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# Heritability of Genetic Resistance to Bovine Respiratory Diseases

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# Heritability of Genetic Resistance to Bovine Respiratory Diseases

## **Abstract**

Bovine Respiratory Disease (BRD) is the costliest disease facing the cattle industry. Therefore, the objective of this study was to better understand the genetic component of underlying resistance to bovine respiratory diseases. The focus of this study was to better understand the genetic differences between cattle that were more susceptible and/or more resistant to BRD. Data from Iowa State University's cattle at the McNay Research Farm have been used to try to determine the best phenotypic measurement with which to identify resistant cattle to ultimately help producers in the selection of this economically relevant trait.

## **Keywords**

Animal Science

## **Disciplines**

Agricultural Science | Agriculture | Animal Sciences

# Heritability of Genetic Resistance to Bovine Respiratory Diseases

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## Introduction

Bovine Respiratory Disease (BRD) is the costliest disease facing the cattle industry. Therefore, the objective of this study was to better understand the genetic component of underlying resistance to bovine respiratory diseases. The focus of this study was to better understand the genetic differences between cattle that were more susceptible and/or more resistant to BRD. Data from Iowa State University's cattle at the McNay Research Farm have been used to try to determine the best phenotypic measurement with which to identify resistant cattle to ultimately help producers in the selection of this economically relevant trait.

## Materials and Methods

Health records are being used to further understand the role that genetics play in resistance to BRD. This is being conducted by comparing health records and parentage information on cattle from the McNay farm. The list of the parameters to be evaluated includes symptom, temperature, number of times treated, treatment procedures, response to treatment, lung scores, and also carcass and growth data. All calves born between spring 2003 and spring 2006 were used in this portion of the study.

Another measurement that was used to identify cattle that showed BRD resistance was response to vaccination. The component of this study evaluated blood samples on 350 head of spring and fall 2006 born calves before, three weeks after, and five weeks after vaccination. These blood samples were used to test for titer levels at each time period. Combining this with the pedigree information of each calf allowed us to determine whether there was a genetic

difference between cattle with varying titer levels due to vaccination. If this relationship is shown, cattle producers may be able to improve herd health by selecting cattle that would respond more effectively to their vaccination protocol.

Another potential phenotype that may be useful in evaluation of resistance to BRD is lung scores at harvest time. Lung scoring is being used as an assessment of the life time exposure of bovine respiratory disease, and not just the cattle that showed symptoms and were treated for BRD. Currently, cattle from the Iowa State University Breeding Project, beginning with cattle born in the spring 2005, are being examined for lung scores. Again, cattle will be compared with their parentage records to see if genetics played a role in cattle that were both determined to be healthy and had no evidence of lung lesions. This will then be compared with the differences in average daily gain, carcass qualities, and many more traits of interest that affect profitability.

## Results and Discussion

The goal of this topic is to provide a more effective method to select for genetic resistance to bovine respiratory diseases. BRD is the most common and costly health issue the beef industry faces currently. The economic advantage to controlling BRD is obvious and is becoming more important due to an increase in resistance to current treatments and prevention procedures. The project is underway and no results were available at the time of publication.

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