Beef Sire
Selection Manual

SECOND EDITION — 2010

National Beef Cattle Evaluation Consortium

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Review Panel

A special "thank you" goes out to the following individuals who reviewed the material included in this publication.

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Dedication

The authors and editor of the NBCEC Sire Selection Manual dedicate this publication to Dr. John Pollak. John was the founding director of the NBCEC and has worked tirelessly for the advancement of beef cattle genetic evaluations for many years. John's tenure as Director of the NBCEC ended in January of this year and his leadership will be missed. John continues to serve the beef industry as Director of the Roman L. Hruska U.S. Meat Animal Research Center in Clay Center, Nebraska.

Foreword

This manual was sponsored by the National Beef Cattle Evaluation Consortium (NBCEC). The NBCEC is an organization of universities that have been involved in beef cattle genetic evaluations over the last several decades, plus affiliate universities doing research critical to beef cattle selection and evaluation. The consortium, which started operations in 2000, is funded by a Special Research Grant from the Cooperative State Research, Education, and Extension Service of the USDA. The focus of the NBCEC is research, but we strongly believe in the need for an active extension program in beef cattle genetics. As such, we have held workshops and symposia on a variety of topics and have conducted several series of distance-education programs. This manual represents another effort by the NBCEC Extension team to provide current and meaningful information to the industry. As director of the NBCEC, I would like to take this opportunity to pay special thanks to the editors, authors, and reviewers who made this manual come to life.

We live in an age of accelerated scientific discovery, which leads to new technologies that must be understood by members of the production sector of the industry to assure that technology is applied appropriately. Today, producers face the challenges of learning about DNA testing and its application to their selection programs. However, one very appropriate use of any new technology is to synchronize it with tried and tested programs. The beef industry still must use tools like EPD and programs such as crossbreeding and/or composite breeding. The Beef Sire Selection Manual incorporates information on both tried and tested programs as well as on new genetic technology. It is meant to be a reference to help producers understand the important genetic concepts that are the tools for profitable cattle breeding.

Knowledge is a powerful asset for any undertaking, and profitable beef production is an endeavor the members of the NBCEC are committed to support. As such, we the faculty members of the NBCEC hope that you find this to be a useful educational tool and a unique resource.

John Pollak
Director
U.S. Meat Animal Research Center, ARS
Director Emeritus
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In principle, genetic improvement is a straight-forward exercise that results from using above-average selection candidates as the parents of the next generation. In practice, the devil is in the details. Both bull breeders and bull buyers need to consider their breeding objectives, defining the list of traits that need to be modified to advance the towards their goal. The bull breeder further needs to determine the characteristics that can be cost-effectively measured on the live animals in order to predict the merit of the candidates for the traits in their objective. The bull buyer needs to know how to interpret the sale information, and to have a working knowledge of the jargon to sensibly converse with bull breeders and other stakeholders in genetic improvement. Knowledge and understanding of these and other issues has never been more relevant than today, with some calling for belt-tightening due to economic pressures on the beef industry, while others are offering new investment opportunities such as DNA-based technologies that may assist in the selection process.

This second revised edition of the sire selection manual builds on the successful first edition and provides many details as to the important aspects of beef cattle improvement. It has been written, edited, refereed and revised by experts in the nation, driven by their interest in education, informed decision making, and the genetic improvement of the beef industry. They deserve special thanks. The manual will be of interest to stakeholders in all sectors of the beef industry, those bull breeders and bull buyers involved directly in animal management and selection, those that assist them in this task, including breed associations, sales representatives, extension agents, and aspiring students looking for career opportunities in any of those areas. The Scientific and Industry Councils of the National Beef Cattle Evaluation Consortium are proud of their role in facilitating this publication and trust you will find it can add value to your business, wherever that may be in the beef industry.

Dorian Garrick
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Iowa State University
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The first edition of the Beef Sire Selection Manual, sponsored by the National Beef Cattle Evaluation Consortium, was printed in 2005. The Consortium is pleased to present this second edition in 2010. A talented set of beef genetics experts from across the USA have authored the chapters. We are indebted to their abilities to present sometimes challenging materials in clear form that is easily understood by readers with a wide array of backgrounds. Many others have reviewed and critiqued the authors' efforts. A new chapter appears near the end, adding new developments in the utilization of molecular information in beef cattle selection decisions. Some chapters have remained quite similar to the initial version, while others have been updated and improved. There has been some reordering of chapters too.

Whether a seedstock breeder, a commercial breeder, a provider of selection decision tools, an educator or simply a casual reader, we believe everyone will gain from the manual. Sire selections are the premier selection decisions that all cattle breeders make, whether in a seedstock situation or in a commercial, crossbreeding one. Understanding the concepts and the tools is the first step in increasing our chances of success.

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