



## META-ANALYSIS OF BEEF RESEARCH STUDIES: FEEDLOT CATTLE

A meta-analysis<sup>1</sup> of the effects of feeding Diamond V Original products on feedlot cattle performance and carcass traits.

### RESEARCH SUMMARY

The purpose of this study was to evaluate the effects of Diamond V Original products on the performance and carcass traits of feedlot cattle using a meta-analysis of randomized controlled trials.

Twenty-four individual research publications and reports with a total of 28 comparisons were identified as having met all of the inclusion criteria for the meta-analysis. Data consisted of 67 treatment means, 234 pens, and 7660 feedlot cattle.

#### Inclusion Criteria:

- Studies evaluated at least one Diamond V Original product (YC™, XP™, or XPC™) fed at recommended feeding rates.
- Studies utilized cattle with an average initial body weight of not more than 454 kg and fed a minimum of 26 days.
- Studies included a concurrent negative control group and randomized treatment assignments.
- Studies used a parallel group design with pen being the experimental unit (i.e. no Calan gate studies).
- Studies reported results for at least one of the production outcomes of interest: Initial and final body weight, dry matter intake, average daily gain, Feed/Gain, Gain/Feed, hot carcass weight, dressing %, yield grade, quality grade (Average Choice, Low Choice, Select, or Standard), and liver abscess rate.

#### Classification of Study Type:

- **All Studies (Overall):** Consisted of all studies regardless of feeding duration. Performance measurements utilized from each study included data collected only during the period of the study when cattle were receiving Diamond V Original products. Interim performance measurements were not included.
- **Receiving Studies:** Consisted only of studies in which receiving cattle performance was measured a minimum of 26 and no more than 32 days on feed and Diamond V Original products were fed the entire period.
- **Finishing Studies:** Consisted only of studies in which cattle were fed Diamond V Original products until slaughter. Interim performance measurements were not included.

#### Statistical Analysis

Data was analyzed using Proc Mixed procedure of SAS. Studies were weighted by the number of replicates within each study. Least squares means of data were adjusted using monensin, tylosin, and implant use (yes or no) and gender (steers, heifers, mixed, or bulls).

**RESULTS**

**Overall Analysis**

- 2.9% increase in ADG ( $P < 0.01$ )
- 3.0% improvement in Gain/Feed ( $P < 0.01$ )

**Receiving Analysis**

- 5.0% increase in ADG ( $P < 0.08$ )
- 4.4% improvement in Gain/Feed ( $P = 0.11$ )

**Finishing Analysis**

- 2.9% increase in ADG ( $P = 0.22$ )
- 2.5% improvement in Gain/Feed ( $P = 0.14$ )
- 11.7 percentage unit increase in % USDA Choice or higher carcasses ( $P < 0.01$ )
- 12.2 percentage unit decrease in % USDA Select carcasses ( $P < 0.05$ )

**Conclusion**

- Diamond V Original Products improved ADG and Gain/Feed of feedlot cattle.
- Diamond V Original Products resulted in a higher percentage of USDA Choice or higher carcasses and a lower percentage of USDA Select carcasses.
- Results of this analysis support the use of Diamond V Original products in feedlot diets.

**DIFFERENCE IN AVERAGE DAILY GAIN (ADG), DRY MATTER INTAKE (DMI), AND GAIN/FEED**

Item <sup>1</sup>	Control	Diamond V <sup>2</sup>	SEM <sup>3</sup>	P-value
<b>All Studies</b>				
Studies, n	28	28	—	—
ADG, kg/d	1.38	1.42	0.107	< 0.01
DMI, kg/d <sup>4</sup>	7.66	7.67	0.681	0.81
Gain/Feed	0.166	0.171	0.015	< 0.01
<b>Receiving Studies</b>				
Studies, n	11	11	—	—
ADG, kg/d	1.21	1.27	0.205	< 0.08
DMI, kg/d	6.91	6.93	0.737	0.78
Gain/Feed	0.183	0.191	0.029	0.11
<b>Finishing Studies</b>				
Studies, n	13	13	—	—
ADG, kg/d	1.37	1.41	0.109	0.22
DMI, kg/d	9.08	9.11	0.296	0.84
Gain/Feed	0.158	0.162	0.011	0.14

<sup>1</sup>Least squares means adjusted for implant treatment and gender.

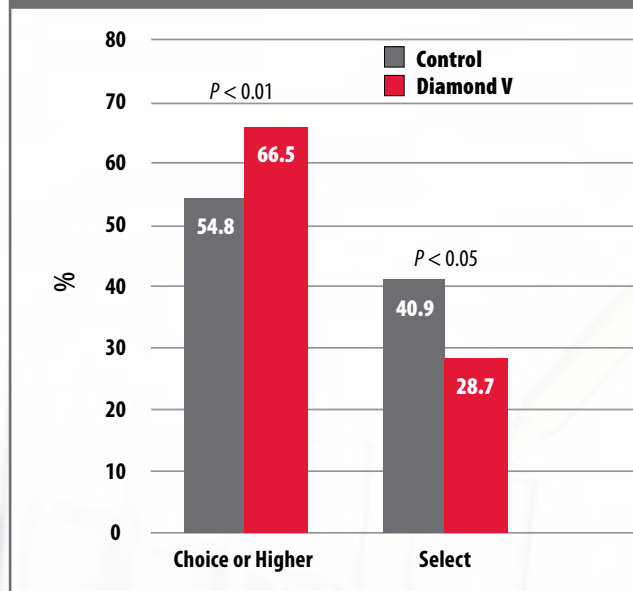
<sup>2</sup>Diamond V Original Products (YC™, XP™, and XPC™, Diamond V, Cedar Rapids, IA).

<sup>3</sup>Largest standard error of the mean reported.

<sup>4</sup>Days on feed included as an additional covariate.

<sup>1</sup>Wagner, J.J., T.E. Engle, and C.R. Belknap. 2013. Meta-analysis examining the effects of *Saccharomyces cerevisiae* fermentation product on feedlot performance and carcass traits. *J. Anim. Sci.* 91 (Suppl. 2): 79.

**DIFFERENCE IN CARCASS QUALITY GRADE**



If you would like more information on this study, please contact your local Diamond V representative.

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2525 60th Avenue SW | Cedar Rapids, IA 52404 | USA  
 TF: 800.373.7234 | Phone: +1.319.366.0745 | [diamondv.com](http://diamondv.com)

