

Internal Parasite Control in Cow-Calf Herds: Impact on Animal Health and Herd Profitability

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INTRODUCTION

Cow-calf producers have historically operated within fairly narrow profit margins. Standardized performance analyses (SPA) of cattle herds in the southwestern United States and Great Plains region have shown that the annual return on assets (ROA) in these operations ranges from 0.3 to 3.1%. For reference, other businesses in the United States have historical ROA that exceed 10%. While the reasons for this discrepancy are numerous, most cow-calf operations have relatively high operating costs, pay high interest rates on borrowed money, and function within a market of highly volatile prices that are largely beyond their control. In addition, producer level surveys of cow-calf operations across the country have shown that a minority of herds adopt management practices that promote herd efficiency and profitability. For example, these surveys have found that less than 35% of producers utilize pregnancy examination of cows and only 23% use body condition scoring to monitor adequacy of herd nutritional programs. The easiest way to improve herd profitability is to focus on optimizing herd efficiency. Optimization of herd efficiency and farm profitability can be done in several ways:

- 1. Increase the number and weight of calves sold**
- 2. Reduce the overall cost of production**
- 3. Increase the number and weight of calves sold while also decreasing the overall cost of production**

Dewormers have the potential to impact herd efficiency and profitability in a number of ways. Unfortunately, the use of dewormers on most operations is not optimized. For example, surveys have revealed that 25% of operations in the United States do not deworm replacement heifers. In addition, these same surveys showed that only 50% of operations dewormed feeder calves of weaning age. In difficult economic times such as now, the tendency is for good animal health practices such as deworming to be set to the side because they are seen as unnecessary costs with little return. The goal of this document is show how dewormers can be used to positively impact herd profitability, even when times are tough.

ECONOMIC IMPACT OF INTERNAL PARASITE CONTROL IN THE CATTLE HERD

Internal parasites represent a source of significant economic loss in almost all segments of beef production. The implementation of an internal parasite control program can lead to increased weaning weights in calves and increased pregnancy rates in heifers and cows. One study that was

performed in Watkinsville, GA found that a single dose of Panacur given at the label dose to cows in early May resulted in a 22% increase in both pregnancy and calving rate compared to cattle that were not dewormed. Similar, but more recent, work from Louisiana has found that cows dewormed with Panacur midsummer had a 12% increase in pregnancy rate compared to untreated cows. To put this in economic context with current market prices, deworming cows represents a nearly 4,000% return on investment due to the increased number of calves available for marketing. In addition, that same study showed that calves dewormed at 3-5 months of age gained 0.3 lb/day more than calves that were not dewormed and weighed, on average, 25-45 lbs more at weaning than control calves. Again, to put this into economic context using current market prices, the use of dewormers in calves represents a 1,500 – 3,000% return on investment due to heavier weaning weights. An analysis from Iowa State University performed in 2007 found that if dewormers were removed from use in the cowherd altogether, the breakeven price for that operation would increase by 34% and the cost per cow would increase by \$165/head. That same study showed that removing dewormers from use in weaned feeder calves increased breakeven price by 3% and increased cost per calf by \$21. A summary of the economic impact of dewormers can be found below in Table 1.

Table 1. Summary of the Economic Impact of Dewormer Use in Cattle Herds

Production Class	Measured Parameter	Impact	Return on Investment
Mature Cows	Reproductive Performance	~12% increase in pregnancy rate	4,000%
Nursing Calves (3-5 months of age)	Weight Gain	0.3 lbs/head/day	1,500%
Weaned Calves	Weight gain	0.2 lbs/head/day	1,500%
Stocker Calves	Weight Gain	0.2 lbs/head/day	250%

DEWORMER RESISTANCE: AN EMERGING ISSUE

Over the last 30 years, control of parasites on cattle operations has relied almost exclusively on the use of dewormers. Unfortunately, dewormer resistance is becoming more common and resistance is particularly prevalent in Southeastern cattle herds. A recent study from the USDA found that approximately 50% of herds surveyed had resistance to brand name pour-on dewormers and over 75% had resistance to generic pour-on dewormers. That same study showed that only 20% of herds had resistance to brand name injectables and no herds had resistance to oral white paste dewormers. Recent work evaluating dewormer resistance in weaned calves on farms in Georgia performed by the parasitology group at the University of Georgia found that resistance to commonly used dewormers was found on 92% of farms surveyed. This same study also found complete dewormer failure on one of the farms involved in the study. A similar study just performed in weaned calves at 4 University of Georgia Experiment Stations found that calves dewormed with either an oral white paste or an oral white paste combined with an injectable dewormer gained 10 lbs more than animals that were not dewormed and 5 lbs more than animals dewormed with just an injectable dewormer alone over the course of a 42-day growing period. This equates to an additional 0.15 lbs/day in ADG and translates to a \$10-12 per calf increase in profit, even with the cost of dewormer included (Table 2).

Table 2. Effect of Deworming Strategy on Weight Gain and Added Value in Weaned Calves

Variable	No Dewormer	Pour-on	Drench	Combination	P-value
ADG (lbs)	1.2	1.3	1.4	1.4	0.0001
Total lbs gained	50	55	59	58	0.0001
*Value added (\$)	\$59.50	\$65.40	\$71.13	\$69.23	0.0001
Efficacy	-40%	61%	92%	99%	0.0001

*Value added is calculated as the difference in treatment cost and total weight gain multiplied by an average market price of \$1.20/lb

PRINCIPLES OF DEWORMER USE

It is clear that resistance to dewormers in Georgia cattle herds is an issue. It is also clear that the proper and judicious use of dewormers has the potential to improve herd performance and profitability, regardless of market conditions. Nevertheless, to reap the most benefit from dewormers, they must be used the right way. The following are basic recommendations for the use of dewormers in different classes of cattle:

Mature cows

Mature cows are generally less susceptible to the effects of parasites than other groups of animals due to the fact that they develop an immunity over the course of multiple grazing seasons. However, some breeds of cattle, particularly cattle with heavy Brahman influence, remain susceptible into their late adult years. **An ideal approach to deworming adult cows is to deworm them in late winter or early spring with a combination of an injectable dewormer and oral white paste.** Deworming them at this time of year is important because they have come through the winter and are under nutritional stress. In addition, parasite burdens are highest during the cooler months of the year and more benefit is gained from the use of dewormers now relative to using them in late spring or early summer. Furthermore, a lot of herds calve in late winter and early spring. Calving creates issues with immune function that allow parasites to take a hold in animals more easily. At the end of the day, making this transition will help improve cow performance. In addition, deworming cattle at this time has the potential to enhance calf weaning weight through an increase in milk production. This is different from the previous recommendations of deworming all animals in late spring or early summer. We realize, today, that this recommendation is inappropriate due to the fact that parasite burdens are lowest during this time of year and this practice increases resistance in parasite populations.

Bulls

Bulls are generally considered more susceptible to the effects of parasites than other classes of animals. **Bulls should be dewormed with both an injectable dewormer and oral white paste prior to the beginning of the breeding season.**

Replacement heifers

Due to their age and lack of immunity, replacement heifers are particularly susceptible to the effects of parasites. Research has found that replacement heifers dewormed appropriately gave birth to 15% more calves than heifers not dewormed. In addition, these same heifers weaned calves that weighed 10% more at weaning. Clearly, deworming replacement heifers is a wise investment for a cow-calf operation. **Replacement heifers should be dewormed at weaning and**

then again prior to breeding. Due to the long period of time between weaning and breeding, an additional deworming may be included between these two time points depending on heifer condition, environmental conditions, and climate. Like cows and bulls, heifers should be dewormed with both an injectable dewormer and oral white paste.

Calves

For herds that maintain calves on farm in a precondition phase after weaning, dewormers can be given at weaning. **For herds that sell calves off the cow at weaning, dewormers should be administered at 3-5 months of age.** This will allow for the capture of an additional 0.3 lbs/day of growth and 30-40 lbs of additional weight at the time of sale. **As with other production classes, calves should be dewormed with both an injectable dewormer and oral white paste.** A summary of deworming recommendations for the different production classes can be found below in table 3.

Stocker cattle

Stocker cattle are particularly susceptible to the effects of parasites due to the effects of stress and poor nutritional status. Not only will parasites affect performance but parasites also increase the risk of bovine respiratory disease (BRD). In fact, work from researchers at UGA and Mississippi State found that for every 100 egg per gram increase in fecal egg count the risk of BRD increased by 30%. **Stocker cattle should be dewormed at the time of arrival processing and then again 8-10 weeks later with both an injectable dewormer and oral white paste.** Work from our lab has shown this combination to be >98% effective in this class of animals.

Table 3. Summary of Deworming Recommendations by Production Class

Production Class	Timing	Product
<i>Mature Cows</i>	Late winter/Early spring	Combination*
<i>Bulls</i>	Pre-breeding	Combination*
<i>Replacement Heifers</i>	Weaning, 8-10 weeks after weaning, Pre-breeding	Combination*
<i>Calves</i>	Weaning (if keeping on farm to precondition); 3-5 months of age (if selling directly off cow)	Combination*
<i>Stocker Calves</i>	Arrival processing, 8-10 weeks later	Combination*

*Combination = use of an injectable and white oral paste dewormer at the same time. Products should be used at the full label dose for each.

Table 4. Examples of Injectable and Oral Paste Dewormers

Class	Example
Injectable	Cydectin, Dectomax, Ivomec
Oral Paste	Panacur, Safeguard, Synanthic

OTHER CONTROL PRINCIPLES

To get the maximum benefit from a dewormer program, several other factors must be considered:

1. Herd immunity should be increased
 - a. Proper nutrition
 - i. Nutrition represents one of the most serious risk to parasite burdens in mature cows
 - b. Stress control
 - c. Reduction in other disease pressures
2. Biosecurity must be observed and new purchases/arrival should be dewormed appropriately so that resistant parasites are not brought onto an operation
3. Always graze cows after weaned calves (feeder or replacement) if the same pastures are used to support animals from the different production classes
4. Consider not deworming mature cows > 5 years of age. These animals are likely immune to most parasites and dewormers probably provide little benefit to them. This will serve to reduce development of resistance over the course of time
5. Animals should never be turned out to a clean pasture (pasture that has been rested through summer, pasture that is alternated for hay, pasture that has been co-grazed with another species) after they are dewormed. This will only serve to promote resistance.
6. Products should be used and stored properly
 - a. Use two dewormers at the same time in all production classes (injectable and oral white paste)
 - b. Avoid pour-on dewormers if at all possible
 - c. Deworm based on actual weights rather than guessing
 - d. Follow label directions for storage and avoid temperature extremes

SUMMARY

Cow-calf production has historically been an industry with relatively low profit margins. Utilizing dewormers appropriately will improve % calf crop, increase the value of the final product sold through enhanced weaning weight and, in most cases, reduce the overall cost of production. This combination of factors will, over the long term, enhance the bottom line of cattle producers while also maximizing animal health and well-being. As always, when questions regarding animal health arise, contact your local herd health veterinarian.