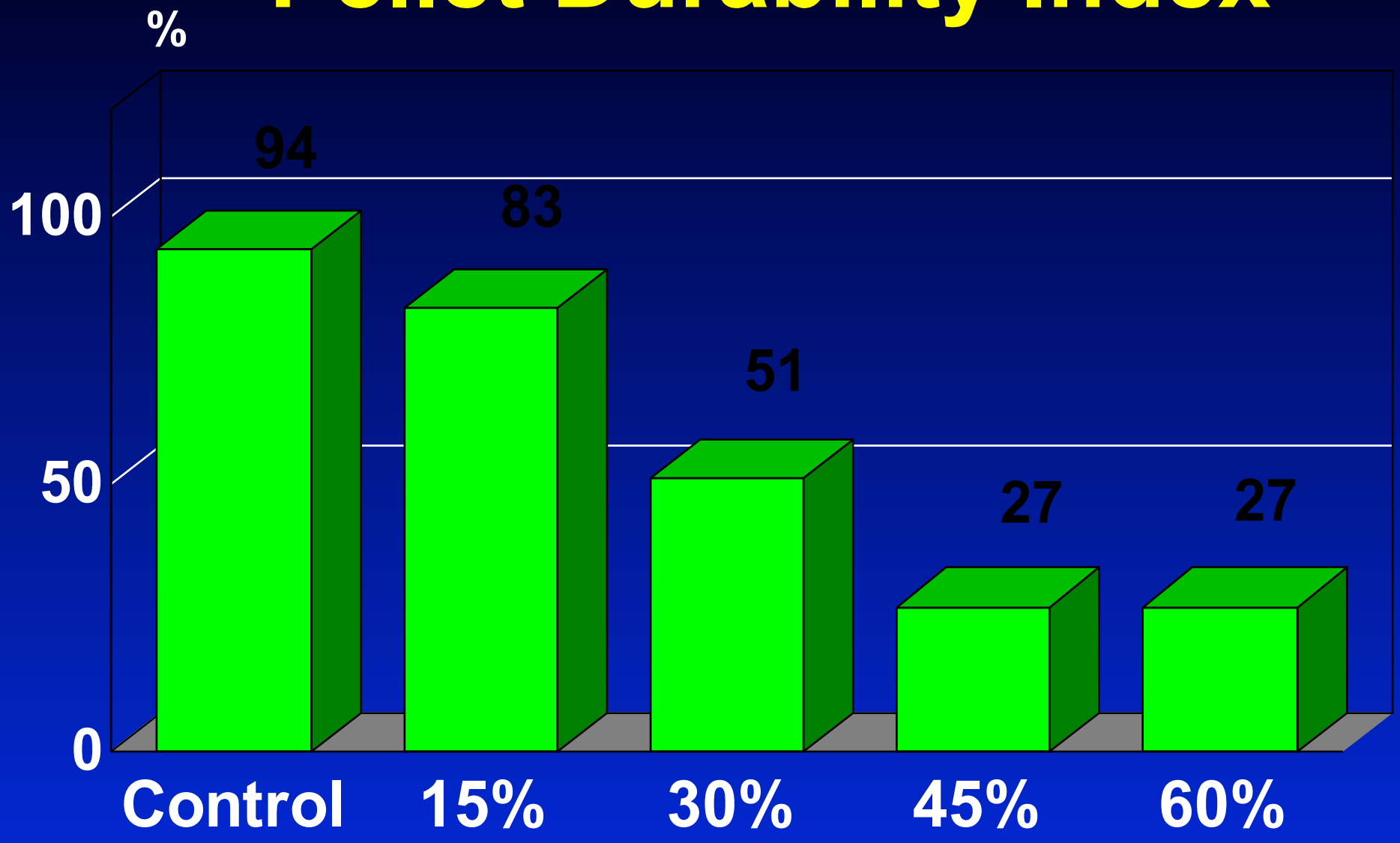


Sorghum-based DDGS and G/F in Nursery Pigs

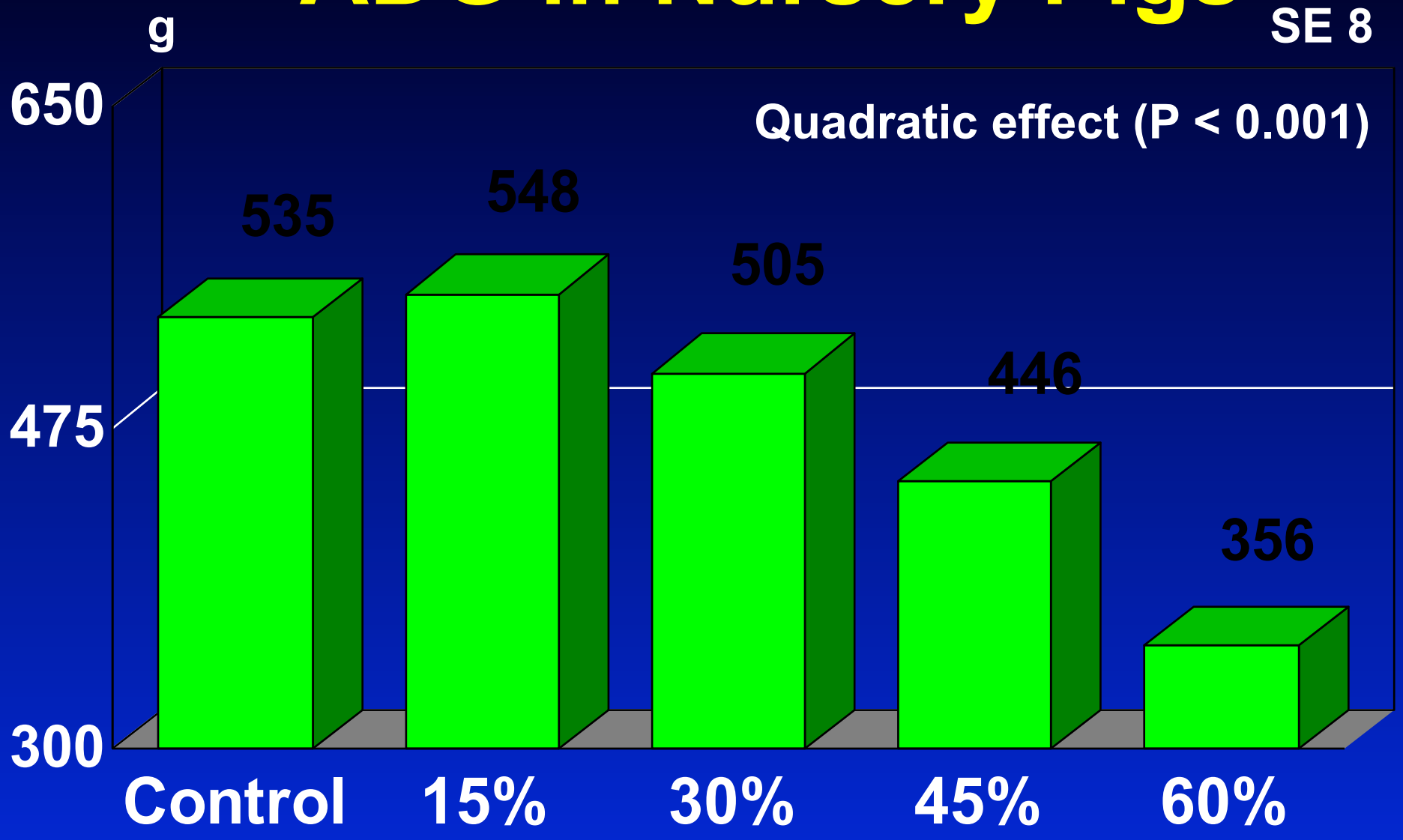


- 180 nursery pigs (avg BW of 8.8 kg) were used in a 20-d growth assay
- 6 pigs/pen and 6 pens/trt
- Fed same pelleted starter diet to d 10
- Experimental diets in pelleted form
- TRTs: corn-soy-based control with 0, 15, 30, 45, and 60% DDGS
- Tallow to equalize ME of diets

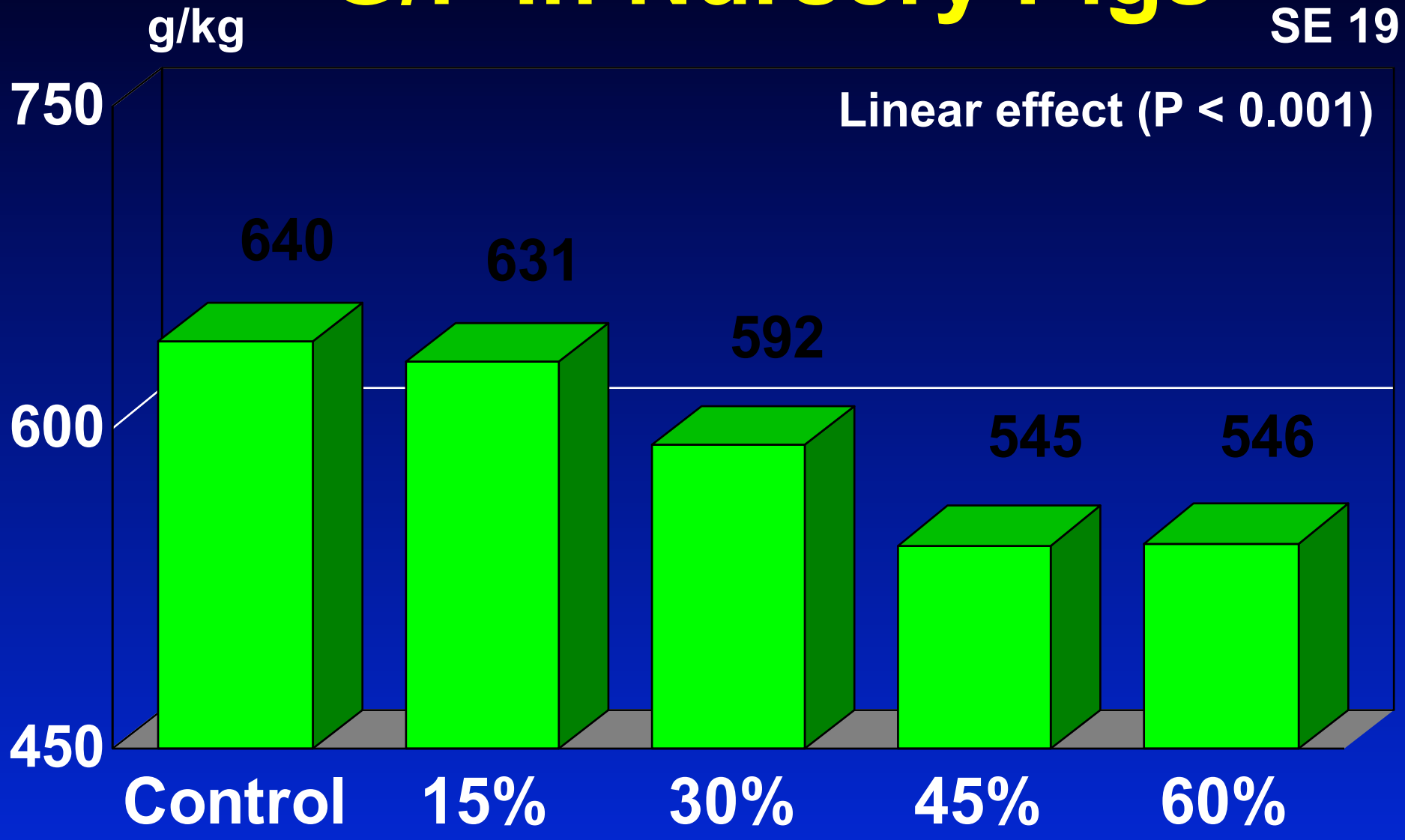
Sorghum-based DDGS and Pellet Durability Index



Sorghum-based DDGS and ADG in Nursery Pigs



Sorghum-based DDGS and G/F in Nursery Pigs



Conclusions

- Sorghum-based DDGS are similar to corn-based DDGS for MEn in broilers….but may be a bit lower in availability of lysine
- As much as 20 to 30% DDGS in diets for nursery pigs and 60% DDGS in diets for finishing pigs had no negative effects on growth performance

General Observations & Comments

- Promoting color as a primary indicator of quality is probably not a terribly good idea
- If mycotoxins are a concern, shouldn't we just test for them instead of limiting use of DDGS in diets?
- 50% of a diet as DDGS will add 2.2% corn oil to finishing diet ..... high oil corn as 80% will add 2.8% corn oil to a finishing diet