

Economics of Safe-Guard Used In Combination with Endectocides in Feedlot Cattle

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Summary: Safe-Guard®¹ has recently been studied in combination with ivermectin and doramectin in feedlot heifers compared to ivermectin and doramectin alone. Results of three trials in two studies^{2,3} tended to show positive effects on hot carcass weight (HCW), quality grade, dark cutters, mortality and morbidity. There was also an indication of a negative impact on yield grade and feed cost per head. While the independent effects on quality grade and HCW were not always statistically significant in the individual trials, the direction of influence was generally consistent. Based on the indications in these three trials the effect of combination use of Safe-Guard with the two endectocides may be of economic significance to cattle feeders.

Introduction: Internal parasites of cattle have been shown to reduce feedlot performance, negatively affect carcass traits, and are associated with compromised immunity and increased morbidity. Effective control of parasites has been shown to reduce their effects on feedlot cattle. Endectocides are highly effective in controlling a wide range of economically important cattle parasites, but are not effective against all species. The addition of Safe-Guard may offer enough additional parasite control to justify its use in combination with endectocides.

Results of parasite control programs in feedlot cattle will vary. Depending on the parasites present, overall cattle health status and environmental factors, the use of parasiticides may or may not be economically viable. However, given the low cost of treatment, most incoming cattle receive at least an endectocide at arrival. The purpose of this study was to estimate, using the results of three Intervet-sponsored trials, the economic benefit of adding a single dose of Safe-Guard to either ivermectin or doramectin at arrival.

Methods and Results: The three trials showed very different magnitudes of effects of adding Safe-Guard to an endectocide treatment at arrival, but were generally consistent in terms of direction of influence. The economic effects are measured using the trial data as reported, even though the results were not always statistically significant. The estimates thus apply to the trials as they were reported, and cannot be generalized beyond these three data sets. Even so, the consistency of the results imply that the effects may be due to the effects of Safe-Guard and not random chance.

Safe-Guard + ivermectin (Trials 1 and 3) and Safe-Guard + doramectin (Trial 2) were tested against ivermectin or doramectin alone. In these trials there was a tendency for increased carcass quality, reduced yield grade, reduced dark cutters, increased DMI, lower death loss, and lower morbidity associated with the use of Safe-Guard in combination versus the two endectocides alone. Effects of the combination treatment were generally stronger in Trial 1 than Trial 2 and much weaker in Trial 3 than either Trial 1 or Trial 2.

Economic effects of morbidity were not estimated due to the wide variance in the costs associated with morbidity and a lack of supporting details in the original studies. Morbidity for

¹ Safe-Guard®, for use in cattle is a trademark for Intervet's brand of fenbendazole.

² Reinhardt C.D., J.P. Hutcheson, and W.T. Nichols. 2006. A fenbendazole oral drench in addition to an ivermectin pour-on reduces parasite burden and improves feedlot and carcass performance of finishing heifers compared with endectocides alone. *J. Anim. Sci.* 84:2243–2250

³ Hutcheson J., W. Nichols, C. Reinhardt, M. Streeter, and D. Yates. The effects of Safeguard and Ivomec alone or in combination on performance, carcass characteristics, and parasite burden of finishing heifers. Unpublished Intervet manuscript.

the combination treatment was much lower in Trial 1 and slightly higher in Trials 2 and 3 compared to the endectocide used alone. Total morbidity across all three trials was lower for the combination treatment than the endectocide used alone.

The economic value of differences in hot carcass weight, carcass quality and yield grade were estimated using the March 1, 2007 pricing grid of Swift's Grand Island, NB packing plant⁴ and March 11, 2007 USDA cut-out value of \$155.60/CWT for Standard grade carcasses. Death loss differences were estimated using total death loss by treatment and the March 16, 2007 price of \$102.34/CWT for #1 feeder heifers delivered to Kansas feedlots. Differences in DMI resulted in feed cost differences per head, and these was estimated using March 16, 2007 feed costs of \$175 per ton, dry matter basis. Dark cutter losses were estimated using a discount of \$30/CWT under Standard grade prices. Results are presented in the table below.

Benefit (Cost), per Head, in Safe-Guard + Endectocide Versus Endectocide Alone in 3 Trials⁵

<i>Variable</i>	<i>Trial 1^g</i>	<i>Trial 2^h</i>	<i>Trial 3ⁱ</i>	<i>Weighted Avg.^j</i>
Increased Carcass Grade +HCW Value ^a	\$20.44	\$19.54	\$2.88	\$14.99
Reduced Yield Grade Value ^b	(\$1.15)	(\$0.95)	(\$0.91)	(\$1.02)
Reduced Dark Cutter Loss ^c	\$1.27	\$3.67	\$0.46	\$1.67
Increased DMI/Feed Cost ^d	(\$5.21)	(\$15.05)	\$1.76	(\$5.91)
Reduced Death Loss Cost ^e	\$6.83	\$1.87	\$0.00	\$3.31
Net Benefit^f	\$22.19	\$9.01	\$4.20	\$13.03

^a Value of differences in quality grade and HCW using the Swift pricing grid, base price of \$155.60/cwt

^b Value of differences in yield grade using the Swift pricing grid

^c Value of reduced dark cutter losses at treatment average HCW and a \$30 discount to Standard

^d Increase (decrease) in feed cost associated with increase (decrease) in DMI

^e Reduction in death loss expense per head at \$102.34 per CWT times inweight

^f Equals a + b + c + d + e

^g Based on Reinhardt et al, Safe-Guard + ivermectin vs. ivermectin alone, n=1,106

^h Based on Reinhardt et al, Safe-Guard + doramectin vs. doramectin alone, n=756

ⁱ Based on Hutcheson et al, Safe-Guard + ivermectin vs. ivermectin alone, n=871

^j Weighted on number of cattle in each trial

Discussion: As these three trial datasets demonstrate, the results of the use of parasiticides can vary widely. In no case was the use of Safe-Guard in combination with an endectocide associated with a decline in economic performance of the heifers in the three trials. In all three cases the estimated increase in economic outcome was substantially more than the cost of Safe-Guard (about \$1.50 per dose). Due to the fact that not all of the individual differences are statistically significant these results cannot be generalized beyond the three trial datasets.

The fact that all three of these studies show a positive payoff for use of Safe-Guard in combination with an endectocide does not imply that there will always be an economic benefit for Safe-Guard use. However, given the number of total number of cattle in the three trials and magnitude of benefits relative to cost the results indicate that cattle feeders should evaluate the use of Safe-Guard in combination with an endectocide in arriving cattle. Results will also vary depending on prices of cattle, feed prices, the condition of incoming cattle, feedlot environment, the details of the pricing arrangements a feeder has with the packer, and other factors.

⁴ Found at: <http://www.genenetbeef.com/grandislandgrid.html>

⁵ Detailed calculations are available from the author at thomaselam@farmecon.com.