

Use of Distiller's Grains (Wet & Dry) in Flaked Corn Diets for Finishing Beef Cattle

R.B. Hicks¹, C.J. Richards¹, and P.K. Camfield²

¹Oklahoma State University

²Oklahoma Panhandle State University



Introduction

- The majority of the research evaluating the use of distiller's grains in feedlot rations has been done with dry-rolled corn (DRC) or high-moisture corn (HMC) based diets in the northern Great Plains, whereas, most feedyards in the southern Great Plains feed steam-flaked corn (SFC) based diets.
- In general, research data suggests that the use of WDGS in DRC or HMC based diets improves performance, whereas, the use of WDSG in SFC based diets has little effect on performance or may decrease performance.
- With the anticipated construction of ethanol plants in the southern Great Plains and thus, increased availability of distiller's grains, additional research evaluating the use of increasing levels of WDGS in SFC diets is needed.



Objectives

- Determine effects of feeding levels of wet distiller's grains plus solubles (WDGS) in steam flaked corn diets.
- Compare a lower level of WDGS to a similar level of dry distiller's grains plus solubles (DDGS) that is representative of current feeding practices in the region.



Experimental Procedures

- **207 hd of mixed yearling steers (882 lb) were received at Henry C Hitch Feedyard on April 17 (157 hd) and 21 (50 hd).**
- **On April 30, 180 steers were sorted off from the original 207 hd based on weight and visual appraisal to be used in the trial.**
- **180 yearling steers were received at OPREC research facilities on May 3.**



Experimental Procedures

- Steers were blocked by weight (6 blocks) and allotted to 30 pens with 6 head/pen.
 - Diet Treatments (DM basis):
 - 1) Steam flaked corn control (28 lb/bu)
 - 2) 10% DDGS
 - 3) 10% WDGS
 - 4) 20% WDGS
 - 5) 30% WDGS
- Replaced corn

Ration Profile

- All diets contained 8% ground alfalfa and 7.5% pelleted supplement

<u>Treatment</u>	<u>CP, %</u>	<u>Urea, %</u>
Control	13.0	1.00
10% DDGS	13.0	0.53
10% WDGS	13.0	0.52
20% WDGS	14.6	0.30
30% WDGS	16.2	0.10

- All diets were formulated to meet 105% of estimated DIP requirement.



- Received 6 loads of WDGS (~70/30 corn/sorghum) from Oakley, KS on April 16 & 17
- Stored in plastic silage bag





Average Nutrient Profile of 6 loads

34.6% dry matter

32.8% crude protein

19% ADF

0.80% phosphorus

0.05% calcium

0.75% sulfur

Initial Weights of Blocks

- 812, 857, 881, 911, 943, and 988 lb
- Average of 899 lb



- Each pen is ~14 ft wide & 55 ft long
- Feed bunks are ~11 to 11.5 ft wide



Experimental Procedures

- **Data collected:**
 - Performance data
 - Carcass data
- **Based on live weight and visual appraisal, blocks of cattle were shipped to an Excel Beef slaughter facility in Dodge City, KS, when the block was expected to have an average back fat thickness of 0.5 inches.**
 - 101 days for two blocks
 - 130 days for three blocks
 - 143 days for last block

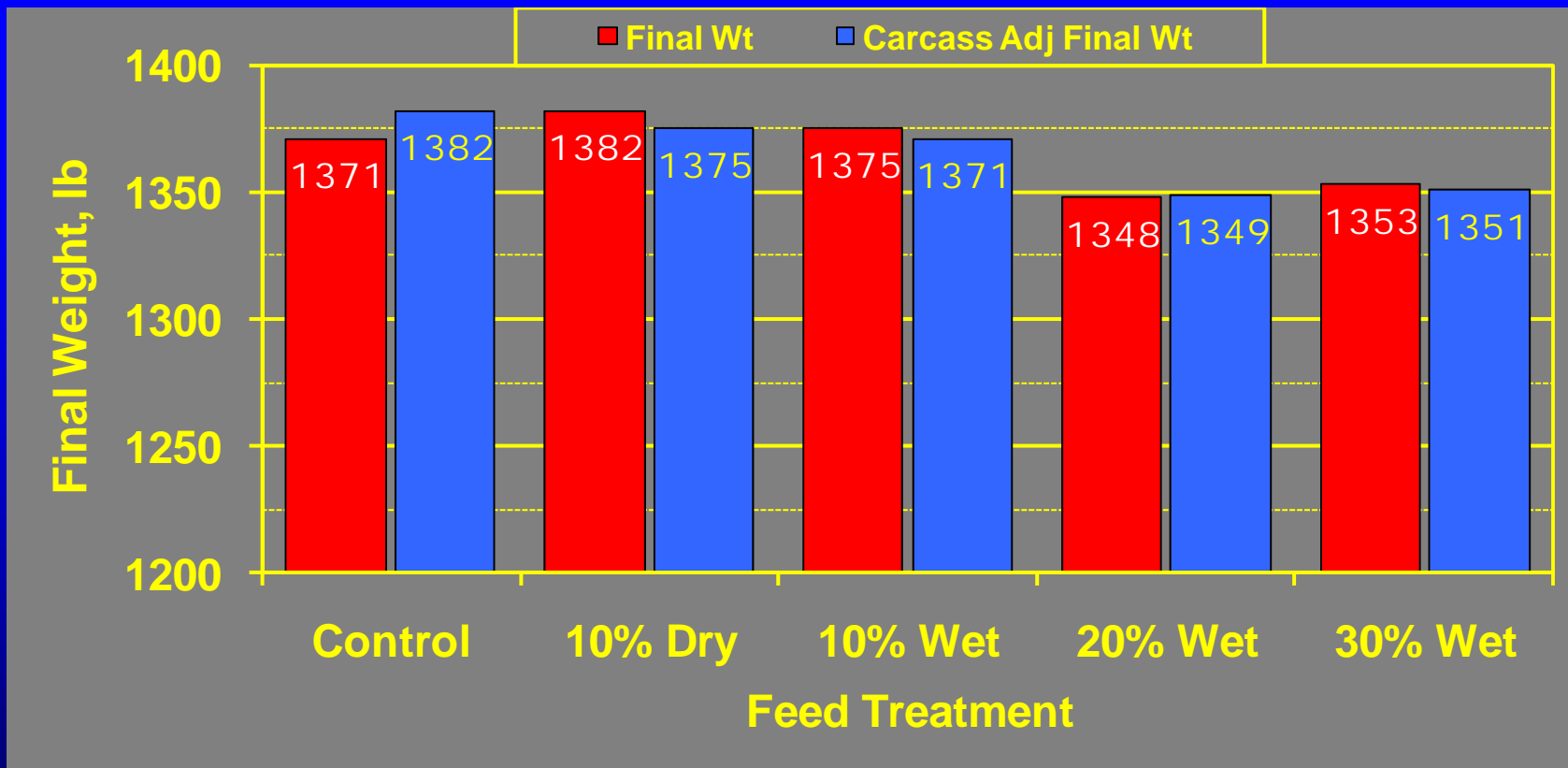
Average of
123 days



Statistical Analysis

- Analyzed as randomized complete block design using MIXED procedure of SAS
- Pen was experimental unit
- Model statement included the fixed effect of treatment and the random effect of block
- Pre-planned contrasts:
 - Linear levels of WDSG (0, 10, 20, & 30%)
 - Quadratic level of WDSG
 - 10% DDGS vs 10% WDGS
 - Control vs 10% DDGS

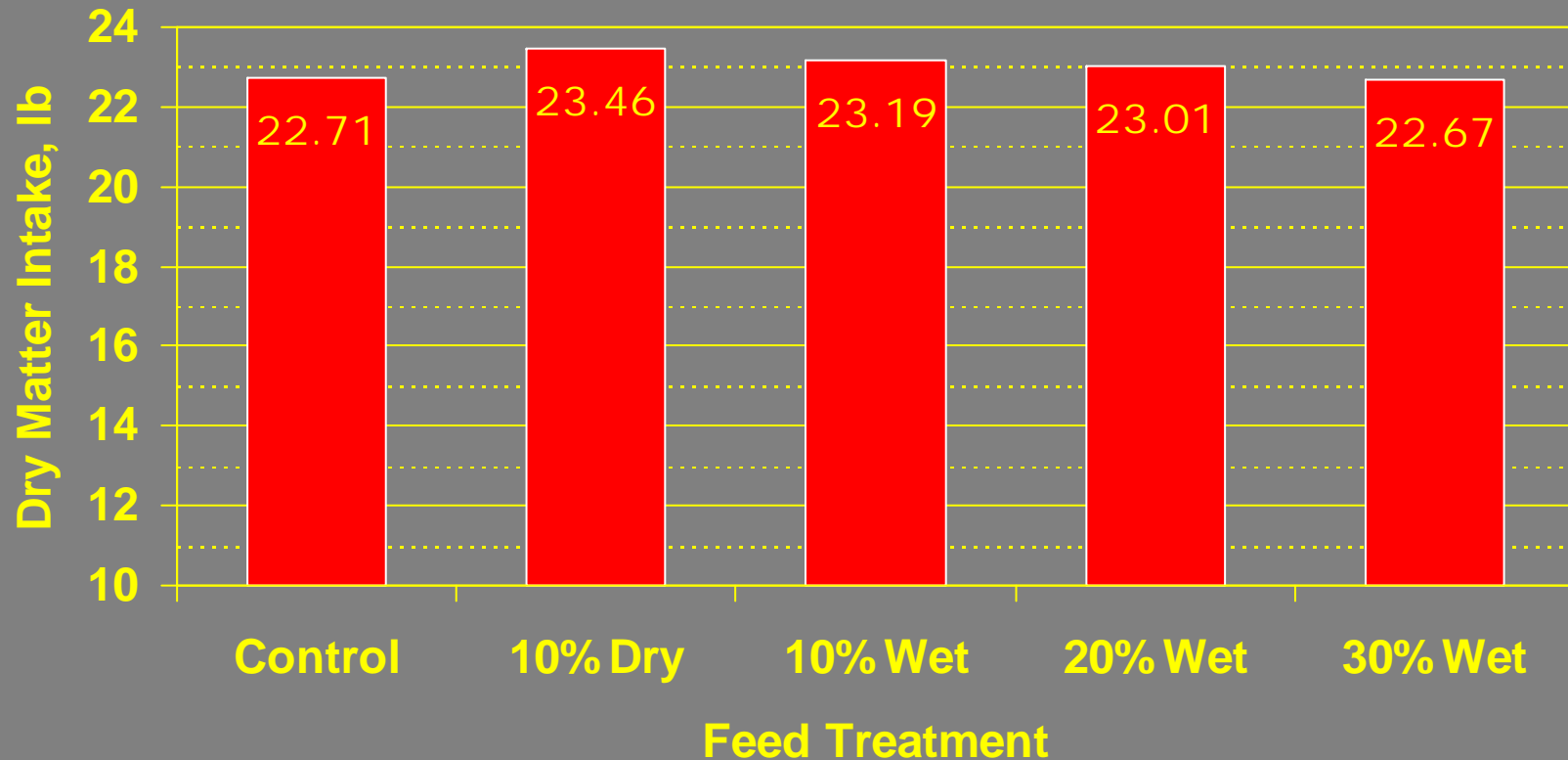
Effect of DGS on Final Weight



Treatment Difference: P = 0.114 Live Adj
Wet Linear: P = 0.085 0.330



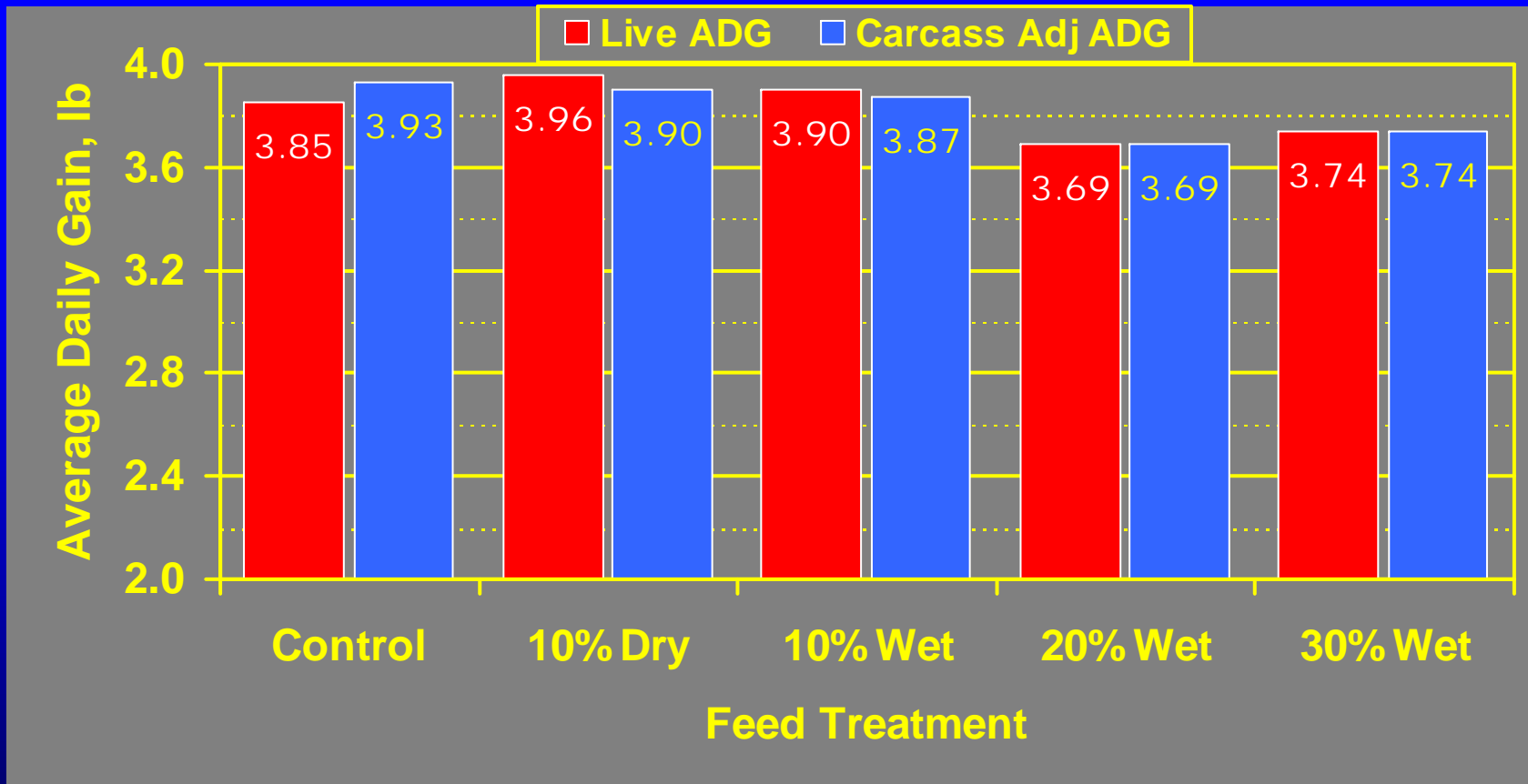
Effect of DGS on DMI



Treatment Difference: $P = 0.573$



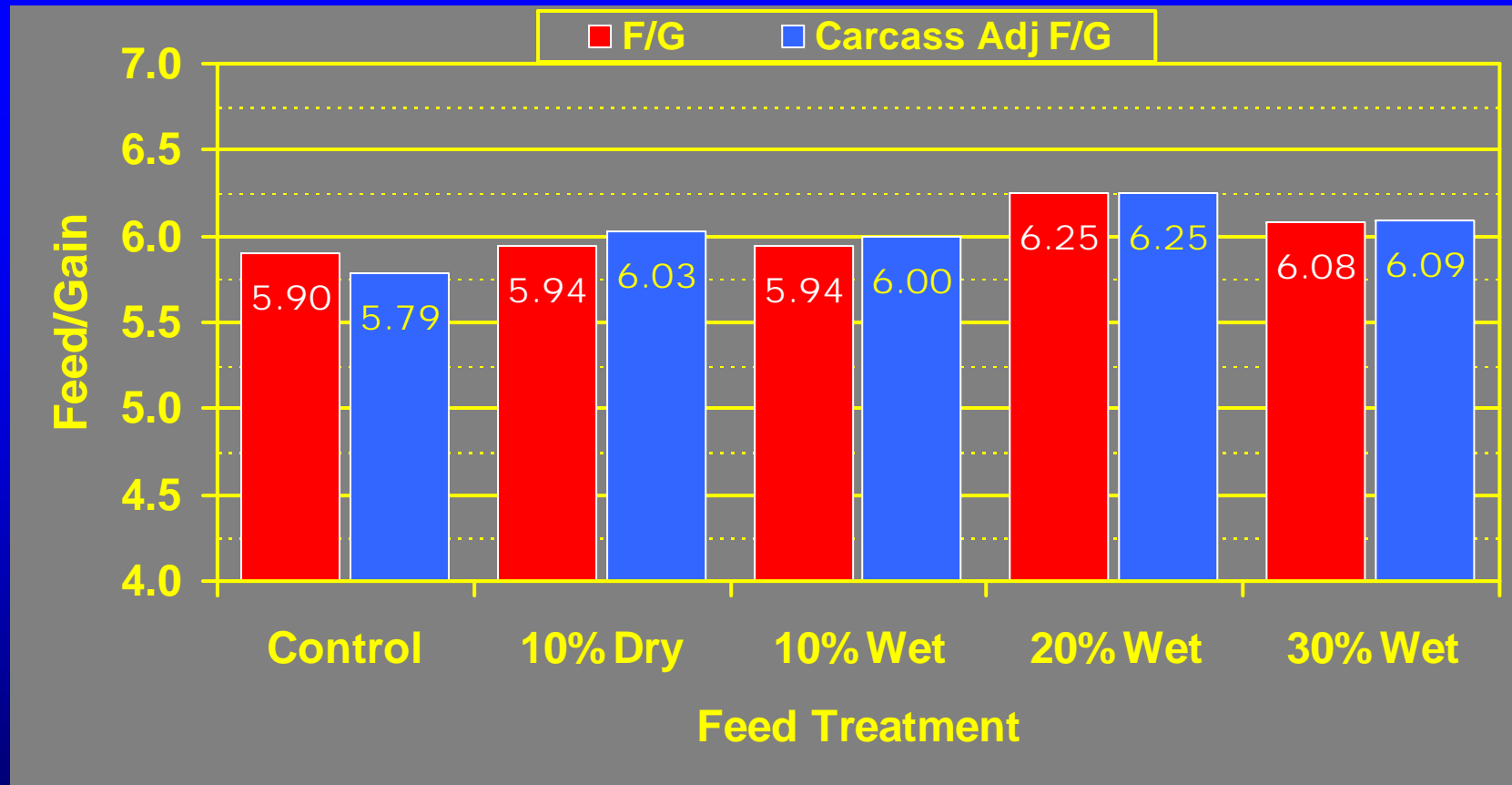
Effect of DGS on ADG



Treatment Difference: Live Adj P = 0.154 0.474
Wet Linear: P = 0.141



Effect of DGS on Feed/Gain



Live Adj
 Treatment Difference: $P = 0.061$ 0.324
 Wet Linear: $P = 0.047$

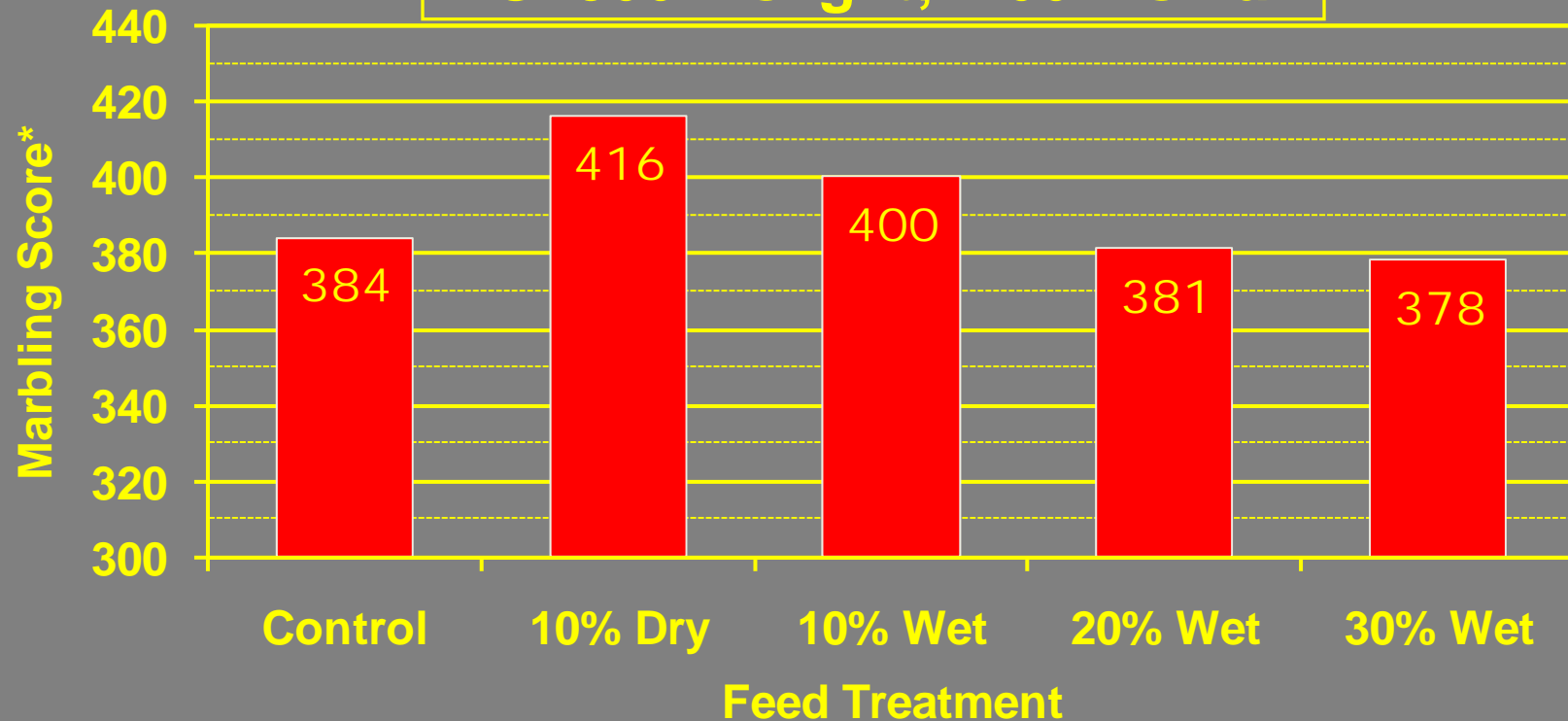


Carcass Data

	Control	10% DDGS	Level of WDGS		
			10%	20%	30%
HCW	898	893	891	876	878
Dressing %	65.5	64.6	64.8	65.1	64.8
Fat Thickness, in	0.53	0.50	0.51	0.54	0.52
KPH	2.36	2.48	2.15	2.36	2.46
REA, sq in	14.24	14.10	14.62	13.59	13.70
Yield Grade	3.15	3.13	2.91	3.30	3.27

Effect of DGS on Marbling

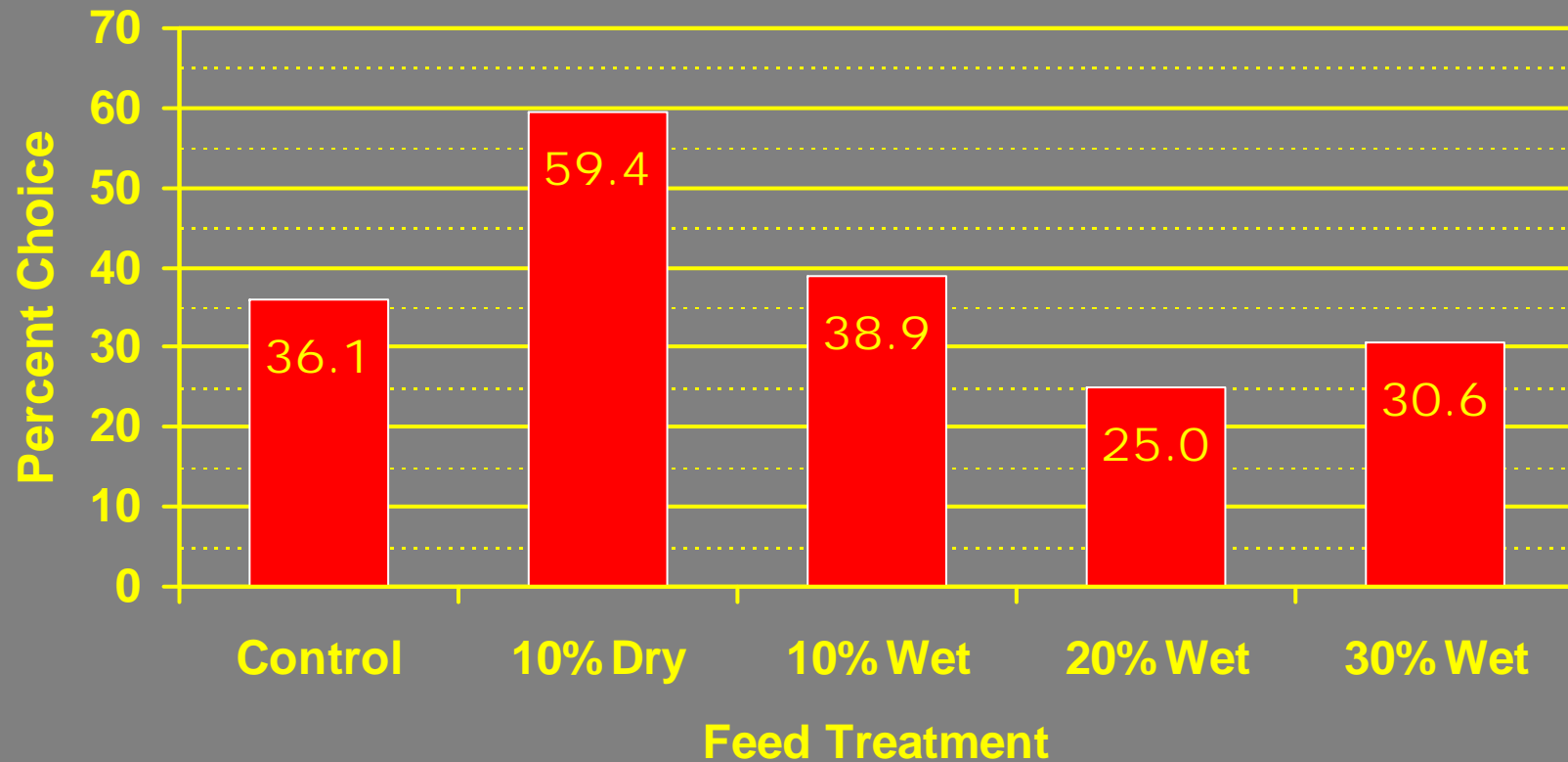
MS: 300 = slight; 400 = small



Treatment Difference: $P = 0.031$

Control vs 10% D: $P = 0.017$

Effect of DGS on Percent Choice



Treatment Difference: P = 0.061
10% DDGS vs 10% WDGS: P = 0.082
Control vs 10% DDGS: P = 0.052



Summary

- No statistically significant differences in performance were noted.
- However, observed numerical trends were similar to that observed by other researchers.
 - Optimum level of wet distiller's grains appears to be ~10% in steam flaked corn rations
 - Increasing levels of wet distiller's grains reduce performance (ADG and feed efficiency)
- 10% DDGS improved marbling
- Levels of WDSG up to 30% have no effect on marbling or resulting USDA quality grade.



Questions?

