

Factors Associated with Handling of Livestock

- 1) Handling cattle can negatively affect growth, health, and reproduction in multiple ways.
- 2) In feedlot cattle, handling cattle costs the feedyard an estimated \$2.10/head due to labor costs, lost feed intake and growth, and risk of injury.
- 3) Cow/calf operations likely realize a cost of more than \$4.00/head to handle cattle. This figure can vary greatly depending on the operation.
- 4) Research has shown that stress during the first 60 days of pregnancy may reduce pregnancy rates 6-12%.
- 5) Cattle handling after arrival is the primary cause of lameness. The cost to treat lameness is estimated at \$10.50/head.
- 6) Animal contact is ranked as one of the two leading causes of agricultural-related injuries.
- 7) As awareness of animal production practices becomes more widely scrutinized, non-handling methods of treating livestock are becoming increasingly important.

Introduction

Handling livestock, whether to provide routine care or for treatment of sickness, is a common and often unavoidable part of livestock production. However, there are instances where handling can be avoided, and it is important to be aware of the performance effects that livestock handling may have.

Every animal responds to stressful situations differently. Naturally calm animals, when handled in a low-stress manner, may show no negative effects in terms of growth, health, or reproduction. Animals with a more excitable temperament, however, may be unable to cope with the change in environment and may become stressed. The stress response will increase cortisol concentrations, and this can lead to reductions in growth, reproduction, and health.¹ Any handling of livestock will also increase the risk of injury to livestock as well as any human personnel involved.



Effects of Animal Handling on Feedlot Cattle

In a 2008 study,² researchers assessed the costs of processing cattle for re-implanting in 20 feedyards in the central United States. This study included pen means for 68 pens and 8,945 head of cattle. For the ten days following processing, feed consumption was, on average, 0.44 pounds/head/day less than the ten days prior to re-implanting. Of all of the pens of cattle processed, 61% had reduced feed intakes after processing. Assuming an incremental feed conversion of four pounds of feed intake per pound of gain, the decreased feed intake would result in a loss of 1.10 pounds per head processed. At current fed cattle prices of \$1.20/pound live weight, this results in a loss of \$1.32/head processed.

In addition, a survey of feedyard managers estimated one injury per 8,136 head of cattle processed for re-implant. Assuming a processing weight of 1,000 pounds and a value of \$1.30/pound for a 1,000 pound steer, this equates to an additional \$0.16/head processing loss. Feedyard managers also assumed a cost (labor, planning, and equipment) to process of \$0.62/head. In combining the lost performance, losses due to injury, and feedyard cost, the total cost of processing is approximately \$2.10/head. An earlier assessment of the cost of processing cattle for re-implant³ estimated a reduction in average daily gain of 0.22 pounds due to processing. Over a 180-day feeding period, this results in a 40 pound reduction in live weight, or \$48/head at \$1.20/pound live weight.

Effects of Animal Handling on Beef Cows

Nutritional status has a great impact on reproduction. Therefore, decreased nutrient intake associated with stress,⁴ as well as altered nutrient partitioning and increased metabolism to support a stress response⁵ can indirectly affect reproduction. Stress hormones, particularly cortisol, can also have a direct negative effect on reproduction.¹

Pregnancy rates in beef cows declined from nearly 100% to less than 40% when comparing cows with blood cortisol concentrations of less than 20 ng/mL (low stress) to cows with blood cortisol concentrations of greater than 80 ng/mL (highly stressed).¹

The first 60 days after breeding are particularly critical for maintaining pregnancy. Handling heifers 10-15 days after breeding reduced pregnancy rates by 6% compared with leaving heifers in the pasture.⁶ Research assessing the effects of shipping stress on bred cows has shown pregnancy rate reductions of 6-12% when cows are shipped within 60 days after breeding.⁷ Although stress from shipping is greater than that from handling cows or heifers, it is likely that simply handling bred cows or heifers in this timeframe could result in reduced pregnancy rates as well.

Cow/calf operations vary widely in size, labor availability, condition of cattle handling facilities, and distance from pastures to cattle handling facilities. Therefore, it is difficult to make an industry-wide estimate of the monetary costs of handling cows. However, some assumptions can be made to develop a baseline for costs.

For example, a 200-cow herd may require four people to prepare and clean up facilities, gather and process cattle. Assuming that this entire process takes seven hours, and each laborer is paid \$15.00/hour, the total cost of processing 200 cows is \$2.10/cow. This does not take into account equipment and maintenance costs, vehicle and/or horse costs associated with gathering cattle, potential for lameness, abortion, and other factors. When all of these factors are considered, the cost is likely more than \$4.00/cow.



Effects of Animal Handling on Health

Added stress on livestock can lead to greater incidence of and greater severity of respiratory infections.⁸ In addition to infectious health issues that may arise due to stress associated with animal handling, non-infectious issues such as lameness may be associated with stressful animal handling. In a 2014 survey of 147 feedyard managers, consulting nutritionists, and consulting veterinarians, cattle handling after arrival was implicated as the primary cause of non-infectious lameness.⁹ In determining the lost revenue due to treatment of lameness, 40.1% of respondents estimated a loss of \$1 to \$50/head treated, 27.9% estimated a loss of \$51 to \$100/head, 8.8% estimated a loss of \$101 to \$200/head, and 5.4% estimated a loss of greater than \$200/head. A Canadian study¹⁰ indicated that the cost of treating an animal for lameness was approximately \$10.50/head.

Effects of Animal Handling on Human Safety

Beyond animal performance and health aspects, it is also important to recognize the human element of livestock handling. Between 2003 and 2007, there were 108 reported fatalities in the United States that involved cattle.¹¹ Animal contact is generally ranked as the first or second-leading cause of injuries on agricultural operations.¹²

Animal Handling and Animal Welfare

Finally, our society is becoming increasingly interested in the practices involved in raising production livestock. As a part of this, animal welfare concerns have increased, and are becoming a key marketing tool for many large corporations. With this in mind, any practices that can be incorporated to reduce the risk of injury to livestock should be considered.

Whether it be through reduced stress, sickness, or injury, or a combination of all of these factors, it is clear that reducing the handling of livestock can have positive effects on animal health and production. In addition, by reducing the number of times livestock need to be handled, there is a reduced risk of injury to humans, and reduced costs associated with equipment and moving livestock. As consumer demand for improved animal welfare increases, the need for non-handling methods of treating livestock is becoming increasingly important.

Conclusion

Regardless of phase of production (cow/calf, stocker, or feedlot), cattle handling represents a cost to cattle producers. The actual cost varies greatly based on size of operation, facilities, labor availability, and several other factors. The cost of cattle handling can also be affected indirectly by lost feed intake, reduced reproduction, or increased morbidity due to stress associated with cattle handling. In addition to stress on cattle, handling poses a risk to cattle production employees. Overall, methods to reduce animal handling can improve animal productivity and reduce risk of injury to cattle as well as humans.

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