An aerial photograph of a large-scale cattle feedlot. The facility consists of numerous rectangular pens separated by metal rail fences. The ground in the pens is dark and appears to be dirt or manure-covered. Hundreds of cattle, mostly black and some white, are distributed across the various pens. In the background, there is a line of green trees and a clear sky. The overall scene depicts a large, organized agricultural operation.

Efficacy of liver abscess vaccines in natural-fed finishing cattle and the impact of liver abscesses on performance and carcass characteristics

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and Kerry Barling**

Liver abscesses in cattle

- Cause
 - High-concentrate rations
- Etiological agent(s)
 - *Fusobacterium necrophorum*
 - *Arcanobacterium pyogenes*
- Prevention
 - Antimicrobials
 - Vaccines
 - Considerations of use



Liver abscess vaccines

- Fusogard®
 - Novartis Animal Health
 - *F. necrophorum* bacterin
- Centurion™
 - Schering-Plough Animal Health
 - *F. necrophorum* inactivated leukotoxin
 - *A. pyogenes* pyolysin

Objectives

- 1) Evaluate the efficacy of Fusogard® and Centurion™ to reduce the incidence of liver abscesses in natural-fed finishing cattle
- 2) Quantify the impact of liver abscesses at harvest on carcass characteristics and previous feedlot performance

Experimental animals

- Feedlot steers and heifers
- N = 1,307
- Enrolled upon arrival (November and December 2006)
- Treatments
 - Control
 - Fusogard[®]
 - Centurion[™]
- Treatment allocation



Experimental diet

- Four step-up rations
- Finishing ration
(as-fed basis)
 - Steam-flaked corn: 73%
 - Alfalfa hay: 4%
 - Sorghum silage: 6%
 - Wet distiller's grains: 9%
 - Soybean straw: 3%
 - Supplement: 5%



Liver abscess evaluation

Elanco System for Grading Abscessed Beef Cattle Livers



Normal



A-



A



A+

Liver abscess evaluation

- Weekly selection of cattle (June, July and August 2007)
- Elanco system
 - 0 = no abscess
 - A- = one or two small abscesses or scars
 - A = two to four organized abscesses
 - A+ = one or more large active abscesses
- Distribution
 - 56% (n = 734 of 1307) had liver abscesses
 - 39% (n = 515 of 1307) had severe (A or A+) liver abscesses

Performance and quality parameters evaluated

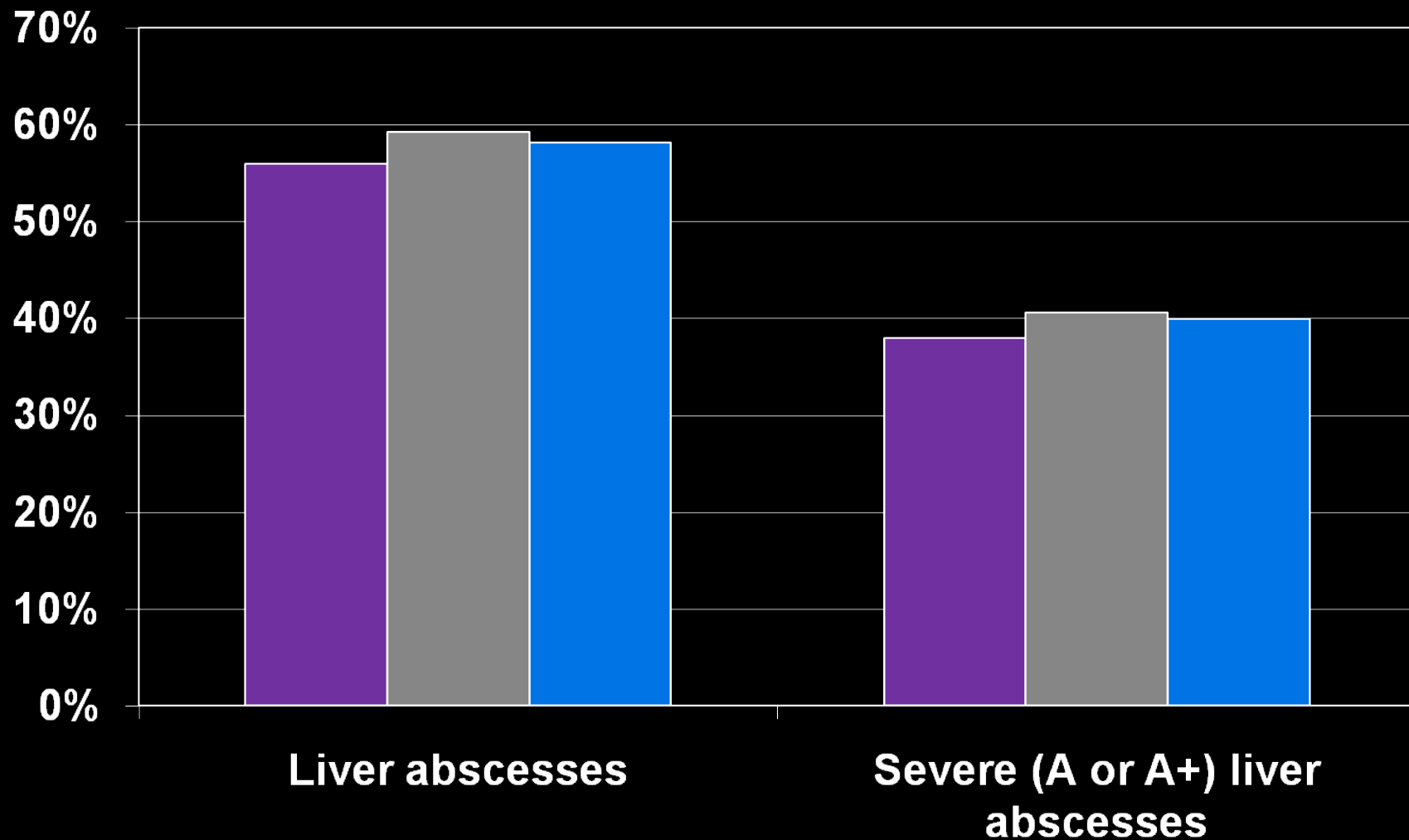
- Arrival weight
 - 613 71 lbs
- 60-d weight
 - 795 83 lbs
- 60-d ADG
 - 3.04 1.1 lbs per day
- Total days on feed
 - 237 20 days
- Hot carcass wt.
 - 738 63 lbs
- Yield grade
 - 2.74 0.7
- Quality grade
 - Prime, 3.5%
 - Choice, 80.4%
 - Select, 15.5%
 - No-roll, 0.6%



Control

Fusogard

Centurion



Treatment effect: P = 0.66

P = 0.75

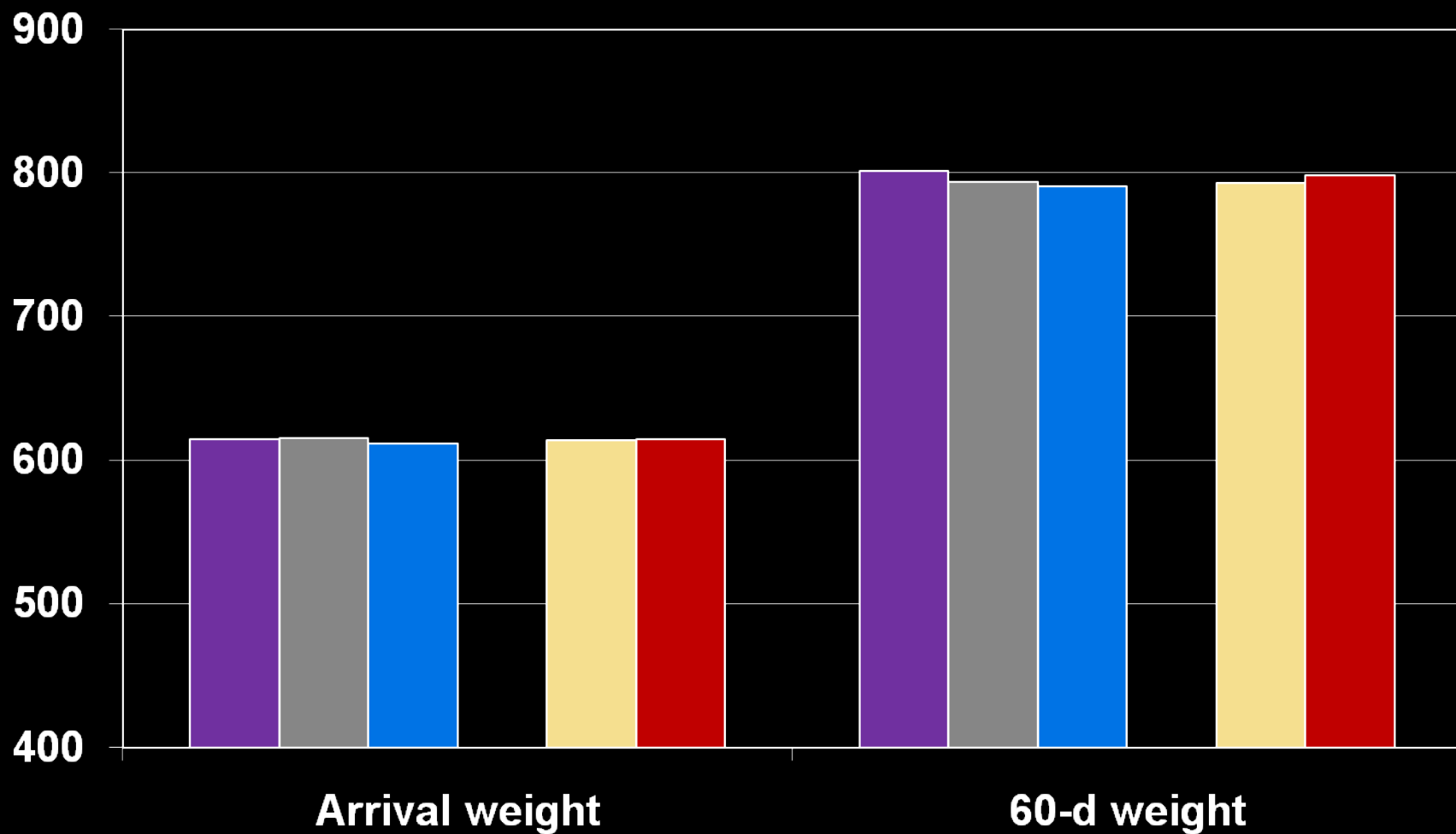
Lot number effect: P < 0.01

P < 0.01

Treatment*Lot number: P = 0.68

P = 0.36

Control Fusogard Centurion Liver abscess No abscess



Treatment effect: $P = 0.67$

$P = 0.14$

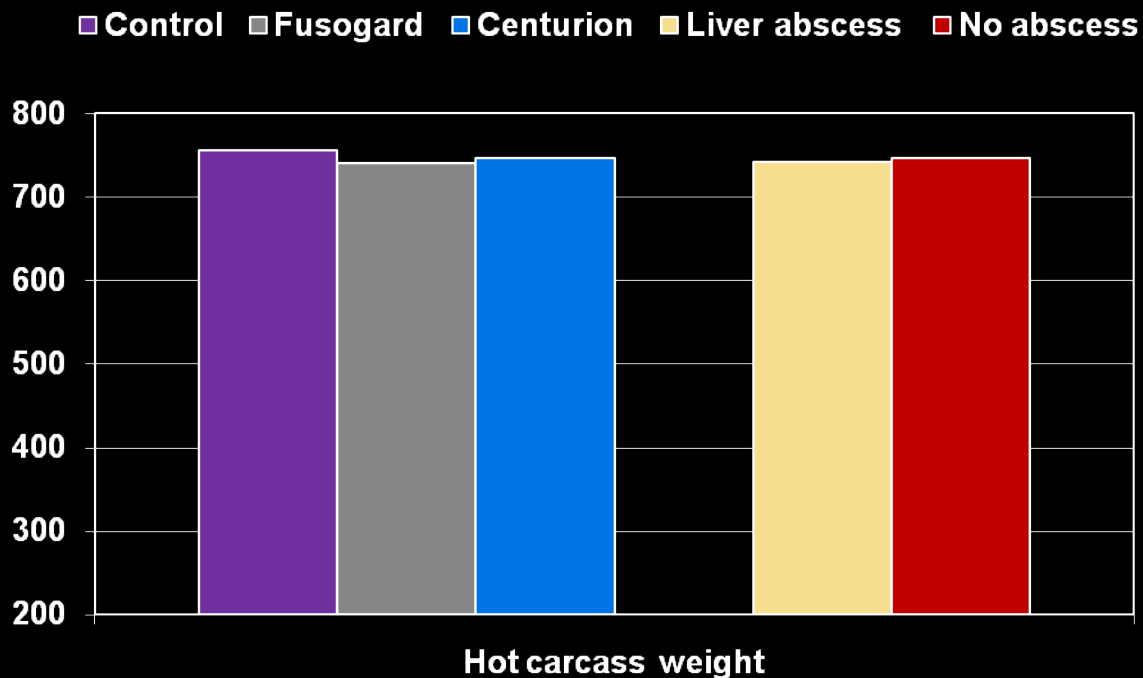
Liver abscess effect: $P = 0.90$

$P = 0.20$

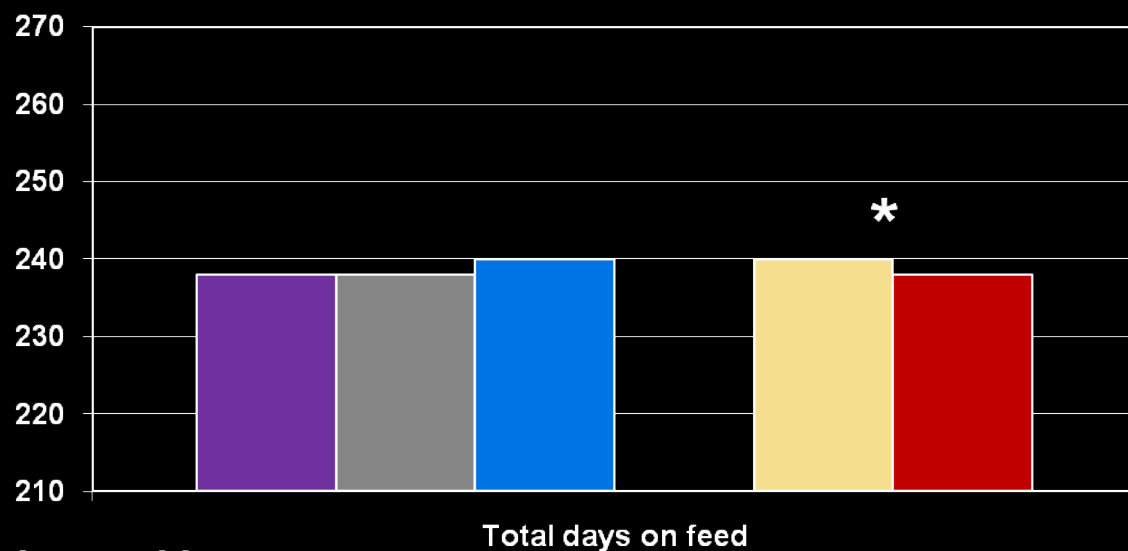
Lot number effect: $P < 0.01$

$P < 0.01$

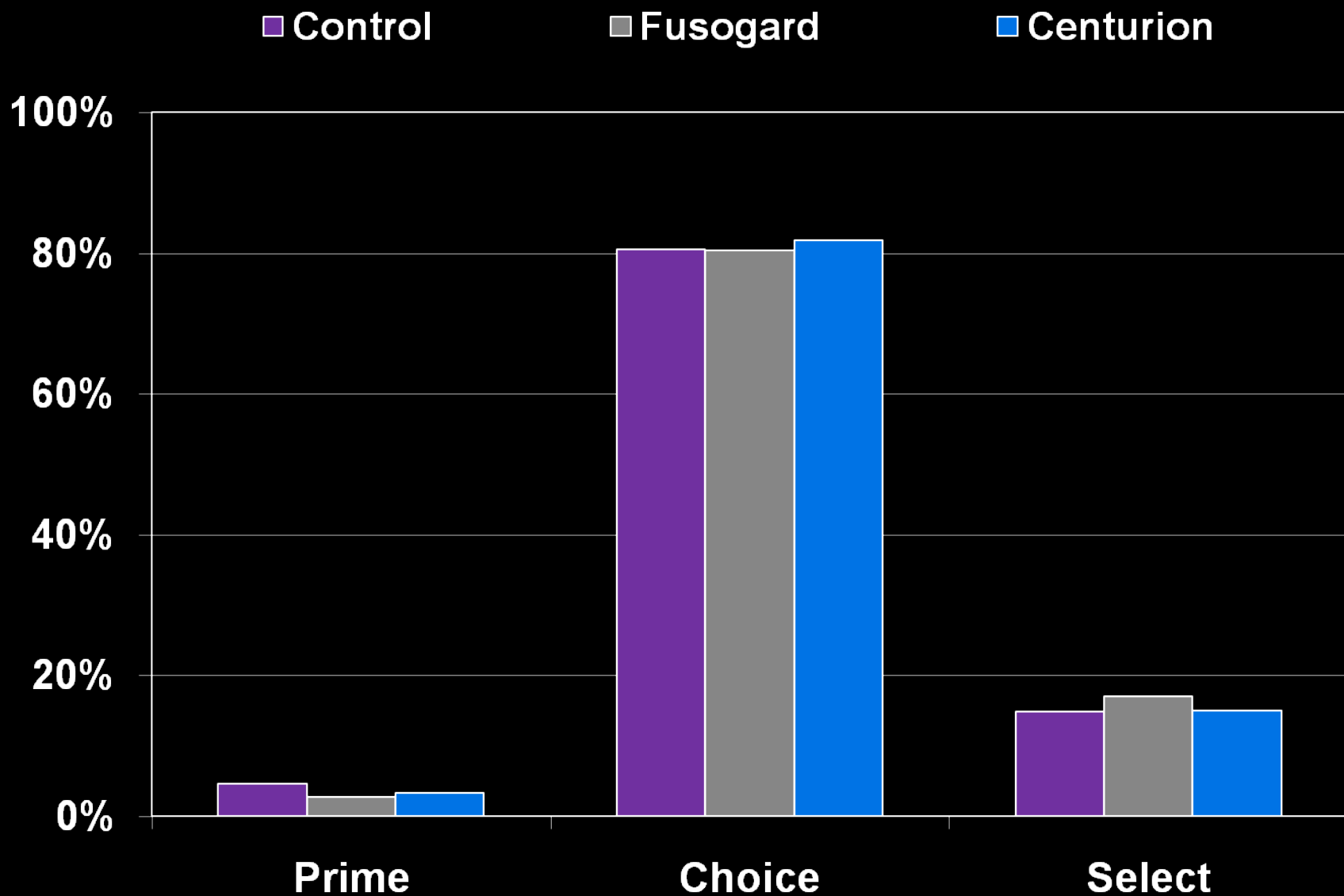
Treatment effect: P = 0.27
Liver abscess effect: P = 0.15
Lot number effect: P = 0.01



Treatment effect: P = 0.23
Liver abscess effect: P = 0.02
Lot number effect: P = 0.01



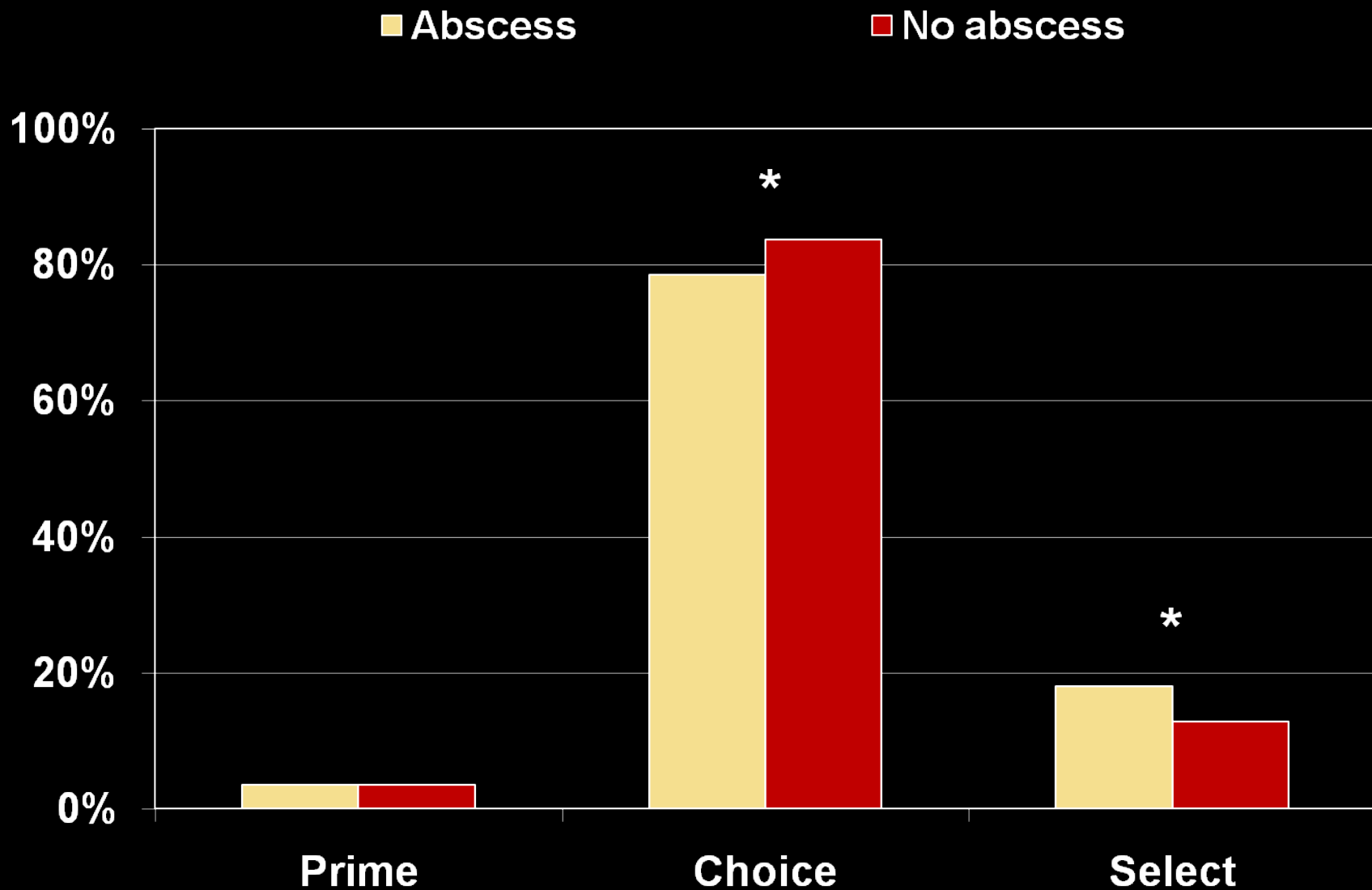
Statistical differences (P < 0.05) are denoted by a star



Treatment effect: $P = 0.51$

Lot number effect: $P < 0.01$

Treatment*Lot number: $P = 0.99$



Statistical differences ($P < 0.05$), within quality grade and liver abscess classification, are denoted by a star

Summary

- Neither vaccine was efficacious in this study
 - No in-feed antimicrobials
 - 87% concentrate diet
- The presence of liver abscesses at harvest did reduce the proportion of animals grading USDA choice vs select

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Questions



Thanks!