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Management Considerations for Calves Treated Multiple Times for Clinical Signs of BRD

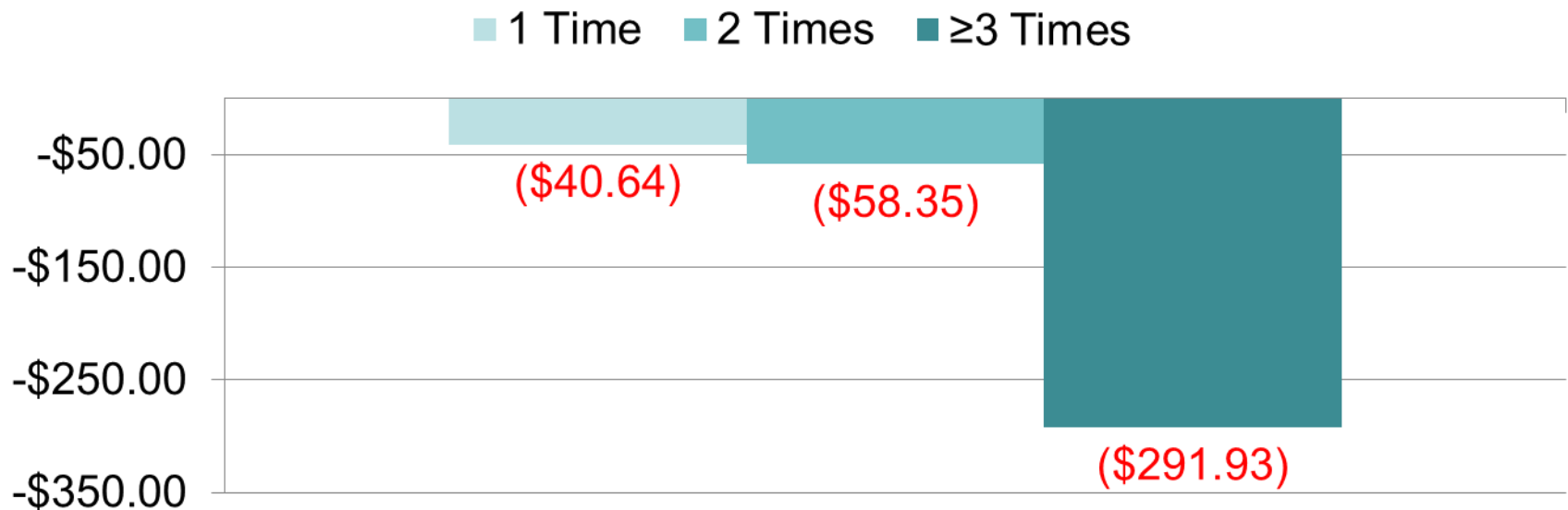
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Introduction

- The Bovine Respiratory Disease complex (BRD) continues to be the most economically important disease in feedlots and stocker operations (Duff and Galyean, 2007).
 - 2/3 of all feedlot mortality (Lonergan, 2004).
 - 16.2% of all cattle placed (NAHMS, 2011).
 - BRD losses account for \$800-900 million annually (Chirase and Greene, 2001).



Net Return of Treated Animals



- Fulton et al. (2002).
- 21% attributable to medicine costs.
- 79% due to lower carcass weight and quality grade (Gardner et al., 1999).



Changes in Performance

- Decreased ADG
- Decreased HCW
- Decreased Marbling Score
- Shifted Quality Grade distribution
- Improved Yield Grade



Overview

- BRD on performance - constant DOF
- BRD on performance - common end point
- Evidence for compensatory gain
- When does a calf become chronic
- How do we manage chronic calves
- Restart programs



BRD on Performance: Constant days

- Steers treated >1 gained 12% slower and had 44 lb. lighter carcasses after 150 DOF (Gardner et al., 1999)
- OK feed yard study indicated calves were worth \$58 and \$292 less when treated 2 or 3 times, respectively (Fulton et al. 2002)
- Ranch to Rail data – reduced value due to live and carcass measurements



BRD on Performance: Common endpoint

- Waggoner et al. (2007) collected feedyard data from cattle enrolled in NM RTR from 2000 to 2003
- Ultrasound measurements were used to sort groups into optimum harvest dates
- Steers treated 2 or more times had equal HCW and marbling score when fed 19 d longer (Waggoner et al., 2007)
 - Gross income was lower due to death loss and railers



Evidence for Compensatory Gain

- Calves treated 2+ times had a 12% lower ADG to d 67, but gain and LW were the same by d 185 (Roeber et al., 2001)
- Montgomery et al. (2009) observed increased pasture gains for calves treated multiple times during a receiving period
- ~6,000 calves fed in 10 Midwestern feed yards
 - Treated calves gained 0.8 lb/d slower during receiving, but only 0.15 lb/d less for the entire finishing period (Schneider et al., 2009)



Definition of a Chronic

- Has received two treatments for BRD
- Still appears unthrifty
- Continues to lose weight
- Significantly behind the home pen
- Does not need to be euthanized



Objectives

- Allot calves with high-risk of respiratory disease to feedlot pens according to BRD morbidity observed during preconditioning.
- Slaughter according to similar compositional endpoint.
- Observe feedlot growth performance and carcass characteristics.



Materials and Methods: Preconditioning

- Three hundred thirty-seven heifer calves (initial BW = 531 ± 37 lb) selected from 360.
- Assembled at an order buyer facility in western Kentucky.
- Shipped 957 km to Stillwater, OK in two separate shipments on September 12 and 14, 2007.



Materials and Methods: Preconditioning

- Evaluated each morning for signs of BRD.
 - Severity score 0 – healthy through 4 – moribund.
- Rectal temperature $\geq 40^{\circ}\text{C}$ or severity score ≥ 3 required for treatment.
 - Micotil 300 (10 mg tilmicosin/kg BW).
 - Baytril 100 (10 mg enrofloxacin/kg BW).
 - Excenel (two doses at 48-h interval of 2.2 mg ceftiofur/kg BW).
- Chronics were removed from home pens on or after d 21.

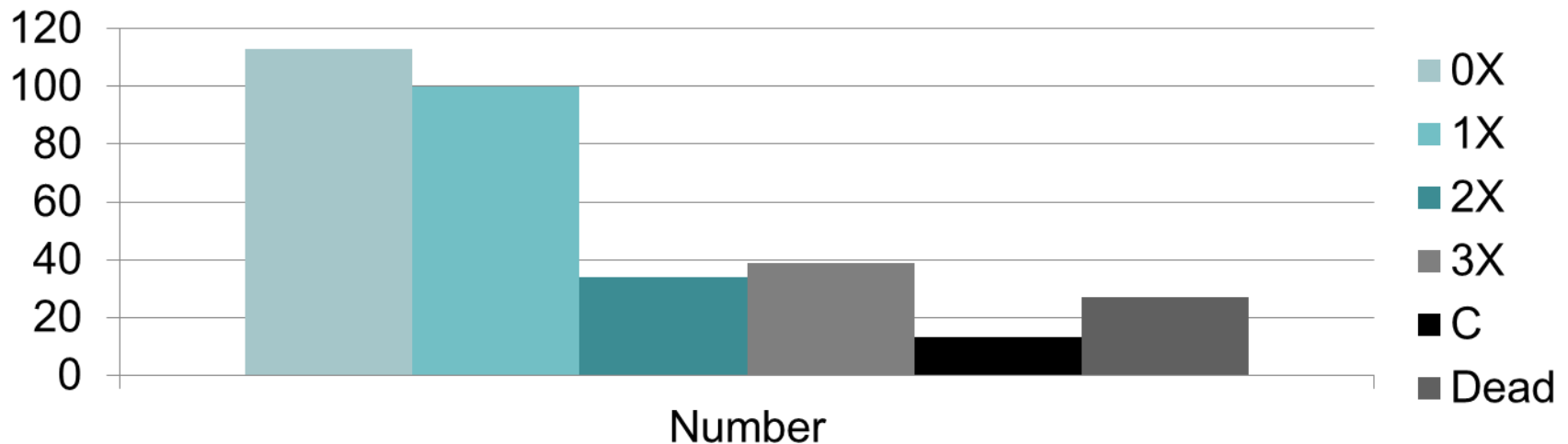


Materials and Methods: Finishing

- After the 63-d growing period, blocked by weight and allotted to finishing pens:
 - 0X – Never treated.
 - 1X – Treated once.
 - 2X – Treated twice.
 - 3X – Treated thrice.
 - C – Chronically ill.



Morbidity

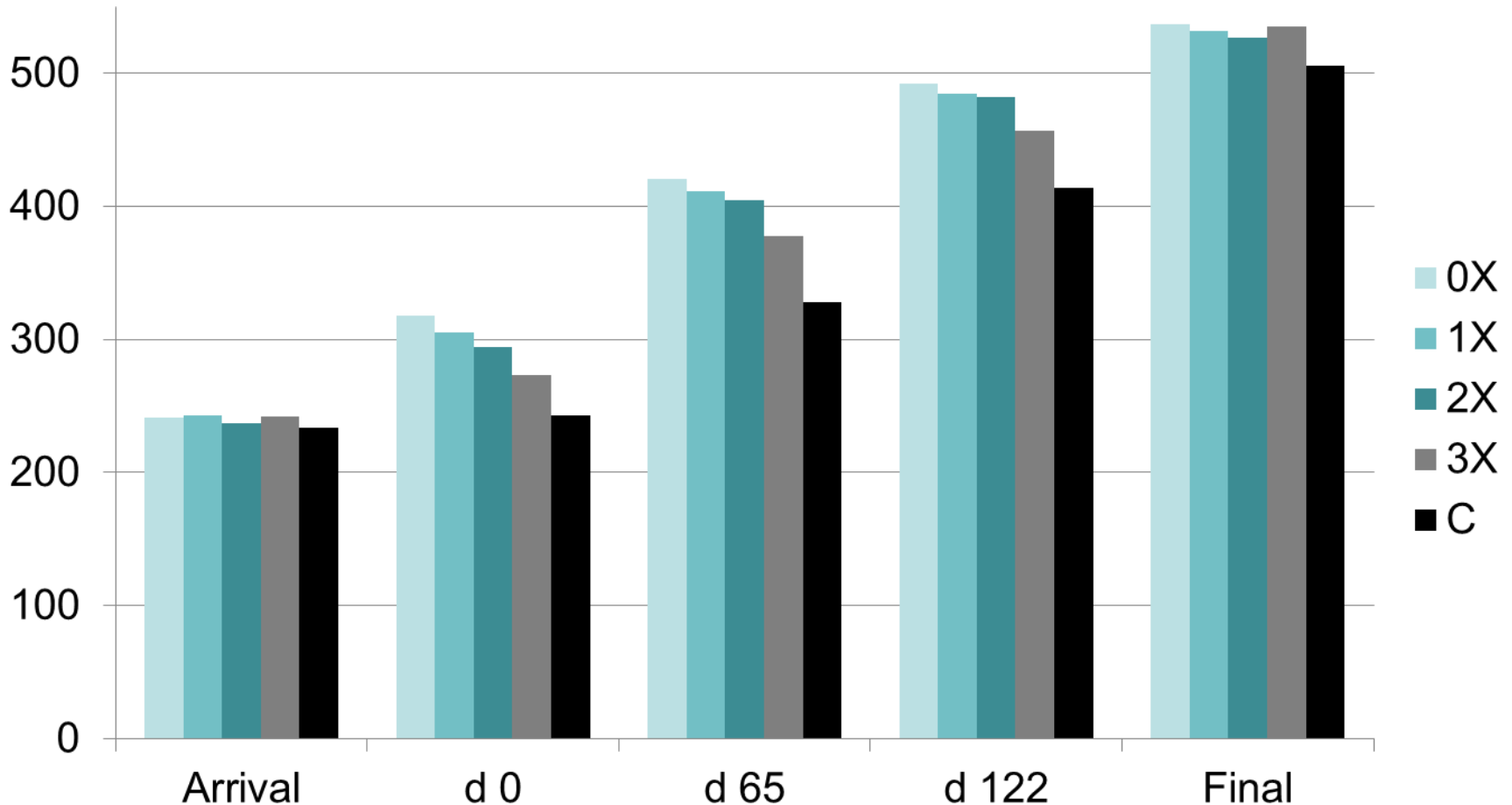


Item	0X	1X	2X	3X	C	Dead
Count ¹	113	100	34	39	13	27
%	33.5	29.7	10.1	11.6	3.9	8.0
Finishing Phase Allocation						
n	54	54	34	39	12	-
Pens	9	9	6	6	2	-
DOF	163	163	163	182	189	-

¹Does not include calves removed due to lameness (n=6) or not included in the finishing phase due to protocol non-compliance (n=5).



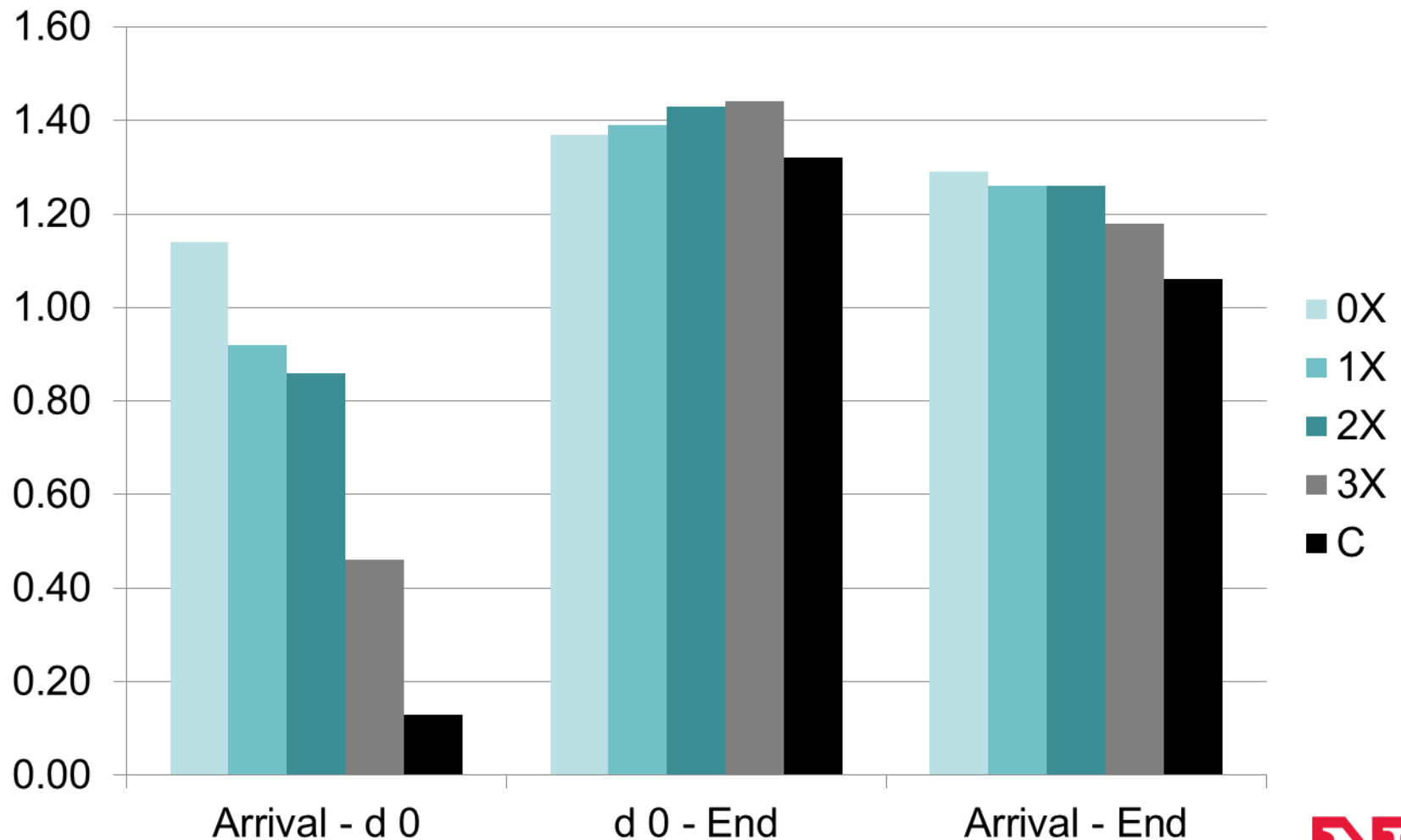
BW, kg



SEM = 9.15	SEM = 18.38	SEM = 19.90	SEM = 17.23	SEM = 10.59
L, $P = 0.84$	L, $P < 0.001$	L, $P < 0.001$	L, $P < 0.001$	L, $P = 0.58$
Q, $P = 0.51$	Q, $P = 0.01$	Q, $P = 0.03$	Q, $P = 0.51$	Q, $P = 0.18$
3 vs. C, $P = 0.11$	3 vs. C, $P < 0.001$	3 vs. C, $P < 0.001$	3 vs. C, $P = 0.11$	3 vs. C, $P = 0.01$



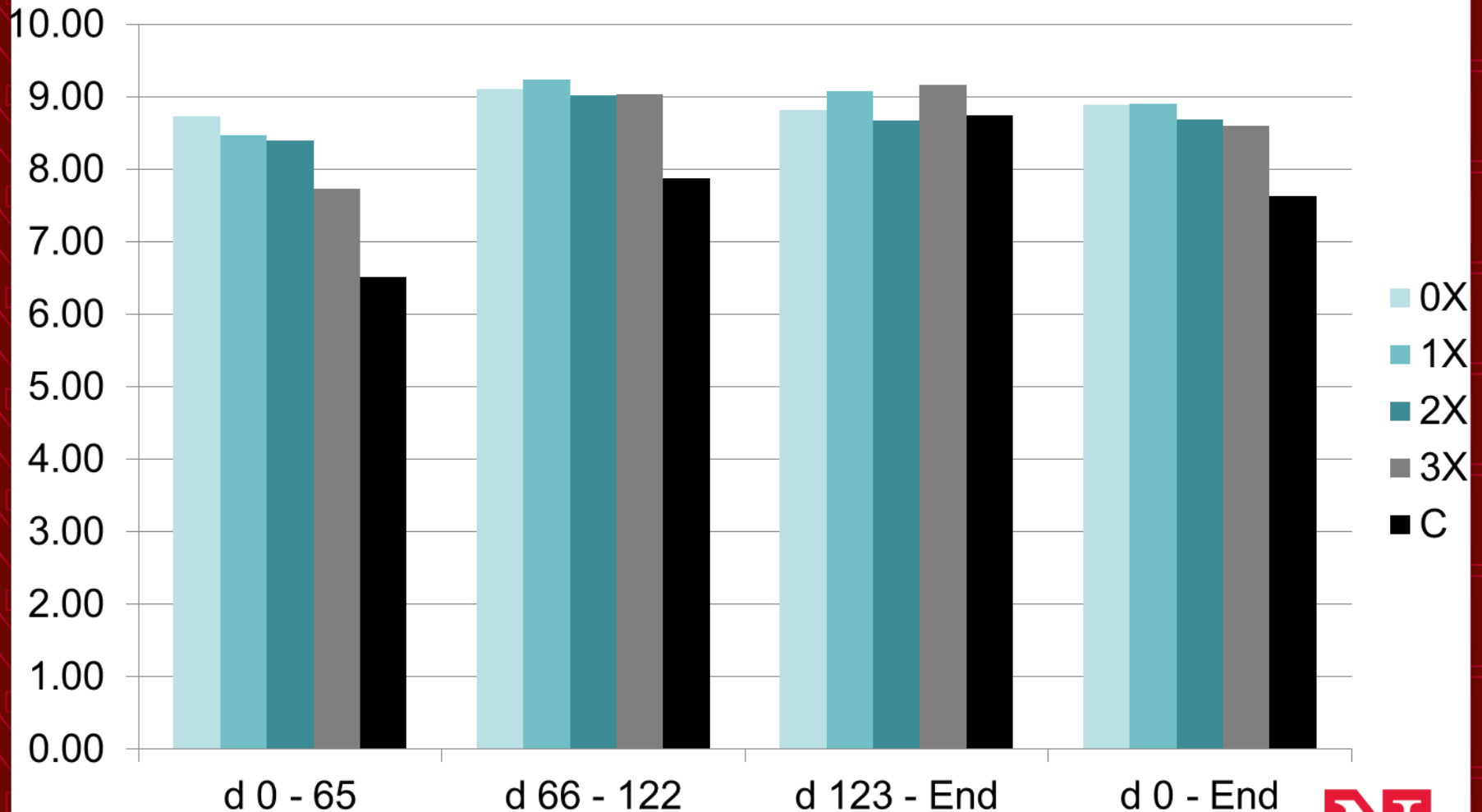
ADG, kg/d



SEM = 0.17 L, $P < 0.001$ Q, $P = 0.03$ 3 vs. C, $P < 0.001$	SEM = 0.13 L, $P = 0.08$ Q, $P = 0.89$ 3 vs. C, $P = 0.37$	SEM = 0.06 L, $P = 0.003$ Q, $P = 0.27$ 3 vs. C, $P = 0.03$
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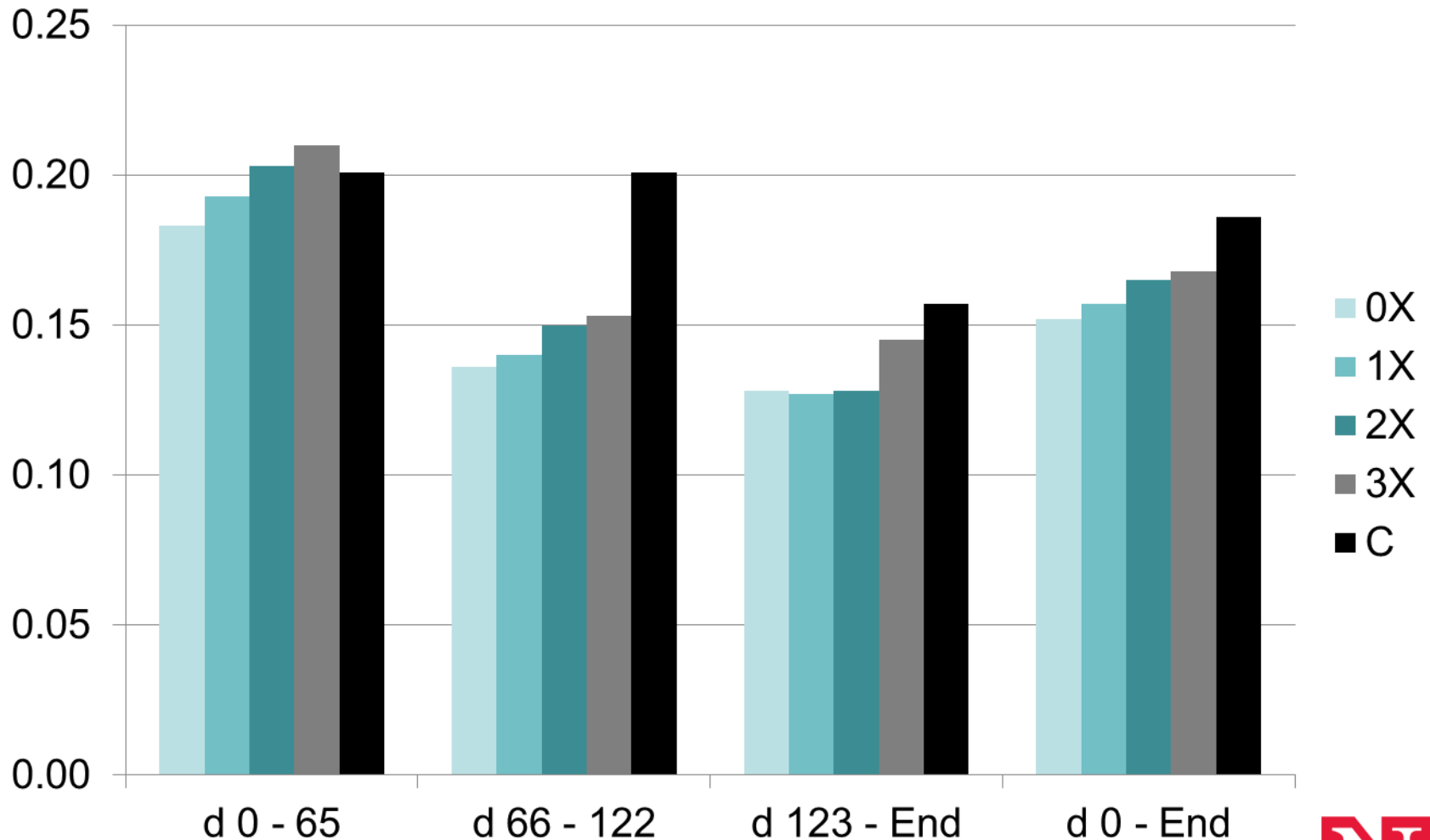
DMI, kg/d



SEM = 0.54	SEM = 0.43	SEM = 0.42	SEM = 0.40
L, $P < 0.001$	L, $P = 0.64$	L, $P = 0.50$	L, $P = 0.13$
Q, $P = 0.18$	Q, $P = 0.79$	Q, $P = 0.62$	Q, $P = 0.75$
3 vs. C, $P < 0.001$	3 vs. C, $P = 0.02$	3 vs. C, $P = 0.37$	3 vs. C, $P = 0.007$



G:F



SEM = 0.54
L, $P < 0.001$
Q, $P = 0.18$
3 vs. C, $P < 0.001$

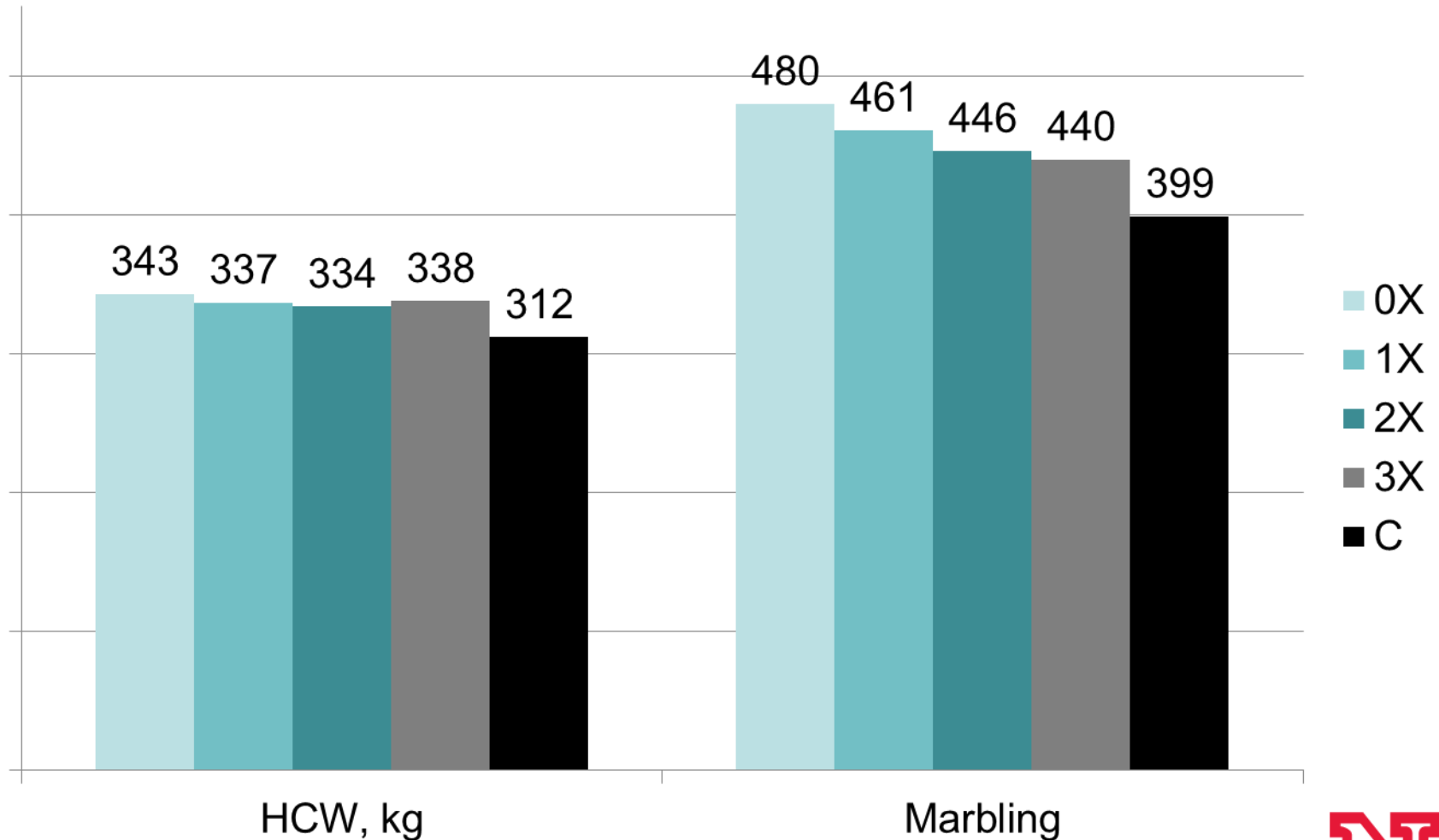
SEM = 0.43
L, $P = 0.64$
Q, $P = 0.79$
3 vs. C, $P = 0.02$

SEM = 0.42
L, $P = 0.50$
Q, $P = 0.62$
3 vs. C, $P = 0.37$

SEM = 0.40
L, $P = 0.13$
Q, $P = 0.75$
3 vs. C, $P = 0.007$



HCW and Marbling Score



SEM = 7.85
L, $P = 0.03$
Q, $P = 0.21$
3 vs. C, $P = 0.007$

SEM = 28.7
L, $P = 0.06$
Q, $P = 0.68$
3 vs. C, $P = 0.22$



Conclusions

- BRD resulted in significant losses in performance during preconditioning.
- During finishing, a compensatory response was observed in ADG and G:F.
- Approximately 18 additional days on feed were required for heifers treated 3 times to have similar live and carcass weights and carcass characteristics to those never treated.



Management Strategies

- Euthanize
- Keep treating
 - Increased medicine costs
 - Odds of success after 2 shots is low
 - Animal well-being issue
- Rail immediately
 - + Stop medicine costs
 - + Reduces risk of a dead
 - + Recoup some revenue
 - Risk of a residue



(Karr, 2017)



Management Strategies

- Feed Yard Restart – ship w/home pen
 - Observation pen
 - Sort off railers
 - Restart pen
 - Starter ration
 - Bedding
 - Bunk and bale hay
 - Extra bunk and pen space
 - Continue to sort
 - Transition to finish ration
 - Take home to finish w pen (>950lbs)

(Karr, 2017)



Management Strategies

- Feed Yard Restart
 - Risk of deaths
 - Labor/Time
 - Pen Space
 - Carcass Discounts

- + Market versus Railer price

(Karr, 2017)



Management Strategies

- Feed Yard Restart – extended DOF
 - Beneficial for LW high-risk calves
 - Too far behind pen
 - Convalescence period on grass/wheat
 - Slow transition to finish ration
 - Ship at market wt.

(Karr, 2017)



Management Strategies

- Feed Yard Restart – extended DOF
 - Death loss
 - Labor intensive
 - Pen Space
 - Accounting
 - + Market price
 - + HCW/QG improved

(Karr, 2017)



Economics: BRDX

Effect of 0, 1, 2, or 3/4 antimicrobial treatments during the receiving period on subsequent carcass value and overall economics

Variable	BRDX ¹			
	0X	1X	2X	3/4X
Actual carcass price, \$/100 lb	200.41	198.24	200.82	198.51
Total carcass value, \$	1643.80	1612.67	1591.56	1550.24
Carcass value difference from previous BRDX, \$	0.00	31.13	21.11	41.32
Carcass value difference from 0X, \$	0.00	31.13	52.24	93.56
Antimicrobial cost, \$	0.00	-14.40	-29.60	-46.97
Additional labor cost, \$	0.00	-5.00	-10.00	-17.50
Additional yardage cost, \$	0.00	1.60	-7.60	-6.00
Additional feed cost, \$	0.00	10.28	-47.30	-38.46
Total calf value, \$	1643.80	1605.16	1497.07	1441.31
Total calf value difference from previous BRDX, \$	0.00	38.65	108.09	55.75
Total calf value difference from 0X, \$	0.00	38.65	146.73	202.49

(Wilson et al., 2016)



Implications

- Morbid cattle maintain the potential to produce carcasses of similar value to non-treated animals.
- Segregating and re-starting animals treated for BRD may be a viable alternative to realizing or railing morbid cattle.
- Calculate a break even based on death loss risk scenarios vs the railer value.



Questions?





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