Feed Efficiency in the Beef Industry

Feed Efficiency in the Beef Industry provides a thorough and concise overview of feed efficiency in beef cattle. It frames the great importance of feed efficiency to the industry and details the latest findings of the many scientific disciplines that intersect and aim to improve efficient and sustainable production of nutritious beef. The vast majority of production costs are directly tied to feed. With increased demand for grains to feed a rapidly increasing world population and to supply a new demand for alternative fuels, feed costs continue to increase. In recent years, the negative environmental impacts of inefficient feeding have also been realized; as such, feed efficiency is an important factor in both economic viability and environmental sustainability of cattle production.

Feed Efficiency in the Beef Industry covers a broad range of topics ranging from economic evaluation of feed efficiency to the physiological and genetic bases of efficient conversion of feed to high quality beef. Chapters also look at how a fuller understanding of feed efficiency is leading to new selective breeding efforts to develop more efficient cattle.

With wide-ranging coverage from leading international researchers, Feed Efficiency in the Beef Industry will be a valuable resource for producers who wish to understand the complexities, challenges, and opportunities to reduce their cost of production; for students studying the topic; and for researchers and professionals working in the beef industry.

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Feed Efficiency in the Beef Industry
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Edited by
RODNEY A. HILL
Dedication

This book is dedicated to all those who have shared their knowledge, collegiality, and support: my mentors, teachers, colleagues, and students. Above all, to my wife, family, and friends.
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Foreword

I first met Dr Hill at a BIF (Beef Improvement Federation) convention in 2009. I was impressed with his dedication and enthusiasm to coordinate meaningful change in researching, identifying, and providing selection tools for improving efficiency in cattle production. It is a passion our family has shared over three generations.

With this book, Dr. Hill and colleagues have provided a valuable service to the beef industry. This book, as a detailed anatomy of cattle efficiency, profiles where we are today and establishes the foundation for future efficiency research.

The timeliness of this book cannot be overstated. Over the past 5 years, the United States has consistently produced 25% of the world beef supply, while other world beef production has declined slightly year over year. In 2012, US beef production is predicted to decline by 5%. This is a disturbing statistic at a time when global population has surpassed 7 billion. By 2030, world population is forecasted to be over 8 billion, global demand for meat is expected to rise by 55%, and energy demand will increase by 40%. We must meet this increasing demand constrained to substantially the same cropland the world has cultivated since 1970.

This book comes at a time when the United States and world beef producers are challenged by many traditional and emerging issues such as:

- Weather.
- Rising energy costs.
- Increasing nonagricultural use for grazing land and increasing competition for traditional feed sources.
- Complex government and international policies including a confounding US biofuel policy.

These issues affect feed prices. Feed costs are directly related to 75% of the cost of producing finished cattle.

Cattle producers take the vast amount of land only suitable for grazing that God has blessed us with, and through grazing cattle, harvest those grasses, conserving land for future generations while at the same time producing a nutritious protein product. By understanding the many challenges faced by cattle producers in maintaining a sustainable business balanced by a strong commitment to animal welfare, a safe, healthy beef supply, and sound environmental stewardship, you will begin to appreciate that beef is one of the great success stories in food production.

For more than 50 years, it has been my family’s commitment to identify genetics that have economic importance to the rancher, feeder, and consumer. In 2007, we invested heavily in technology developed by GrowSafe Systems Ltd to measure individual intake in young bulls and heifer calves. We now test about 1700 head a year, and the first offspring we fed from one of these high-efficiency
bulls performed at the same level with 15% less intake. This improvement took a systematic, measured approach over time, but these results were unprecedented. To those who say we are a mature industry, I say we have just entered a new generation.

As you travel through the chapters of this book, you will better understand the importance of developing genetic traits for selection, such as RFI, that allow cattle producers to produce more effectively with less. Through this book, you will also come to appreciate the positive conservation and environmental impacts that selecting for efficiency traits such as RFI offer. I hope you appreciate Dr. Hill’s commitment to consolidating groundbreaking research from leading scientists in the field of cattle efficiency, particularly as the scientific community faces reduced agricultural research funding.

As a beef producer, use the knowledge you gain to expand your operation’s opportunity to improve efficiency. These are truly exciting times as product quality and production efficiency will be the profitability drivers that sustain our industry. Consider the tremendous opportunity we have in meeting today’s and tomorrow’s responsibilities to feed the world and enhance our natural resources in a sustainable and meaningful manner.

Leo McDonnell
Columbus, Montana
Preface

As I write, in November 2011, we remain in the throes of a lingering worldwide recession that has affected business costs, changed markets, and challenged production models across many industries. The issues around feed efficiency in the beef industry remain complex and many perspectives are evolving and changing. An enlightening perspective that a beef industry colleague recently expressed is that there has never been a better time to embrace opportunities to excel.

I see that improving feed efficiency in the beef industry is a great example of such an opportunity. The issues and challenges we face in improving feed efficiency are driven by ever increasing knowledge of the underpinning science, competing economic forces, and inevitably industry politics. I also see and experience a broad array of interpretations of data and perspectives from industry representatives, producers, scientists, and others. Our beef industry is large and complex with a broad array of interests and priorities. Multiple sectors within the industry variously work in collaboration or compete for a greater share of profits. The players vary in the scale and scope of their influence from large multinational entities to single families and individuals working to improve profitability and success, or especially in the case of smaller operations, just seeking to maintain a fulfilling lifestyle.

The topic of feed efficiency in the beef industry is one that has slowly gained the notice of both scientists and the industry over the last two decades. However, during the past few years, the costs of feedstuffs and fuel (and energy generally) have risen to new highs and have undergone unprecedented volatility bringing feed efficiency to greater prominence.

For the beef producer, improving feed efficiency is a move away from thinking about the outputs from their enterprise, driving revenue, to thinking about taking control of costs. In one aspect, beef producers actually do have some level of control over how and how much they invest in inputs such as feed, whereas they have little or no control over the price they receive for their products. Thus, controlling feed costs is a pragmatic way for producers to improve profitability.

Scientists are intent on discovery and providing better approaches to improving feed efficiency. This is a complex, real-world problem that cannot be addressed by a single scientific discipline. The collaboration of many is essential to progress. The so-called hard sciences also need the collaboration of economists to understand costs, revenues, and profitability and social scientists to help us understand how and why producers either adopt new knowledge or why they may be reluctant to do so.

From my interactions with many producers and others in the broader beef industry, I know that scientists have a lot to learn, and I have benefited from the profound insights of people with practical experience and perspectives who have not seen the inside of a laboratory or pursued a college degree. As the editor of this book, I am deeply indebted to many from both outside and inside academe who have shared their knowledge or who have stimulated my thinking and helped me gain new insights.