

# How to Mitigate the Effects of Feeding Corn DDGS on Carcass and Pork Quality

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# Feeding DDGS Mainly Affects ...

1. Dressing percentage
2. Fat hardness
3. Pork quality,  
↓ fat content

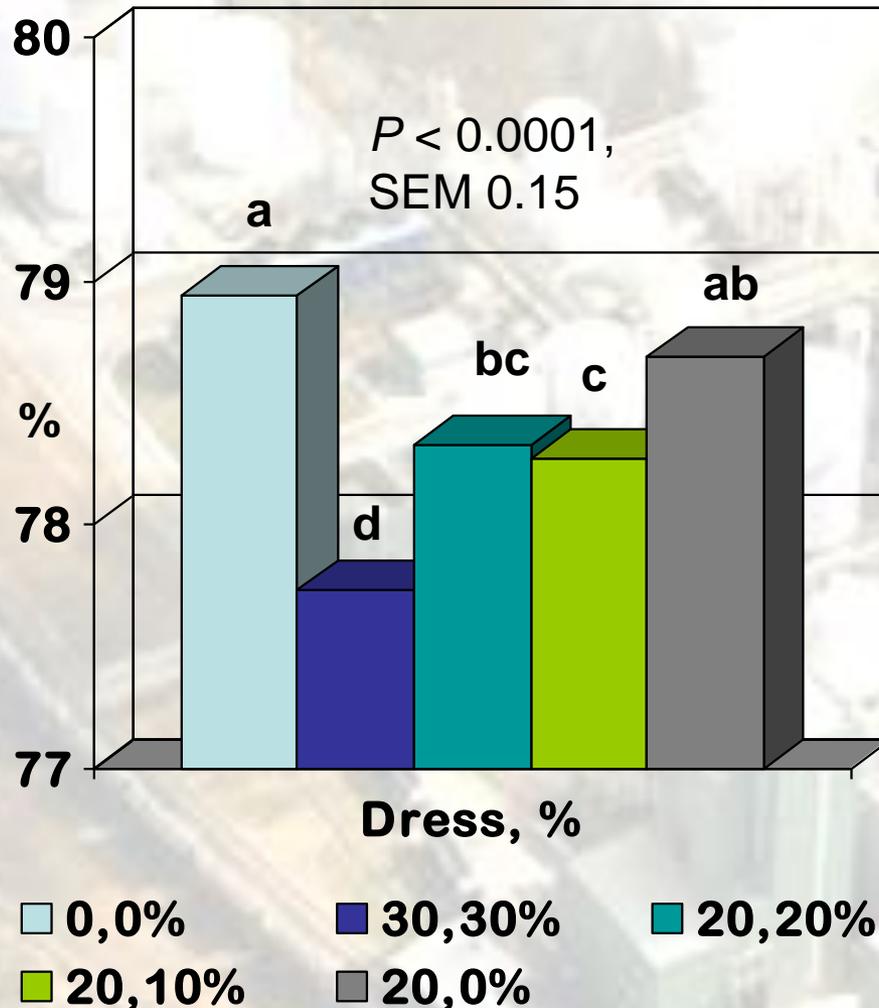


# Corn DDGS Withdrawal Rates

- 1. 0, 0, 0, **0, 0%**
- 2. 30, 30, 30, **30, 30%**
- 3. 30, 30, 30, **20, 20%**
- 4. 30, 30, 30, **20, 10%**
- 5. 30, 30, 30, **20, 0%**



# Corn DDGS Withdrawal Rates on Dressing



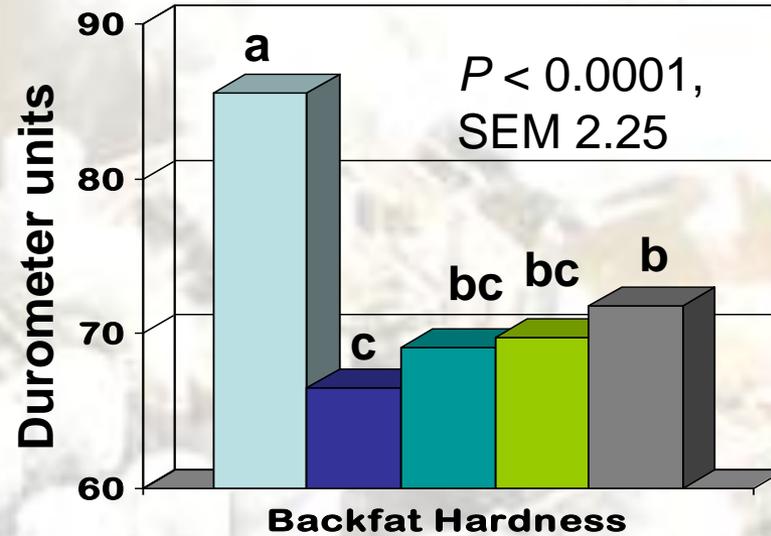
- Reduction in dressing:
  - For each 10% DDGS dressing declined 0.4%
  - Loss dressed weight represented \$0.50/pig
  - **Withdrawal strategies mitigated the problem**

# Effects on Fat Hardness

- Corn DDGS 10-12% fat, unsaturated linoleic acid
- Feeding DDGS increases iodine value
- Asia is Canada's most attractive pork market
- Packers' greatest concern is loin firmness
  - Bacon slices may stick and gel together
  - Sausage may appear oily, runny
  - Reduced pork shelf life
- Genotype and gender exacerbate the problem



# Corn DDGS Withdrawal Rates on Backfat Hardness

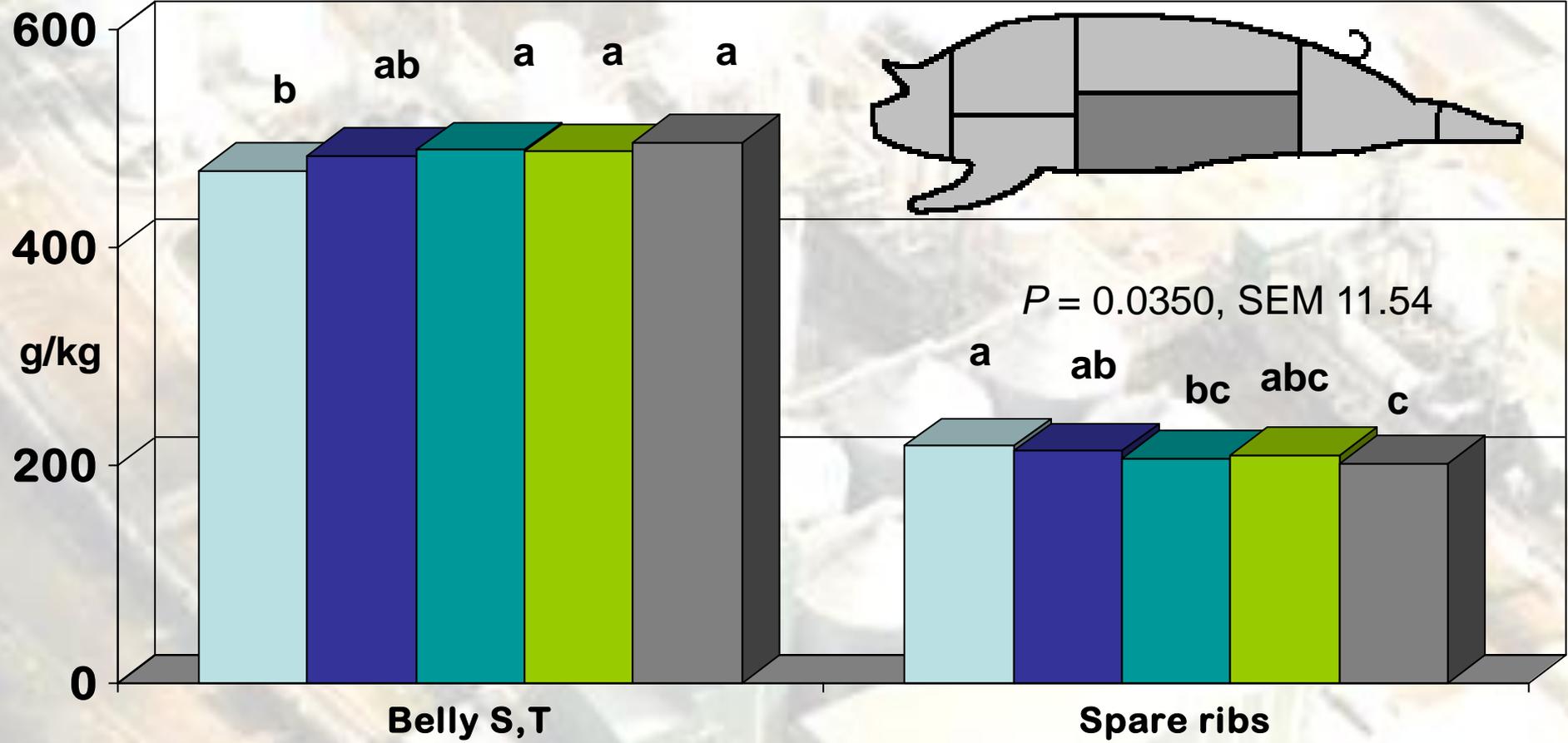


0,0%      30,30%      20,20%  
20,10%      20,0%



# Corn DDGS Withdrawal Rates on BELLY Tissue Composition

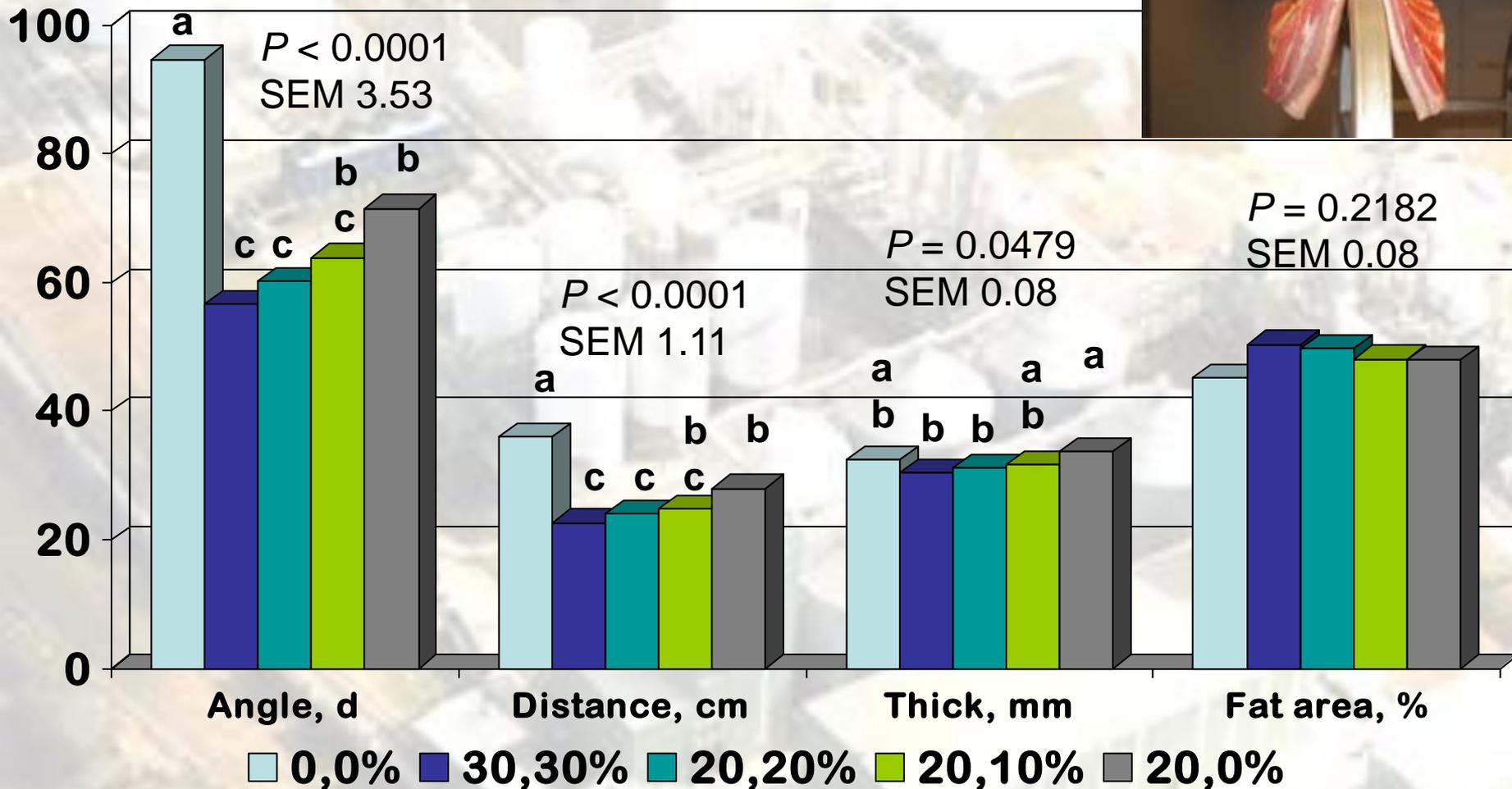
$P = 0.0187$ , SEM 10.87



■ 0,0% 
 ■ 30,30% 
 ■ 20,20% 
 ■ 20,10% 
 ■ 20,0%

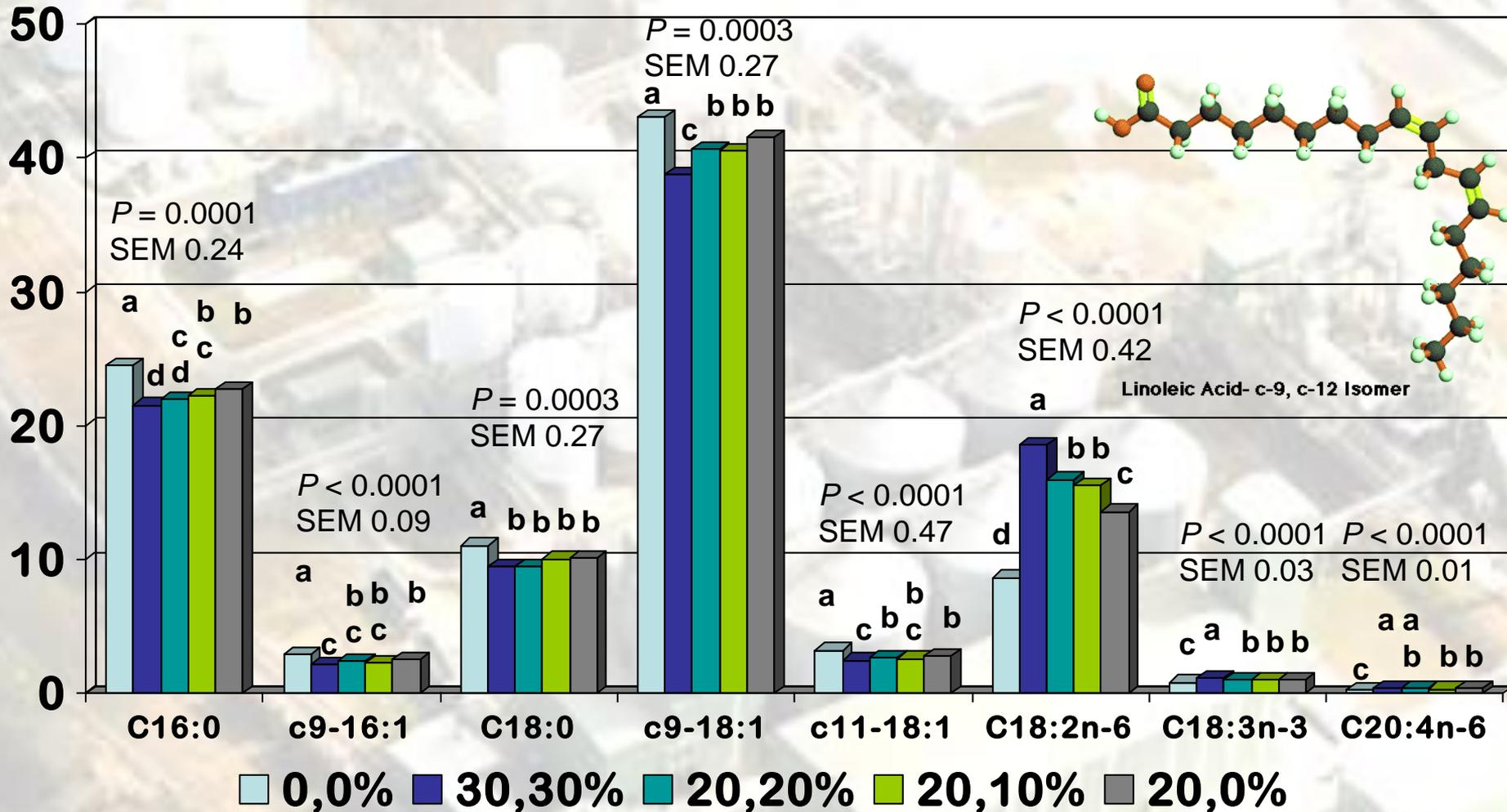
# Corn DDGS Withdrawal on Belly Measurements

**Gender  $P \leq 0.0004$**

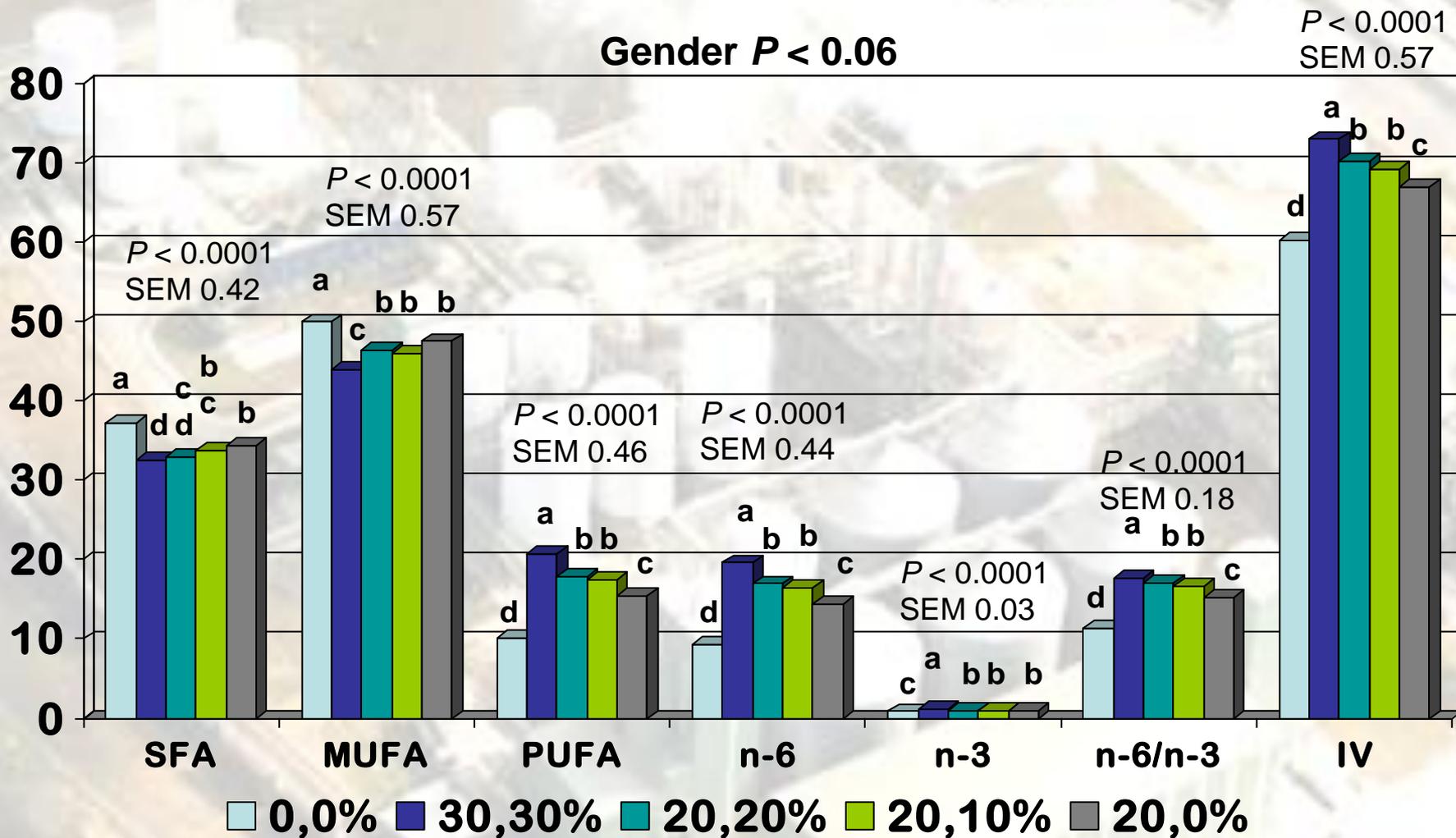


# Corn DDGS Withdrawal Rates on % Belly Fatty Acid Composition

Gender  $P < 0.05$ , except C18:0, c9-18:1



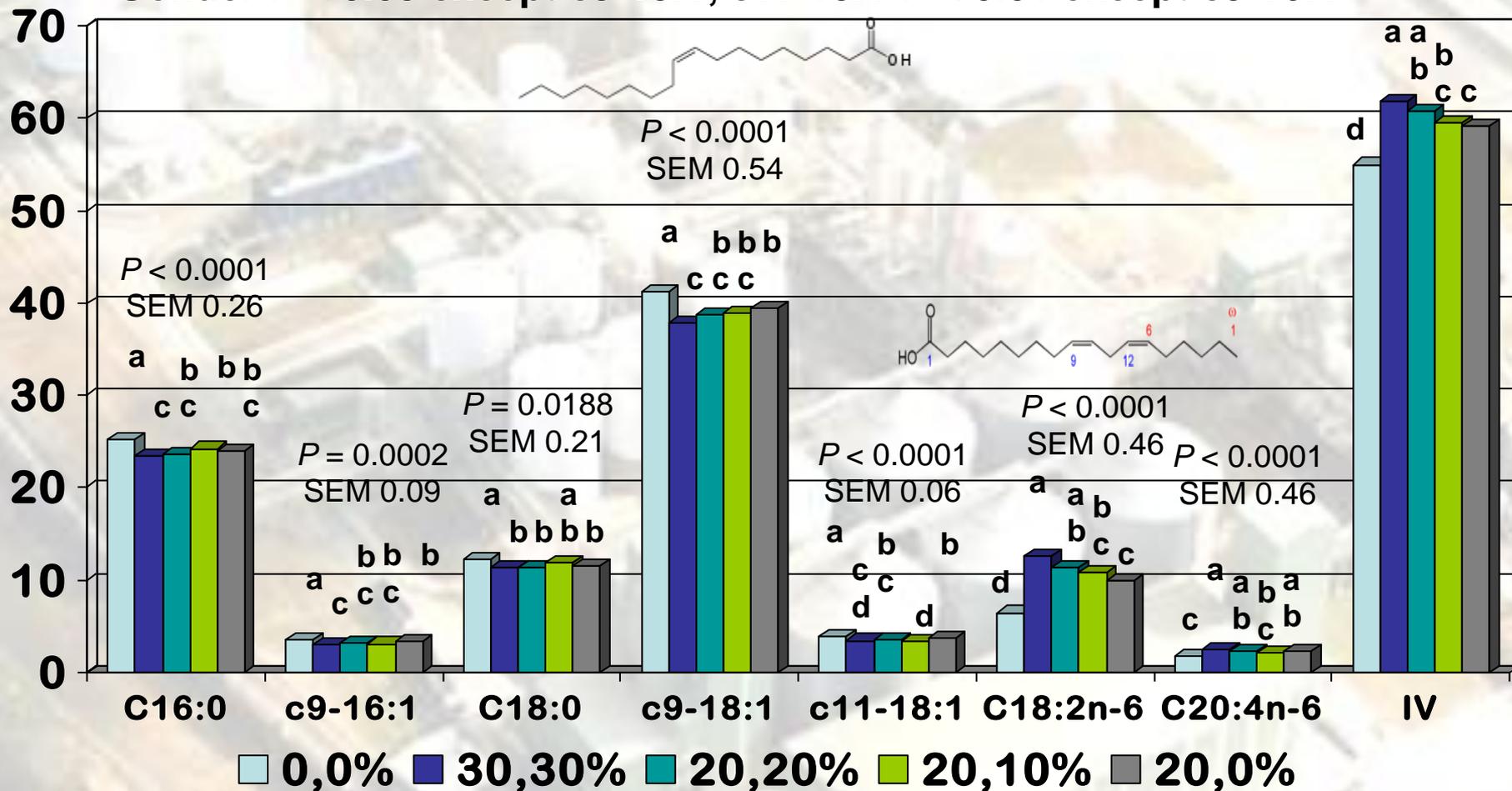
# Corn DDGS Withdrawal Rates on Belly Fatty Acid Composition, %



# Corn DDGS Withdrawal Rate on Loin Fatty Acid Composition, %

$P < 0.0001$

Gender  $P < 0.05$  except c9-18:1, c11-18:1  $P < 0.01$  except c9-16:1 SEM 0.54



# Processed Pork Products



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Food Processing Centre, Leduc, AB

# Corn DDGS Withdrawal Rates on Ham Physical Properties

- The fat content in ham was too low to notice differences in texture or color
- No differences were noted by consumers on ham sensory attributes

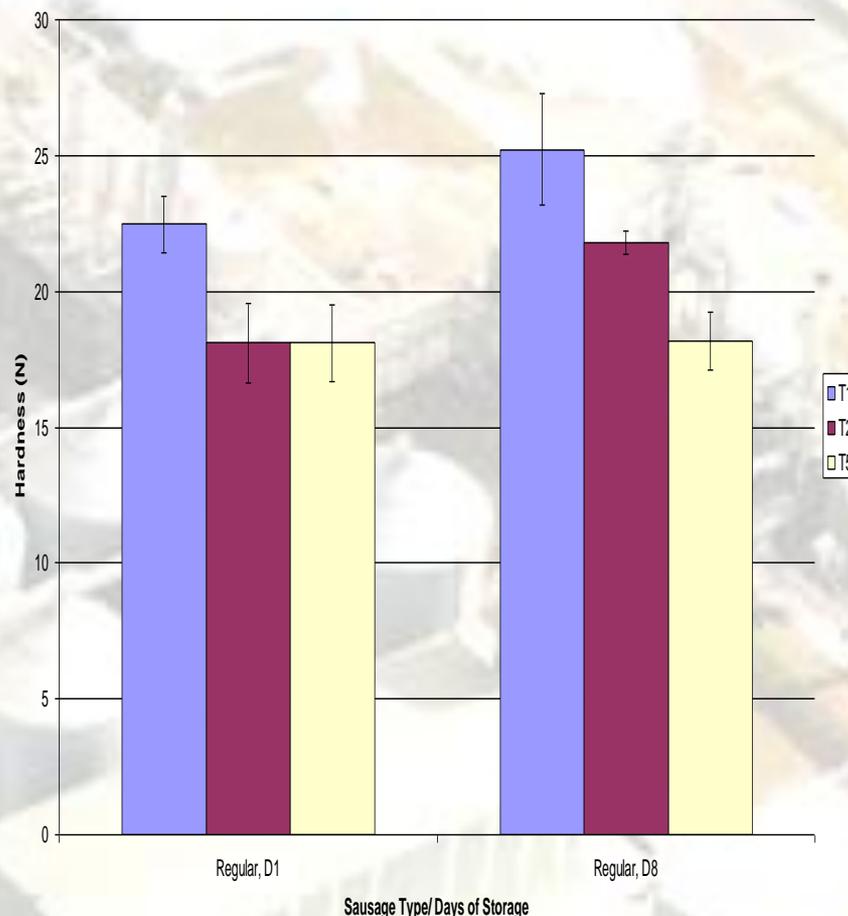


# Corn DDGS Withdrawal Rates on Breakfast Sausage Shear Force

- **Kramer Shear Force**

- 30% DDGS trend to require less force to shear than both control or 20,0% DDGS
- **The 20,0% DDGS showed similar shear force values as the control**

The hardness of breakfast sausages made from pork harvested from hogs finished with different levels of DDGS



# Corn DDGS Withdrawal Rates on Sensory Evaluation of Breakfast Sausage



- **Appearance and Colour of 30% Fat Sausages**
  - Comments were that 30% DDGS sausages were pale compared with controls
  - **Panelist reported no difference between 20,0% DDGS and control.**

# Corn DDGS Withdrawal Rates on Sensory Evaluation of Breakfast Sausage



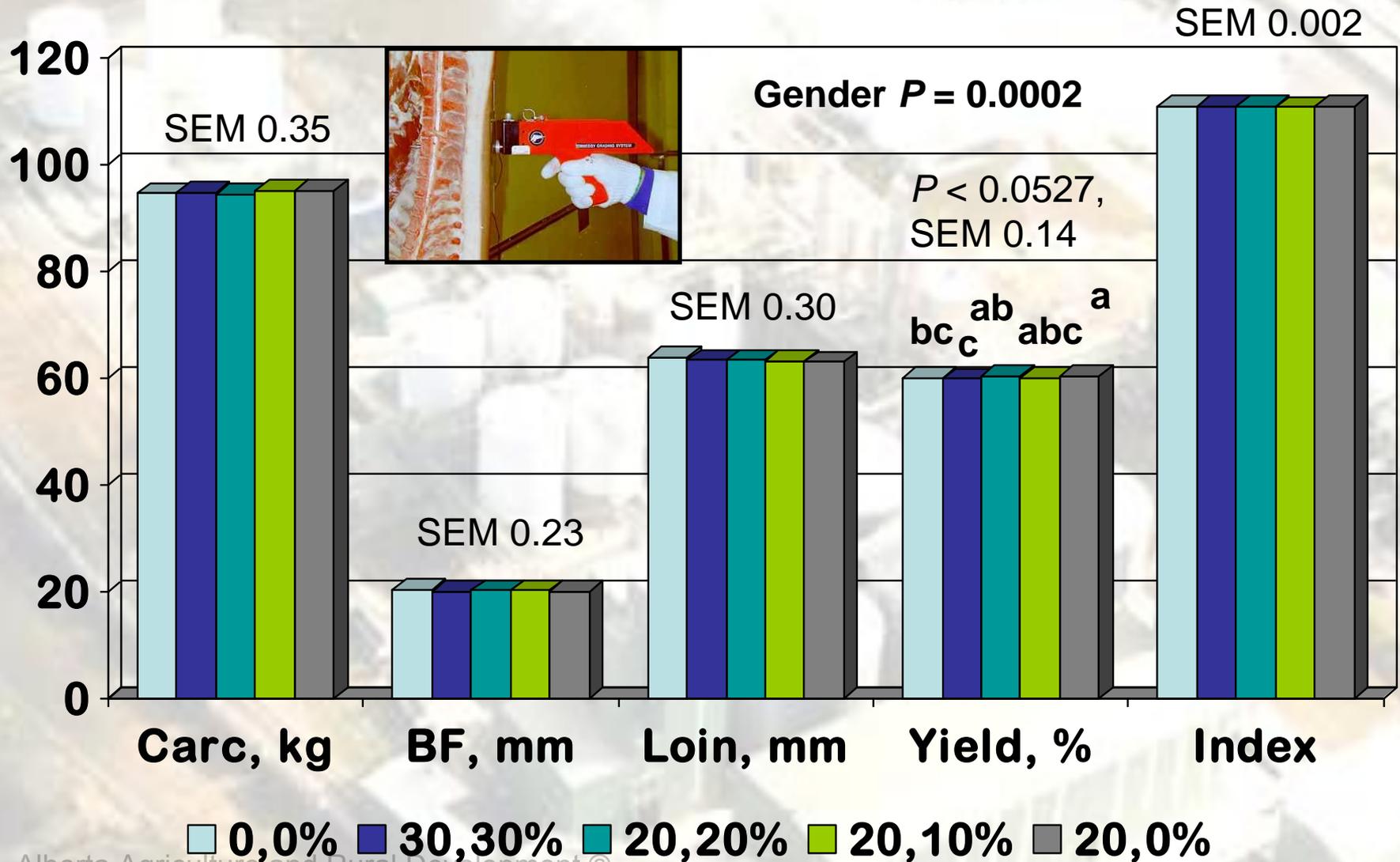
- **Texture of 30% Fat Sausages**
  - Consumers disliked the texture of 30% corn DDGS sausages,
    - *Too mushy !!*
  - **Panelist reported no difference between 20,0% DDGS and control**

# Conclusions

## Processed Pork Products

- Processed pork products containing >15% fat were not affected by the inclusion of pork fat containing an altered fatty acid profile due to corn DDGS feeding up to 30% dietary inclusion
- Withdrawal of DDGS in the late finishing phase mitigated changes in texture, appearance and colour in breakfast sausages made with this pork

# Corn DDGS Withdrawal Rates on Carcass Traits





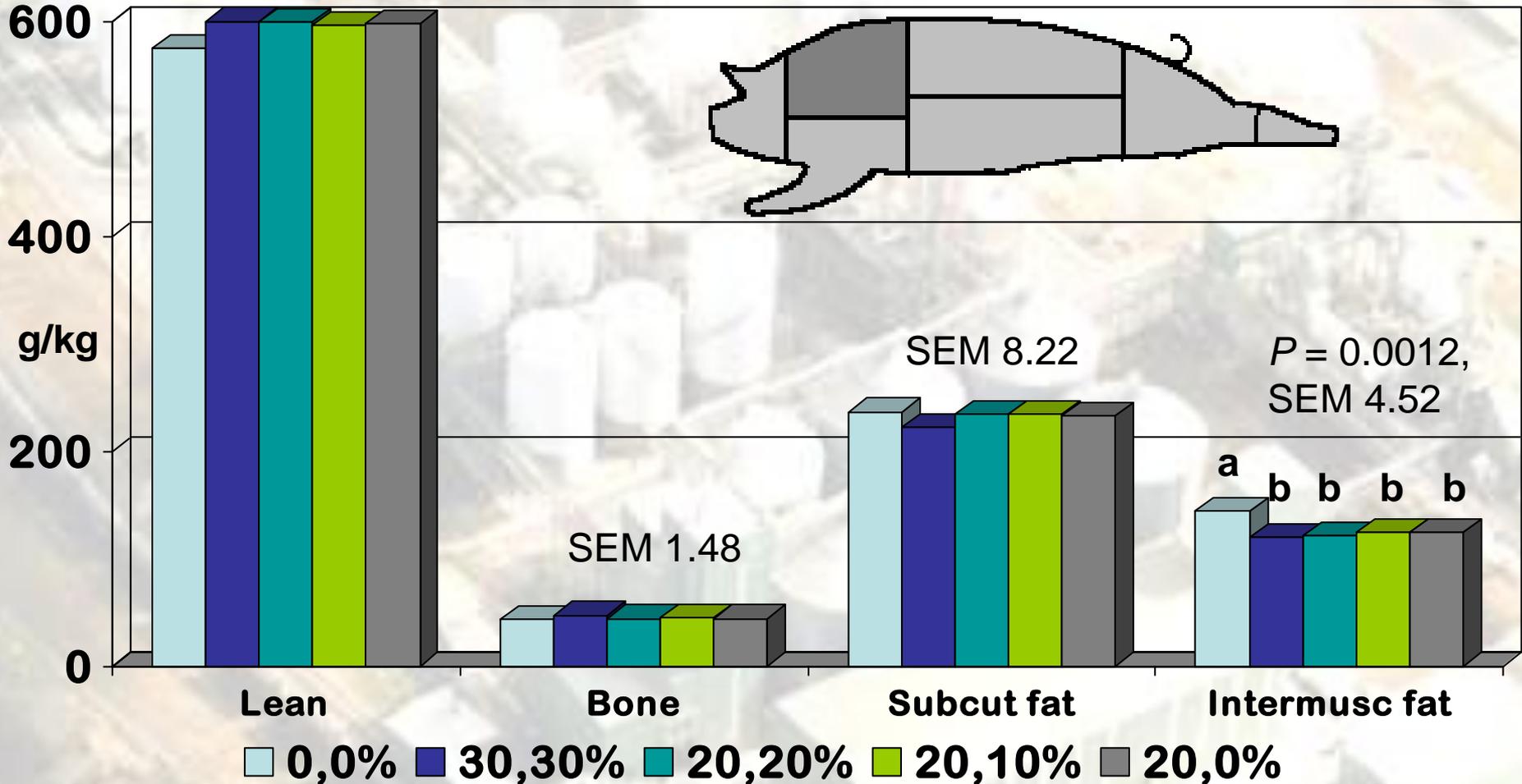
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# Corn DDGS Withdrawal Rates on BUTT Tissue Composition

SEM 9.60

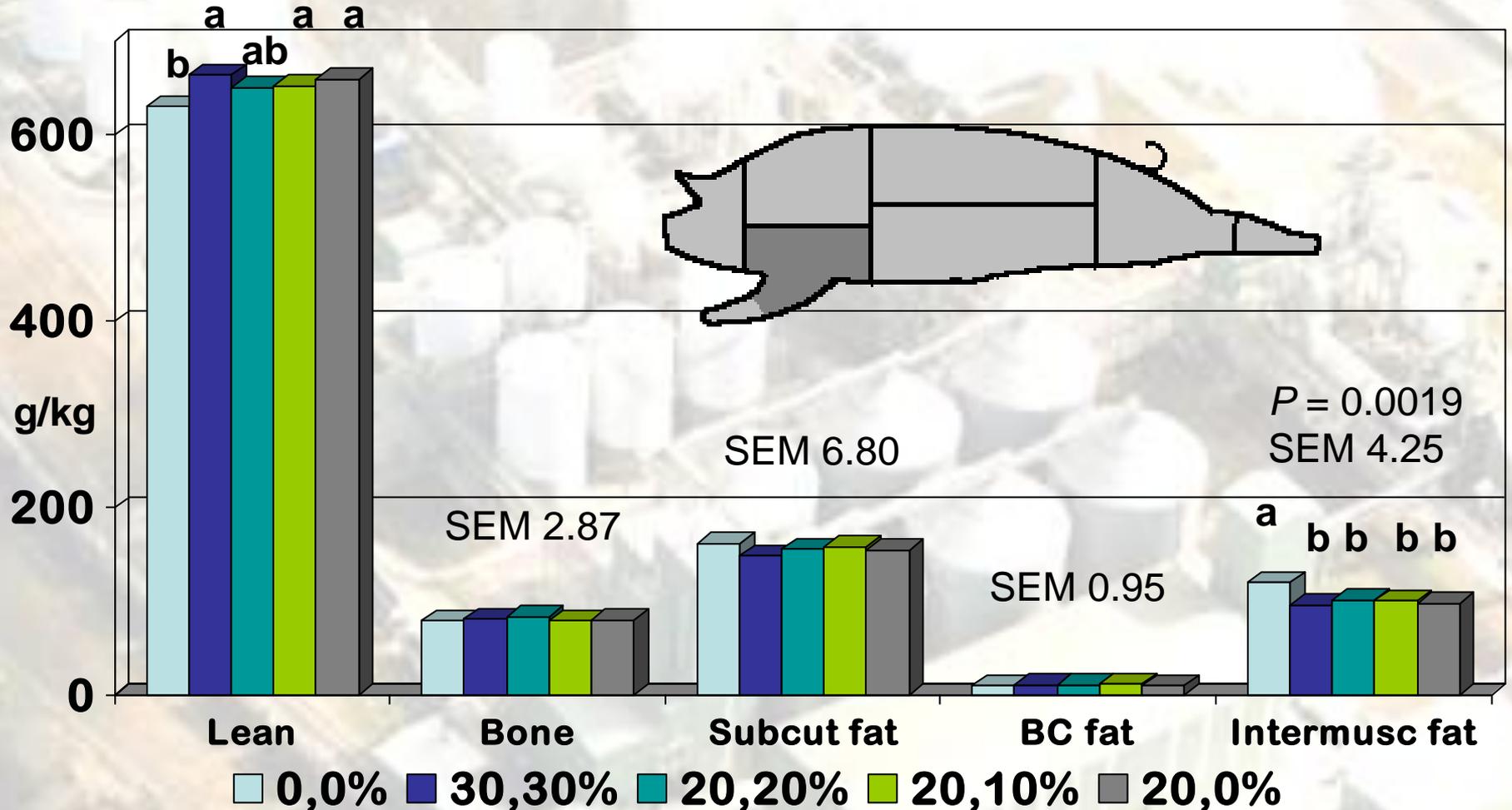
Gender  $P = 0.0063$



# Corn DDGS Withdrawal Rates on PICNIC Tissue Composition

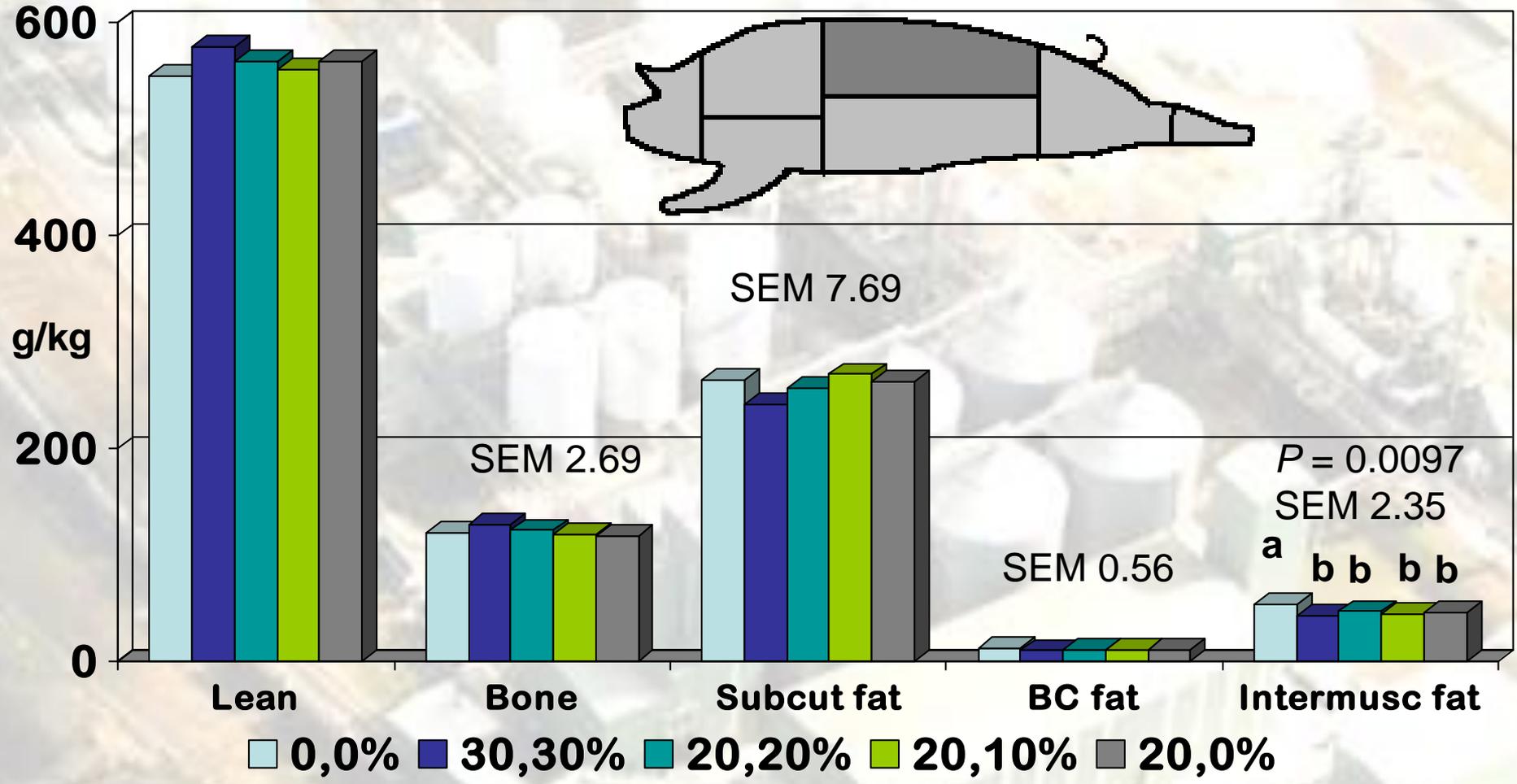
$P = 0.0269$ , SEM 9.17

Gender  $P < 0.0001$



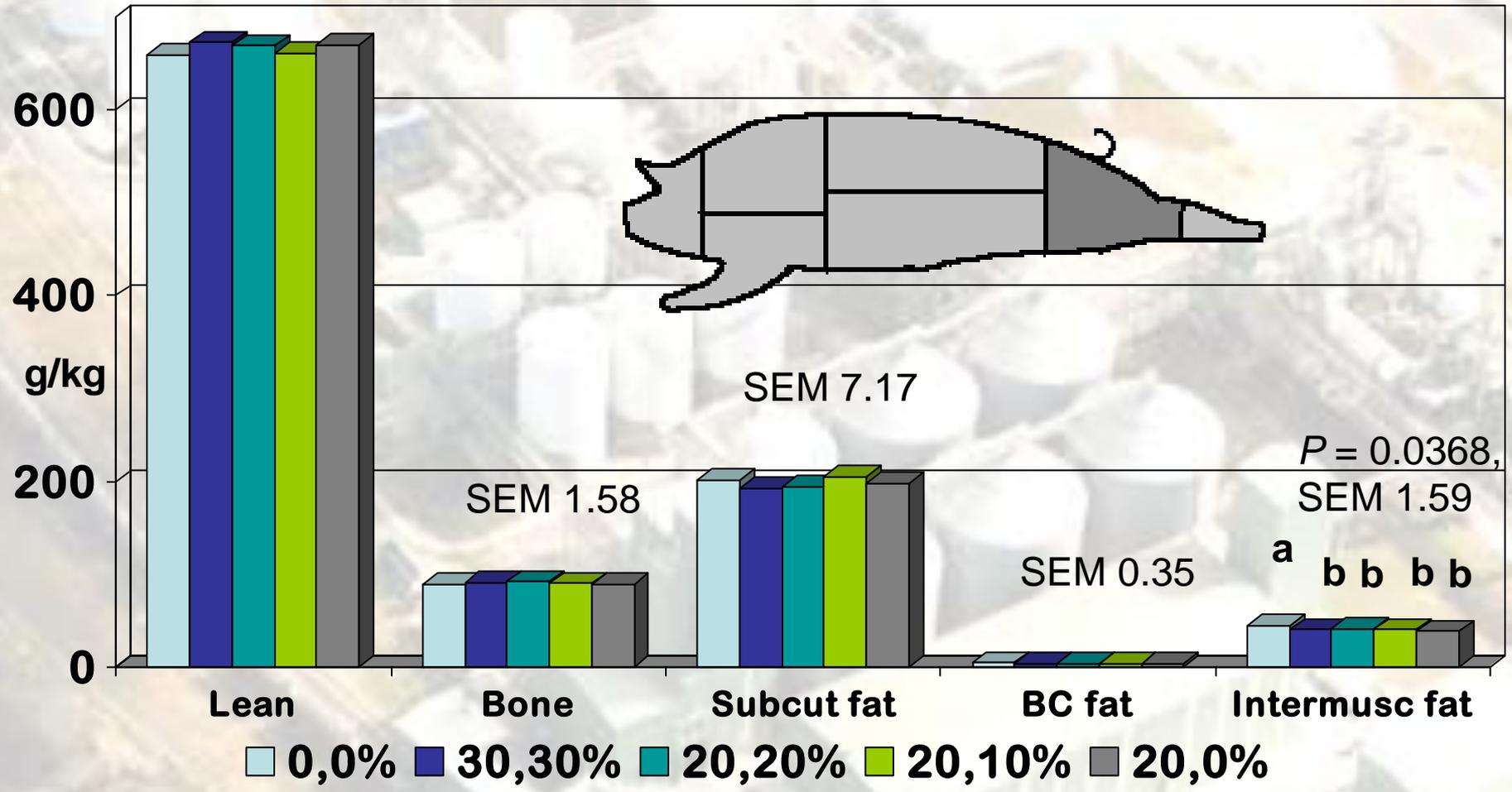
# Corn DDGS Withdrawal Rates on LOIN Tissue Composition

SEM 8.33

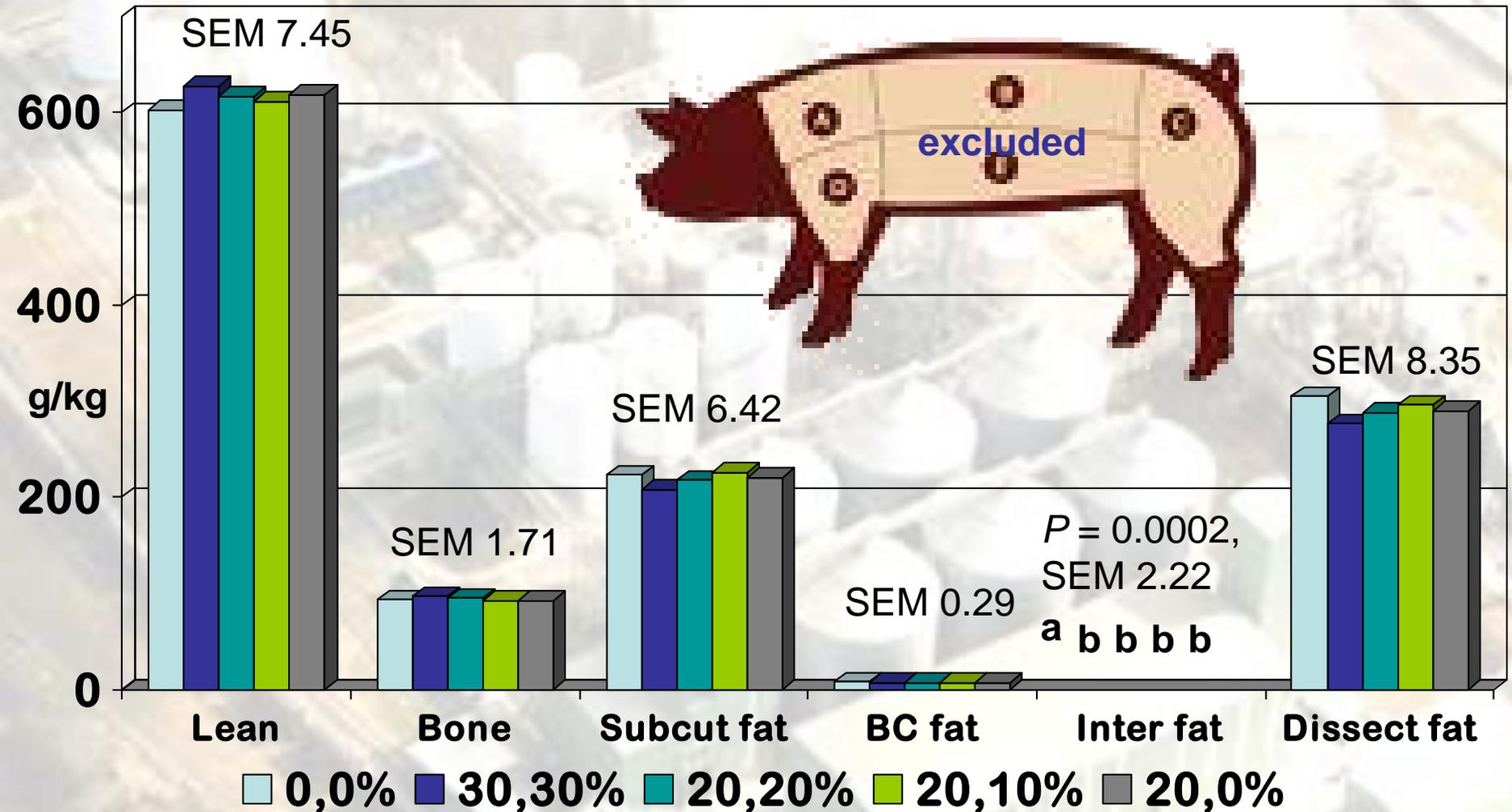


# Corn DDGS Withdrawal Rates on HAM Tissue Composition

SEM 7.25



# Corn DDGS Withdrawal Rates on Lean Cuts Tissue Composition



# Retail Appearance

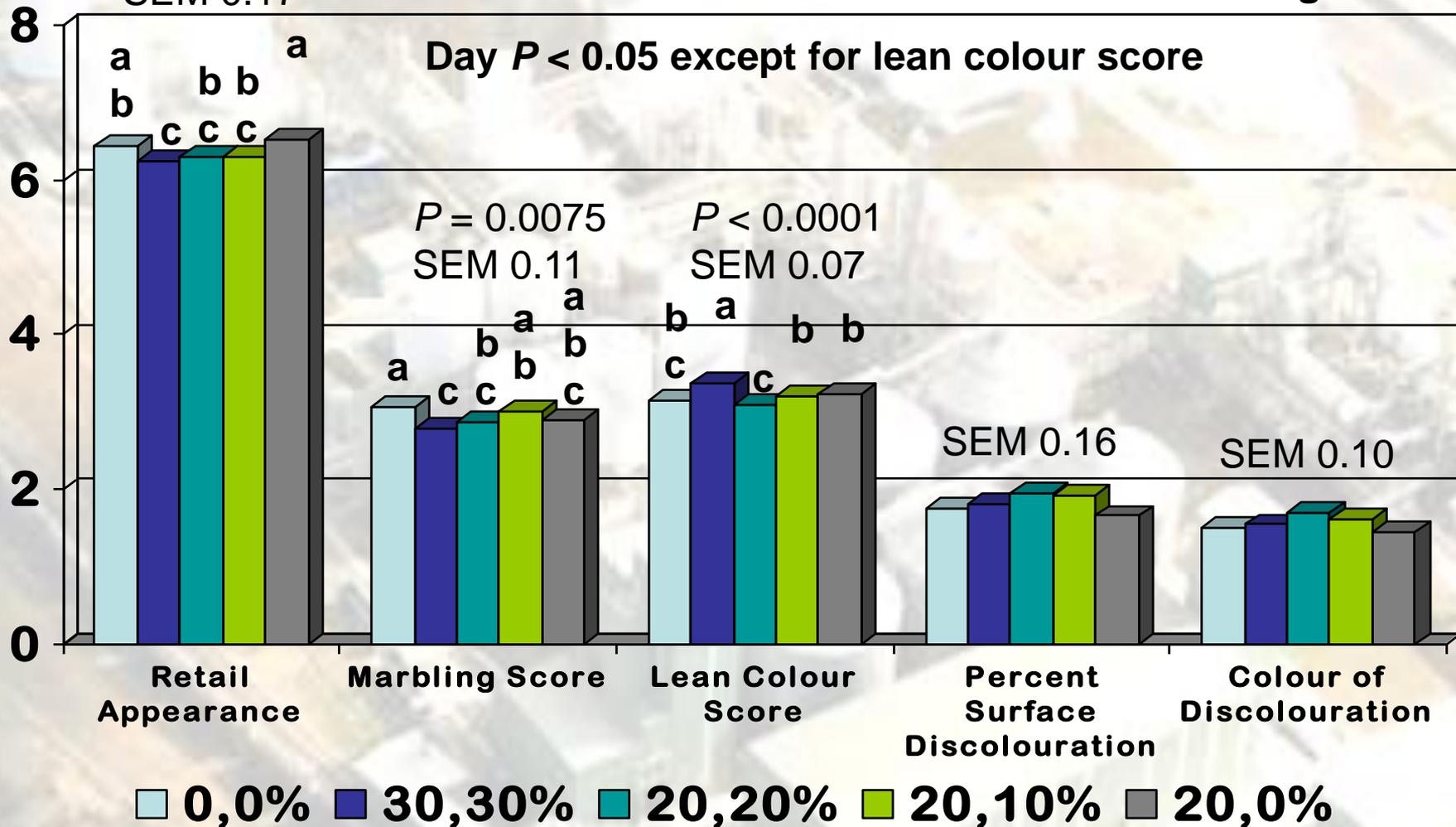


# Corn DDGS Withdrawal Rates on *Subjective* Loin Retail Appearance over 3 days

$P = 0.0388$   
SEM 0.17

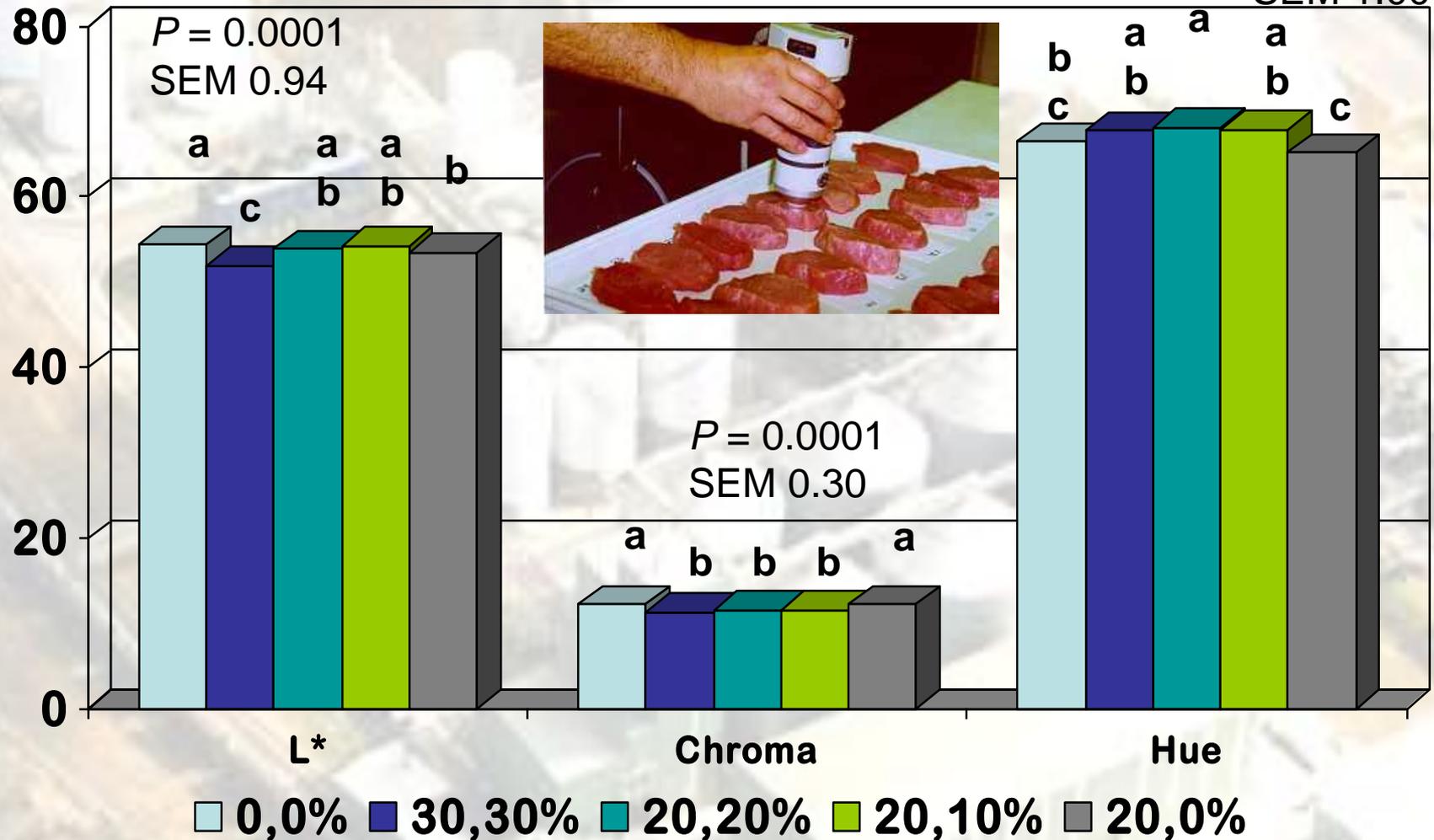
Gender  $P < 0.0001$  for lean colour and marbling scores

Day  $P < 0.05$  except for lean colour score

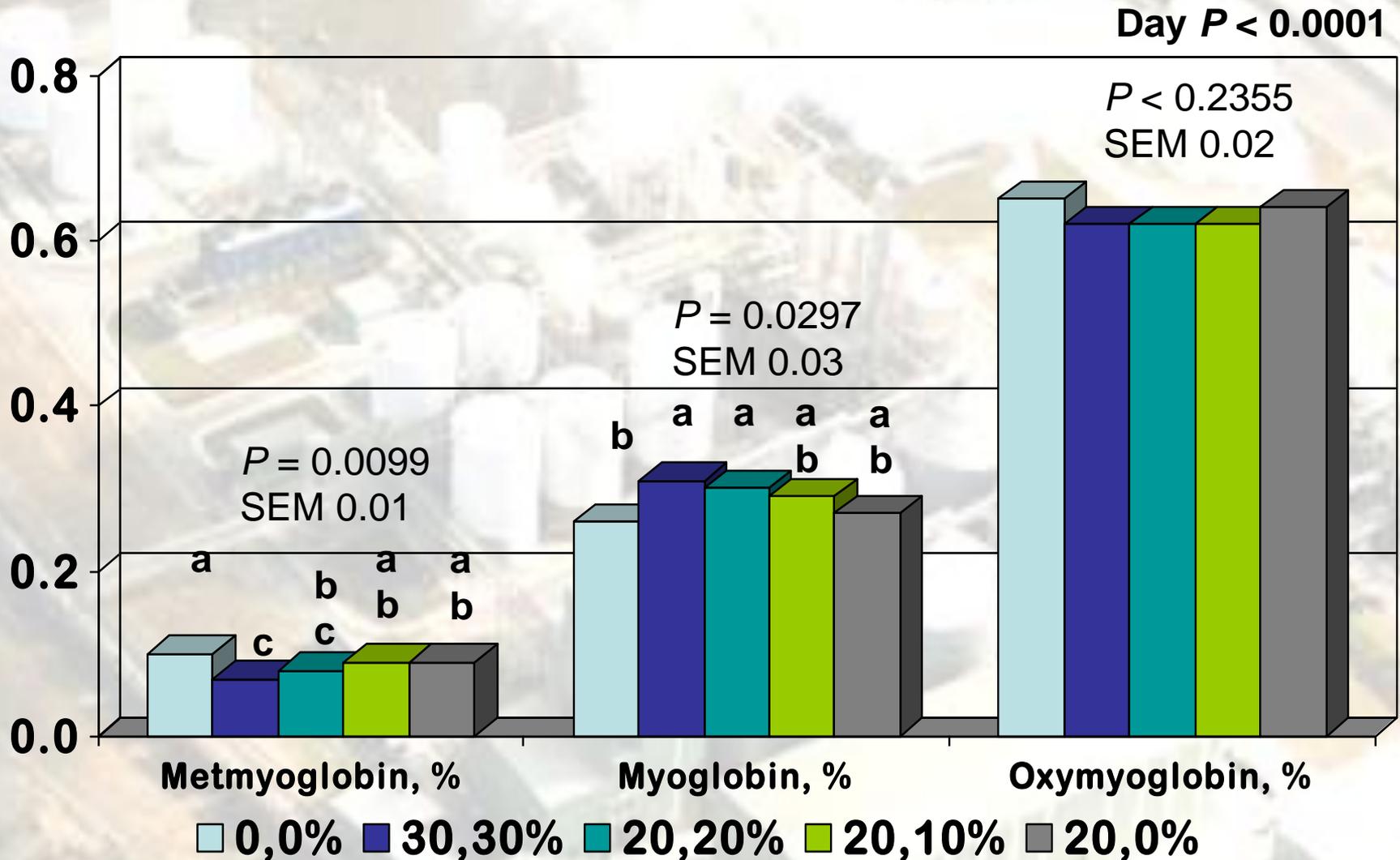


# Corn DDGS Withdrawal Rates on *Objective* Loin Retail Appearance over 3 days

Gender  $P \leq 0.0354$  L\* and hue      Day  $P < 0.005$  except chroma       $P < 0.0001$   
SEM 1.00



# Corn DDGS Withdrawal Rates on *Objective* Loin Retail Appearance over 3 days



# Conclusions

1. Withdrawal of corn DDGS from finisher for the last ~3 wks corrected the ↓dressing %
2. Withdrawal of corn DDGS from finisher diet for the last ~3 wks lessen fat softness
3. Withdrawal of corn DDGS from finisher diet for the last ~3 wks reduced fat, restored marbling
4. Processing to reduce the oil content of corn DDGS will lessen effects on fat softness, but *...will it be less \$ feasible to feed ?*

# Acknowledgements



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**Canada** ■

The Agricultural Policy Framework (APF)  
A FEDERAL-PROVINCIAL-TERRITORIAL INITIATIVE

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