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ECONOMIC IMPACTS OF TRICHOMONIASIS

Wenzel, J, Gifford, C., Hawkes, J[1]

Introduction

Trichomoniasis is a disease that can be economically devastating in a short period of time. Trichomoniasis is caused by the protozoa, *Tritrichomonas foetus*, and does not cause the animal to show clinical signs. Additionally, there is no treatment to cure infected animals making the disease difficult to control if proper preventative practices are not followed. A susceptible cow that is bred by an infected bull will become infected with the organism, and will generally abort, resume cyclicity, and then may settle thereby infecting all bulls that breed her while she is infected. Infected bulls will then transmit the disease to the cows he breeds and the disease spreads rapidly through the herd. Trichomoniasis is known to reduce herd fertility, and the economic impacts from reproductive losses can be substantial for the livestock enterprise with extensive implications for both production and economic sustainability. However, the full extent of economic damages associated with a Trichomoniasis outbreak in New Mexico livestock operations has not been evaluated.

Therefore, a series of factors that are impactful to the economic profile of the livestock production unit were considered in a recent survey of known positive premises across New Mexico. Physiological factors that were found to be most economically impacted included: calf crop percentage, conception rate, cull rates, weaning weights and re-establishment of the herd. Impacts associated with Trichomoniasis are not a one-year recovery process, but rather a long-term situation that requires intensive management by the livestock producer to return to profitability.

Cost and Return Estimate

A representative livestock enterprise was employed in the modeling process using the New Mexico State University cost and return estimate generator. The representative ranch had 400 mother

cows, 1:20 bull/cow ratio, 15% replacement rate, and a 91% weaned calf crop. The comparative analysis cost and return estimate for a Trichomoniasis infected herd had the same number of mother cows, 1:20 bull/cow ratio, 35% replacement rate and a 64% weaned calf crop. These values were determined through survey responses.

Economic Implications of Trichomoniasis in New Mexico

The percentage of weaned calves in the Trichomoniasis positive ranches across New Mexico fell by almost 37% after the disease was identified. Economic impacts associated with fewer calves are multi-faceted for the production unit. First, the reality of selling fewer calves has a significant impact on the return for the enterprise. Second, due to the extreme environment in NM, most producers find it necessary to raise their own replacement heifers in order to match their animals to the environment. A reduction in weaned calves will constrain the producer decision making process as forward planning is evolving. Not only were fewer calves weaned, but market calves were lighter with the presence of Trichomoniasis thus further reducing gross returns. The result of lighter calves was representative of approximately $21 per cow. Overall, this research model indicated that economic impacts of Trichomoniasis were in excess of $300.00 per cow on the representative livestock enterprise.

Conception rates were 90.55% for the disease free enterprise, and 64.5% for the enterprise exposed to Trichomoniasis. The physiological and economic impact is stated in weaned calves. When the disease is present, effects on conception are significant. Conception may be delayed by several cycles. It is estimated that every cycle that a cow does not breed reduces her calf's weaning weight by as much as 50 pounds. In addition, many cows will not rebreed, and will have to be sold as open cows. Cows that were pregnant, at pregnancy check may abort at any point up to 240 days of gestation. Perhaps the most devastating is the loss in calf crop which can be 10- 50% the first year depending on the rate of transmission in the herd which is largely dependent on the number of infected bulls.

Replacement of the aggregate breeding herd holds economic challenges that are both financial and genetic. Trichomoniasis has been shown to alter the genetic composition of the breeding herd. New Mexico producers must select for cows that can produce in an environment where forage is often limiting, and it can take decades to build a herd adapted to the challenging environment. Thus, purchasing replacement heifers is not common for the majority of New Mexico producers. Generations of family choices relative to the development of the mother cow herd have been devastated by this Trichomoniasis. This impact is very challenging to determine a specific economic value through the

implementation of the representative cost and return estimate, but reduced calving percentages associated with Trichomoniasis makes it necessary to purchase replacement females. This additional cost is only partially offset with increased cull sales. Costs associated with the replacement of bulls was estimated to exceed $80,000 for the representative model.

Testing

The only known way to eliminate the disease, and to prevent infection is to test bulls; thus, Trichomoniasis testing is a positive investment for the livestock entity. The cost of a Trichomoniasis test was estimated to be $46.21 per bull as determined by the survey average. Relative to the potential economic loss associated with the disease should the enterprise become infected, this cost would appear to be a positive return on investment. In addition, annual testing will also facilitate positive working relationships with neighboring livestock enterprises. Collaborative efforts to increase Trichomoniasis testing in a region is an encouraged concept and is the most effective method to eliminate or minimize spread of the disease.

Table 1. Economic Profile of Trichomoniasis in New Mexico

	Without Trich	**Per Cow**	**With Trich**	**Per Cow**
Number of Cows	400		400	
Calf Crop Percentage	91%		64%	
Weaning Weight Heifers	495		486	
Weaning Weight Steers	515		509	
Trich Test/Bull	$0.00	$0.00	$46.25	$0.12
Bull Cost	$8,000.00	$20.00	$91,107.14	$227.77
Total Return	$242,063.00	$605.16	$166,114.00	$415.29
Total Cost	$165,037.00	$412.59	$249,822.00	$624.56
Return Above Total Costs	$77,025.00	$192.56	-$83,708.00	-209.27
Change in Return	**-$401.83**			

Summary

Table 1 provides a summary of the economic impact of Trichomoniasis. The introduction of this disease in a livestock enterprise will have economic impacts. These impacts will change both liquidity and solvency. The overall impact of the study determined that all factors when combined will have a total economic impact to the livestock enterprise of greater than $400 per cow. Annualized return on investment would exceed 129% in this scenario. A return with a level of significance as presented allows the livestock enterprise owner/management team to make an easy decision- initiate and sustain Trichomoniasis testing.

[1] – All with New Mexico State University, Department of Extension Animal Sciences and Natural Resources
Wenzel, J -Extension Veterinarian
Gifford, C.- Extension Beef Specialist
Hawkes, J. – Ag Economist and Department Head

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Upcoming Event
Southern NM State Fair
Sept. 27 – Oct. 1, 2017

Have fun at the Fair and the Rodeo